



**ECONOMIC GROWTH INSTITUTE**

UNIVERSITY OF MICHIGAN

# Maximizing Technology Commercialization of Federal Research Investments Through the Best Practices at Innovation and Economic Prosperity Universities

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# Background

## Study



## Institute



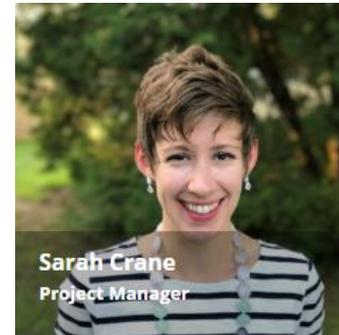
## Researchers



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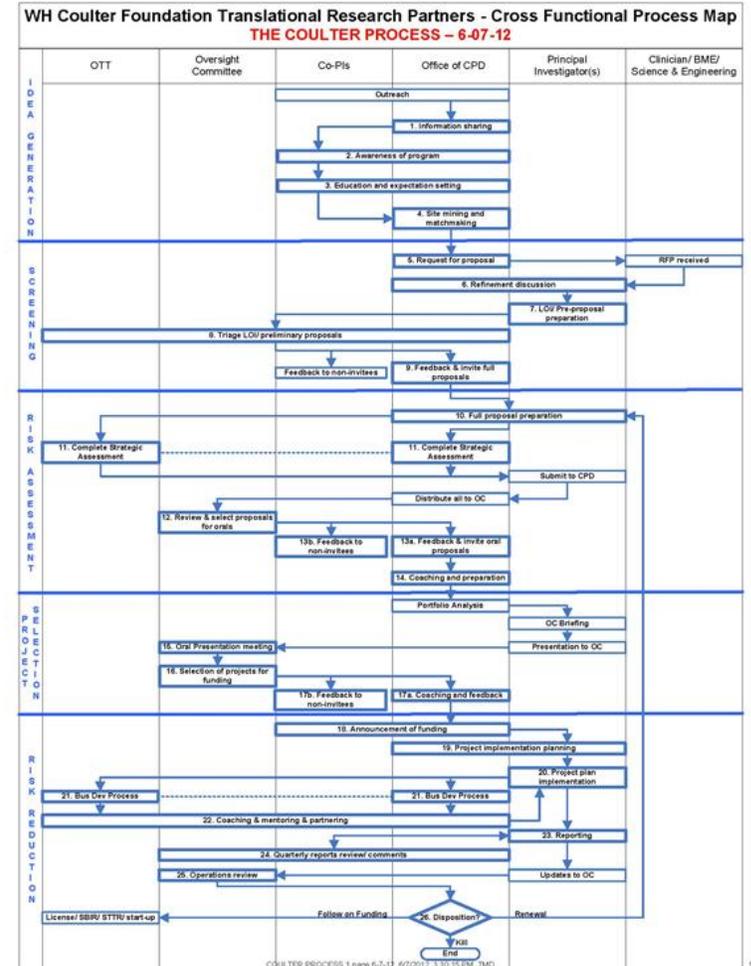
# Level Set Basic Perception: Technology Commercialization

