Rensselaer

University-Industry Partnership for Next Generation Manufacturing

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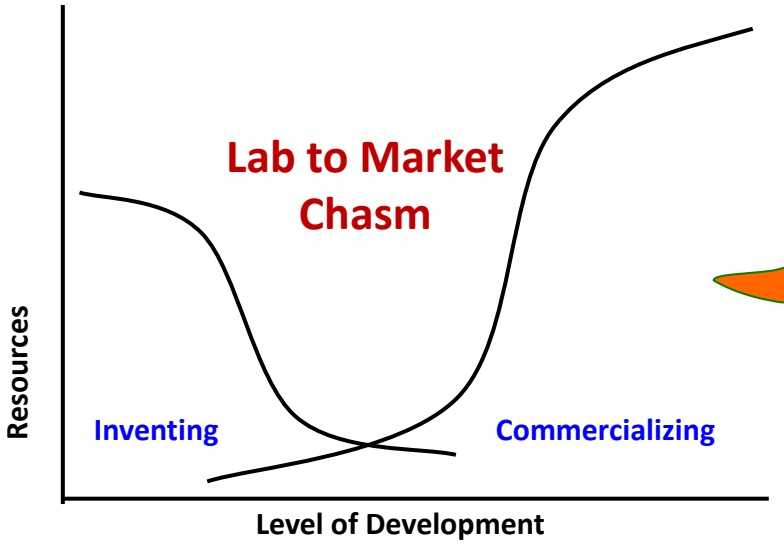
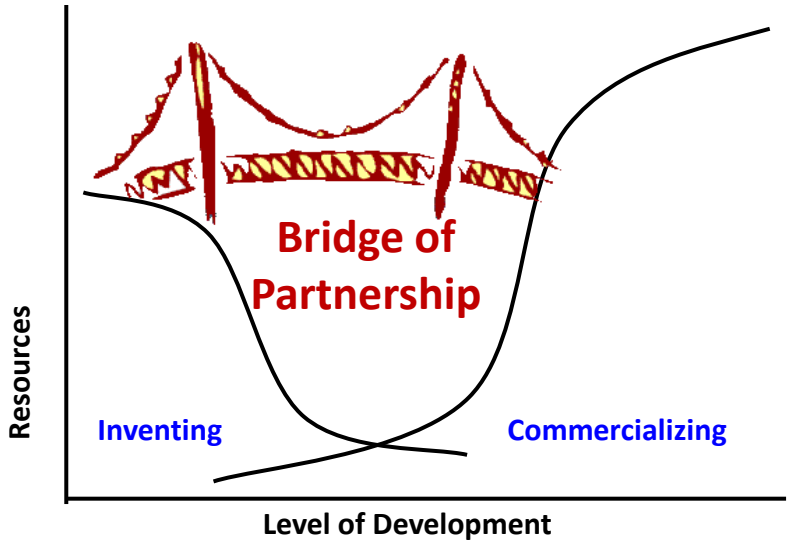
Key Challenge: From Discovery to Scale-Up



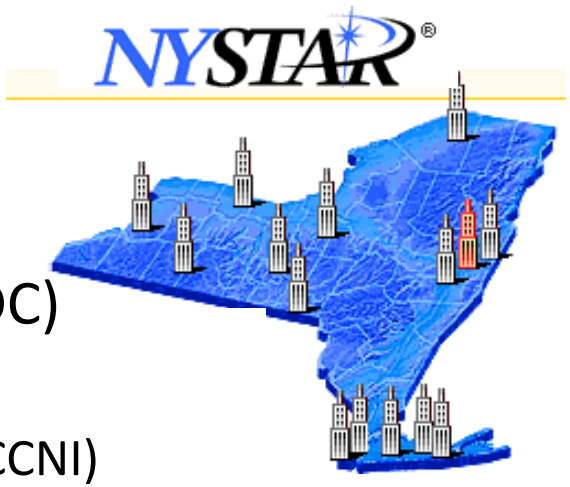


Industrial-academic-government partnership

A Successful Example: NYSTAR

Empire State Development Division of Science, Technology and Innovation (NYSTAR)

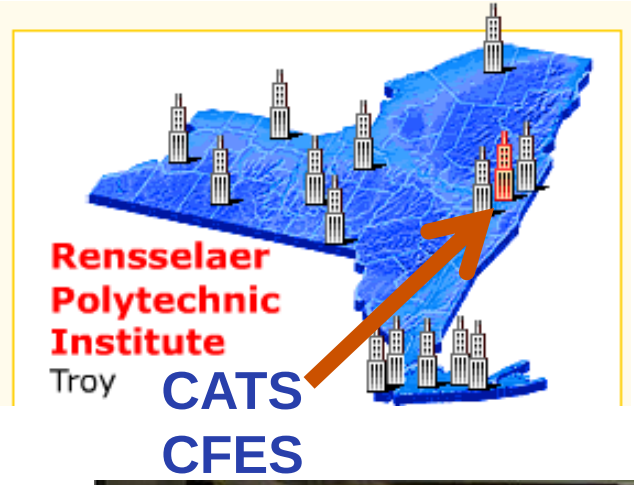
- Center for Advanced Technology (CAT)
- Regional Technology Development Center (RTDC)
- High Performance Computing (HPC): RPI's Computational Center for Nanotechnology Innovation (CCNI)



CAT Program: Industrially-driven research leading to measurable economic impact

- Annual baseline funding with industrial match requirement
- Renewable ten-year designation
- Annual economic impact reporting
- Since 2000 ➔ over $5B economic impact