Perception

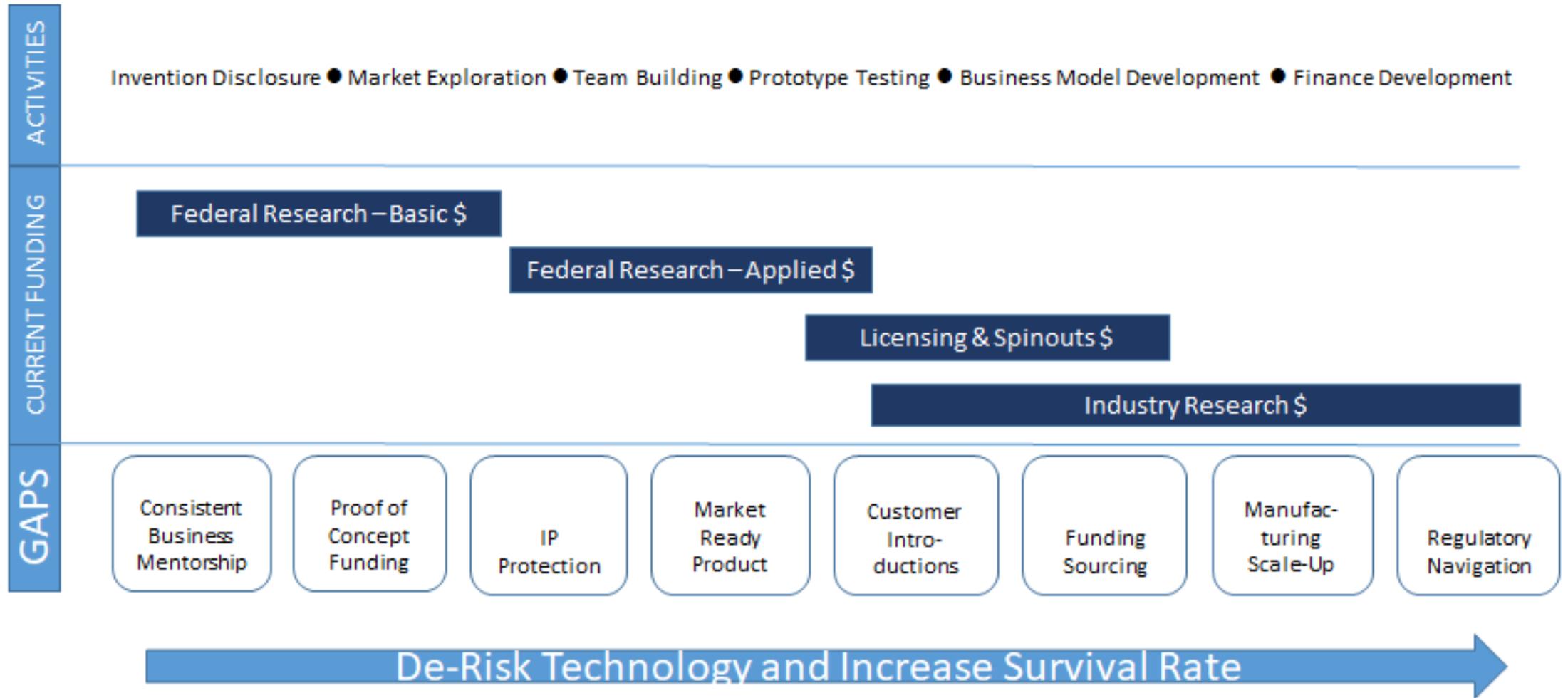
Reality

Federal  
Research  
Funding

Tech  
Products  
in the  
Market



# Research to Commercialization



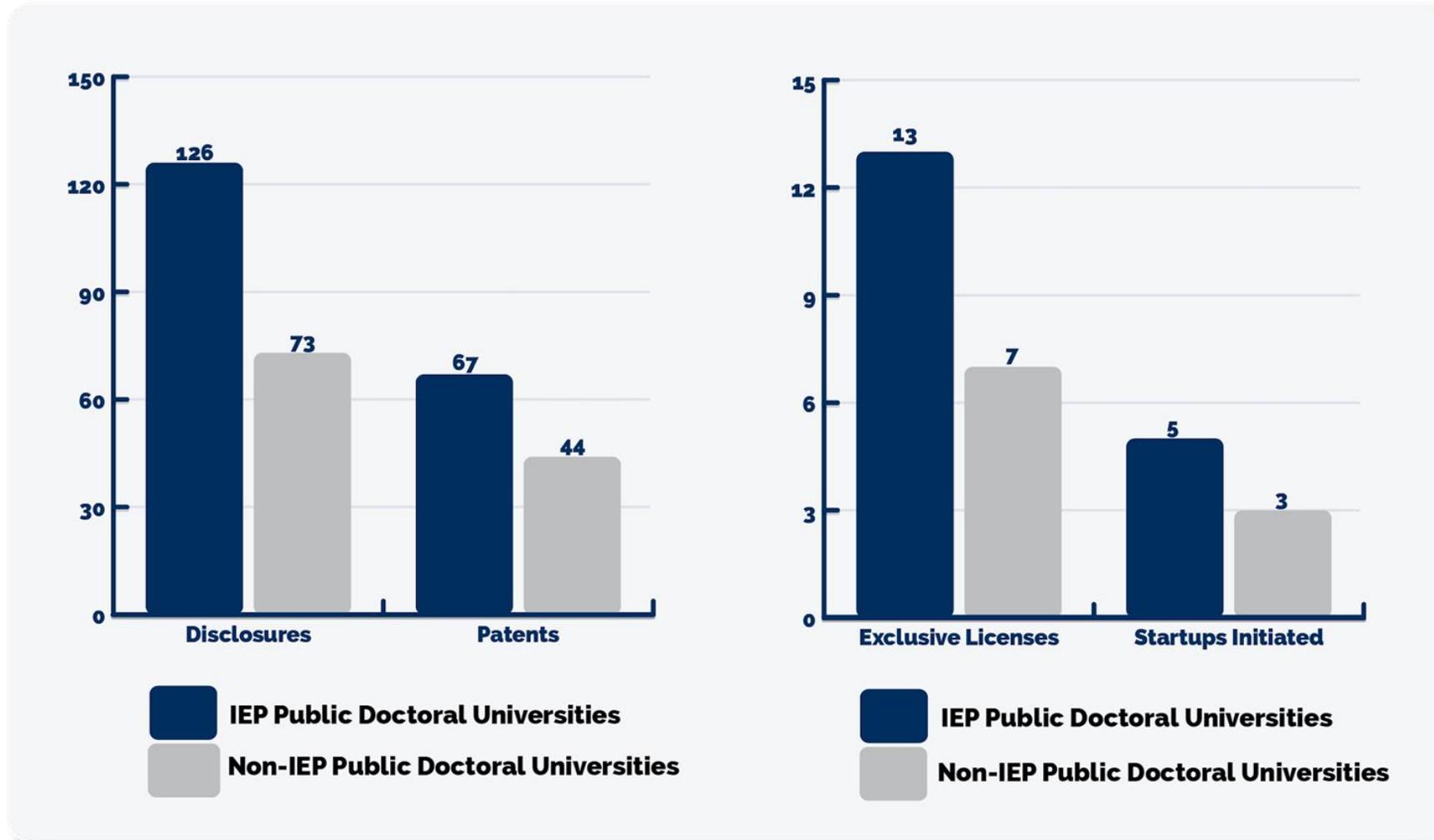
# Innovation and Economic Prosperity Universities



# IEP Universities produce more commercialization outputs than peers

## UNIVERSITY LAB-TO-MARKET ACTIVITY

Mean Annual Count from 2012-2016 for 110 Public Doctoral Universities

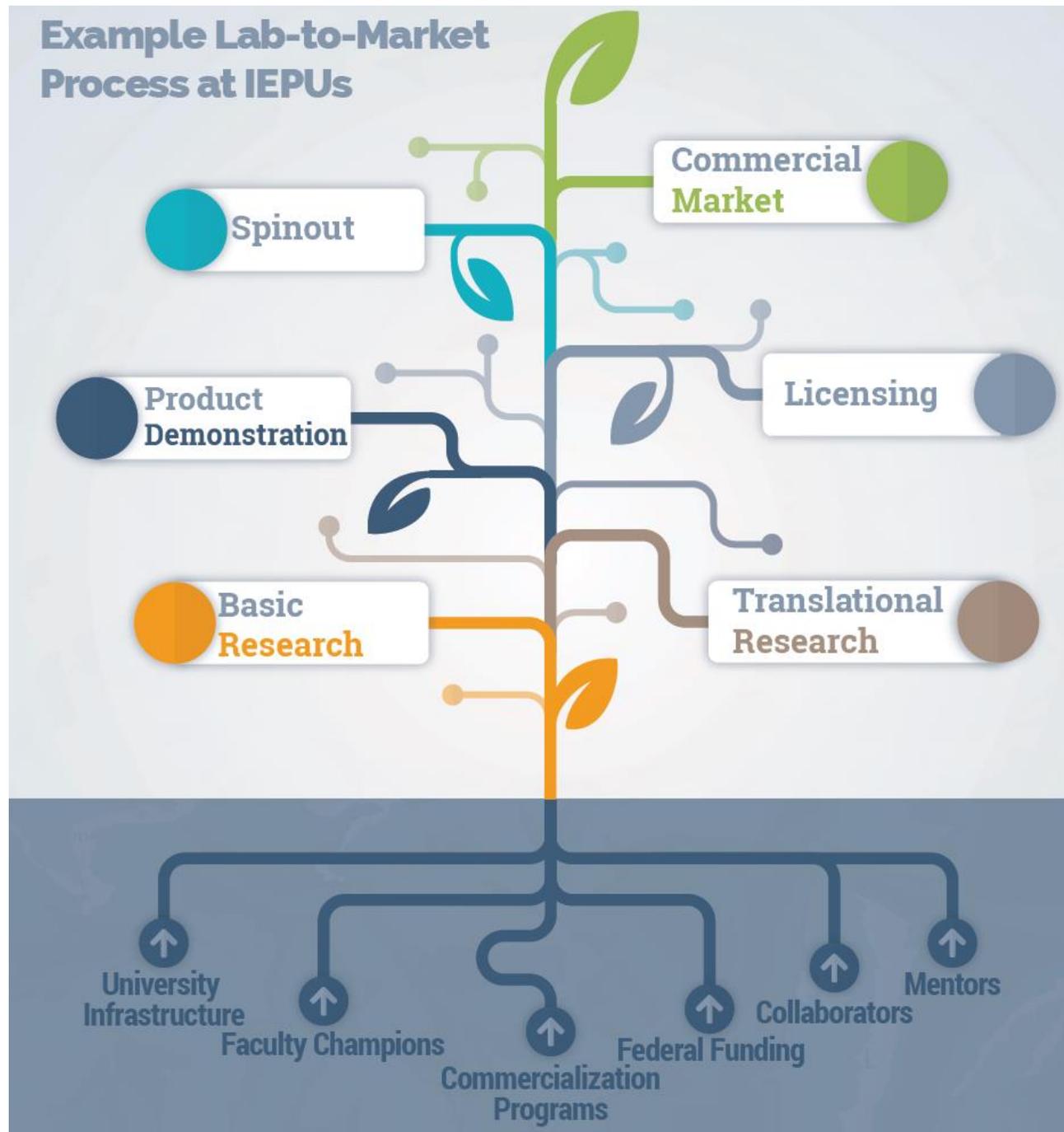


# Takeaways

- Confirmation of what is working for IEP Universities
- Existence of barriers and strategies for removing them
- IEP High Producers used collaboration and mentors to greater benefit
- Instructional models for other universities and FRLs
- Support for discussions regarding filling “gaps”
- Challenge of providing consistent support for a typically non-linear activity



## Example Lab-to-Market Process at IEPUs



# Methodology

## Mixed Methods study

- 59 North American public research universities with APLU “IEP” designation
- 10+ hours of interviews with staff at federal research laboratories in leadership and research roles
- Other sources: AUTM Data, IPEDS, Pitchbook



# IEP High Producers



Top 35% IEP universities have a significant concentration of technology commercialization output

# Best Practices

## LAB-TO-MARKET BEST PRACTICES AT INNOVATION AND ECONOMIC PROSPERITY UNIVERSITIES



## Faculty Researchers

### Obstacles

- Legal issues
- Conflicting cultural priorities
- Champion missing
- Proof of Concept

### Incentives

- A champion
- Legal incentives and transparency
- Cultural and promotion/tenure value
- Leave time

## All Survey Respondents

### Key Change Needed

- Cultural support and awareness of value of activity
- Funding
- Improving IP agreements and associated processes
- Other themes: More industry connections, mentorship & infrastructure



# Best Practice 1: Culture

## EFFECTIVE LAB-TO-MARKET UNIVERSITY CULTURES:

- Value translational research and commercialization activities as academic activities
- Reward commercialization activities through career advancement and public recognition
- Support people, programs and innovations through funding



# Best Practice 1: Culture

- Support from all levels
- Removal of administrative barriers
- Career path support
  - 3 out of 4 faculty mentioned personal motivations
  - Only 5% wanted to be CEOs



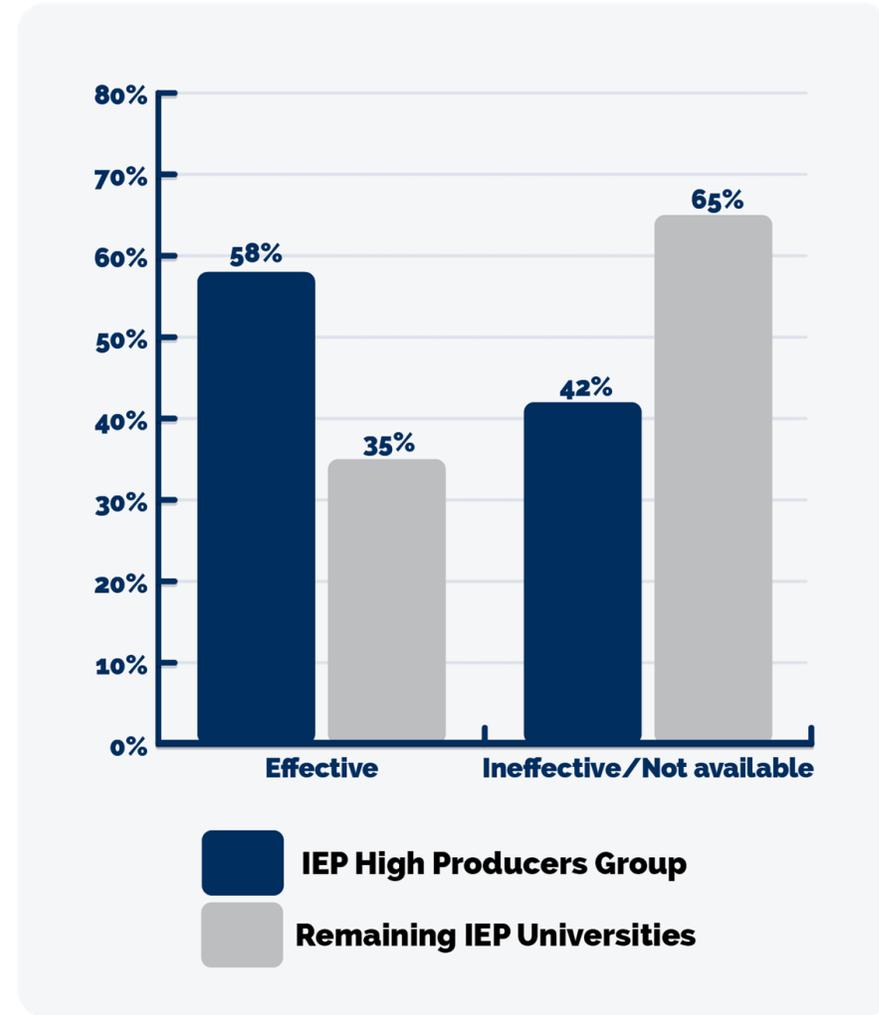
## Best Practice 2: Champion

- Staff with industry experience
  - Technology commercialization program leaders were from industry at 9 out of 10 the High Producers Group

IEP High Producers Group  
are more likely to have an  
effective Mentor-in-  
Residence Program

## MENTOR-IN-RESIDENCE PROGRAMS

Reported by selected Survey Respondents, n=98



## Best Practice 2: Champion

- Department chairs as “protectors”
  - 3 out of 4 faculty preferred engagement
- Peer coaching from successful faculty



# Best Practice 3: Incentives & Assets

**INCENTIVES AND RESOURCES OVERVIEW**

**POLICIES**

- Promotion and Tenure Policies
- Leave Policies
- Legal Policies

**FUNDING**

- Internal Funding
- External Funding
- Gaps in Funding

**ASSETS AND INFRASTRUCTURE**

- Research and Tech Parks
- Incubators/Accelerators

## Policies

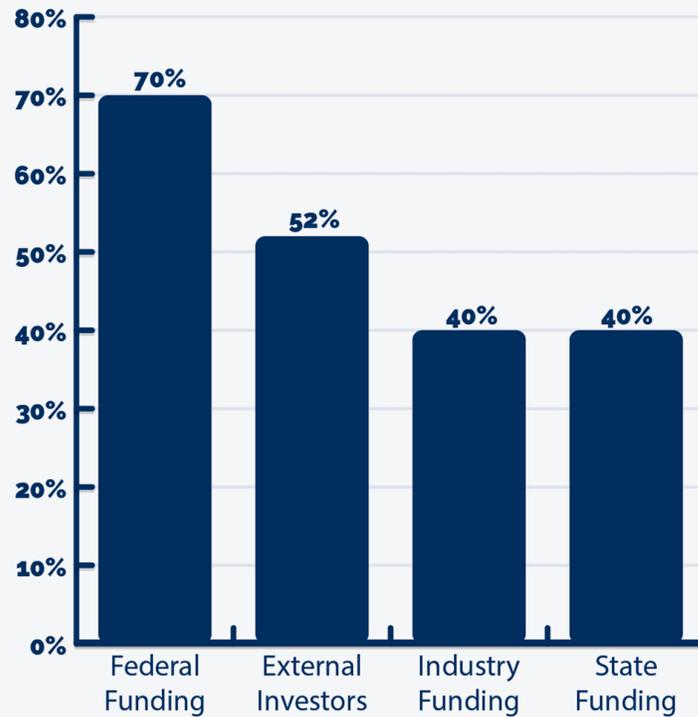
- Promotion and Tenure
  - 44% of faculty identified P&T as a barrier to lab-to-market activities
- Leave Policies
  - Others mentioned: champions, legal and cultural value
- Legal and COI Policies & Navigation
  - Most often mentioned obstacle
  - Transparency



# Best Practice 3: Incentives & Assets

## SOURCE OF LAB-TO-MARKET FUNDING

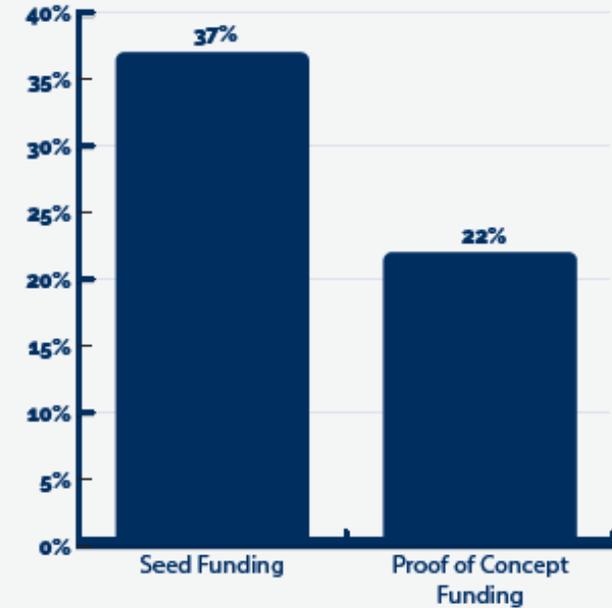
Reported by Faculty Researchers, n=51



Federal Funding is a vital source

## MOST CRITICAL GAPS IN FUNDING

Reported by Survey Panelists, n=45



## Best Practice 3: Incentives & Assets

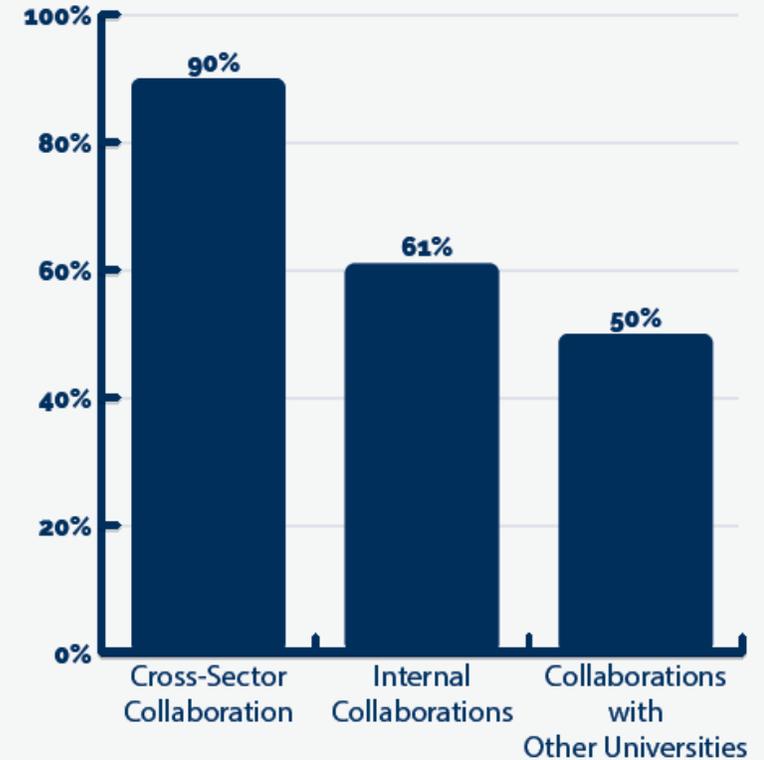
Infrastructure - High Producers were more likely to:

- Utilize formal business engagement centers (22%)
- Operate an accelerator or incubator (39%)

# Best Practice 4: Collaboration

- In-person Networking
- Internal Collaborations, with other universities and cross-sector

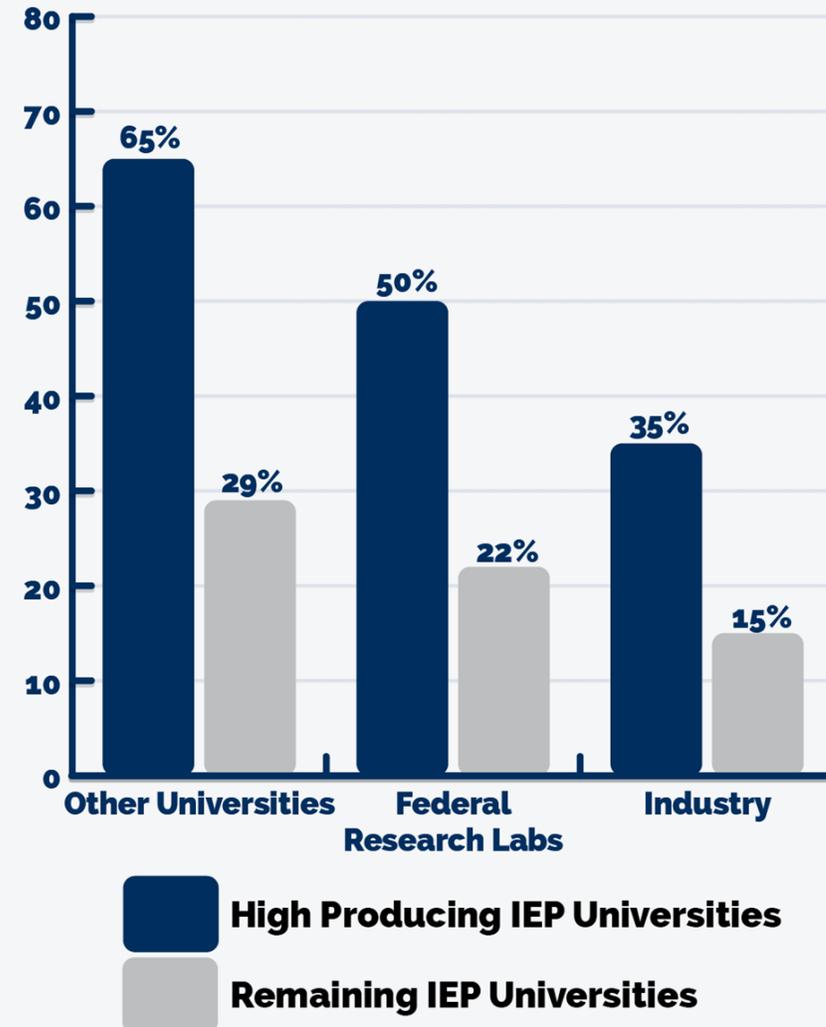
**TYPE OF LAB-TO-MARKET COLLABORATION**  
*Reported by Faculty Researchers, n=51*



High Producing IEP Universities are more likely to report strong collaborations

## “OUR COLLABORATIONS ARE ADEQUATE”

Reported by Survey Panelists, n=200

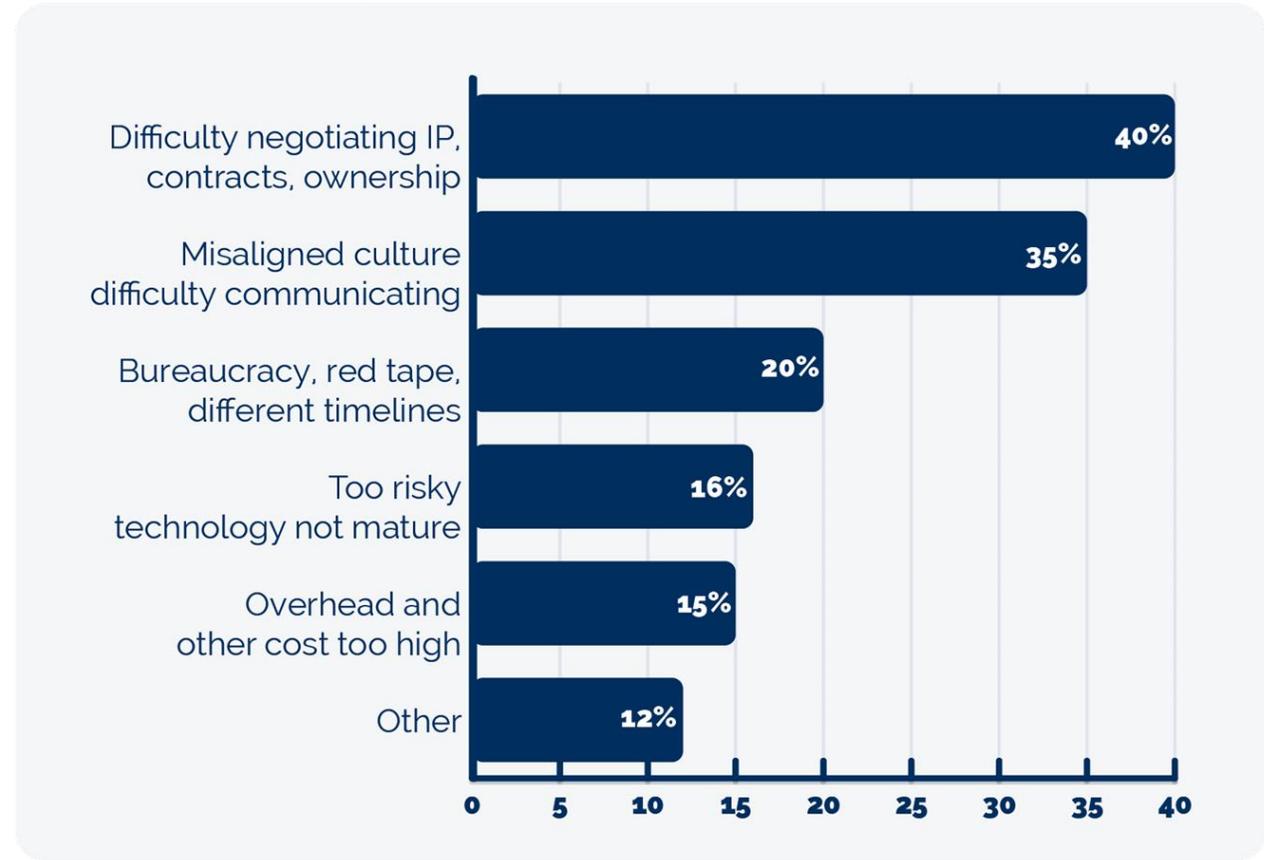


# Best Practice 4: Collaboration

IEP Universities still experience issues in collaboration, especially with legal and cultural issues

## PERCEIVED REASONS FOR BREAKDOWNS IN INDUSTRY COLLABORATIONS

*Reported by selected Survey Panelists, n=82*



# Conclusion

- Universities and FRLs are in their core designed as a “technology push” model
- IEP universities are at the leading edge of best practices for technology commercialization
  - These practices focus on culture, champions, incentives, and collaboration
- There is an opportunity to address university policies and perceptions about IP to improve the process (and thereby volume) of commercialization
- Universities’ connections to their community and ecosystem are critical to successfully commercializing technology
- There are gaps in the commercialization process that, if filled, could improve outcomes.

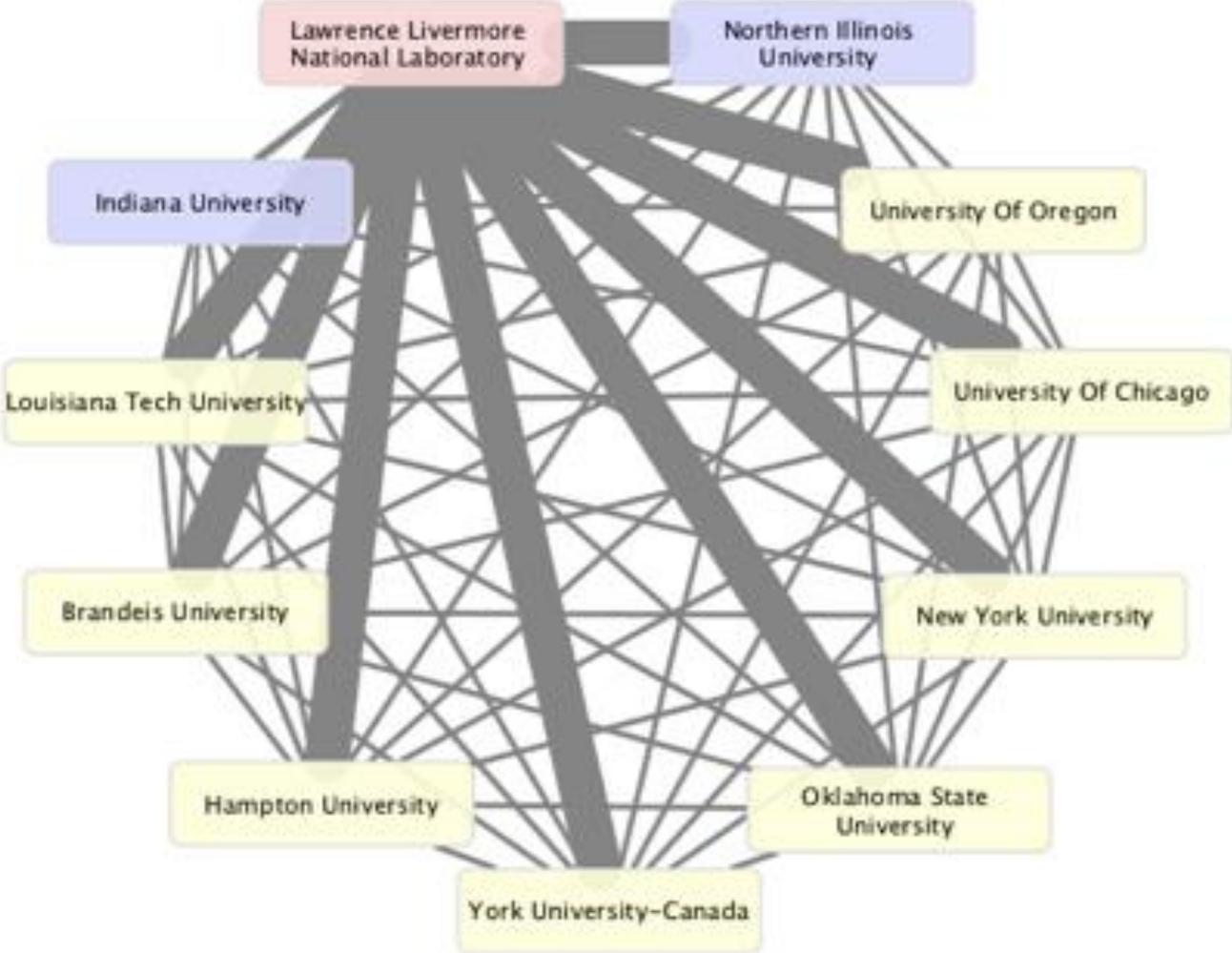


# Specific FRL Takeaways

- Policies vary widely across labs that directly impact technology commercialization
- Positive movement over the last ~5+ years
- Research collaborations are robust, not limited by geography
- FRLS have some of the same challenges, same opportunities



# Semiconductors Co-Publishing Network



# Collaborate and Convene

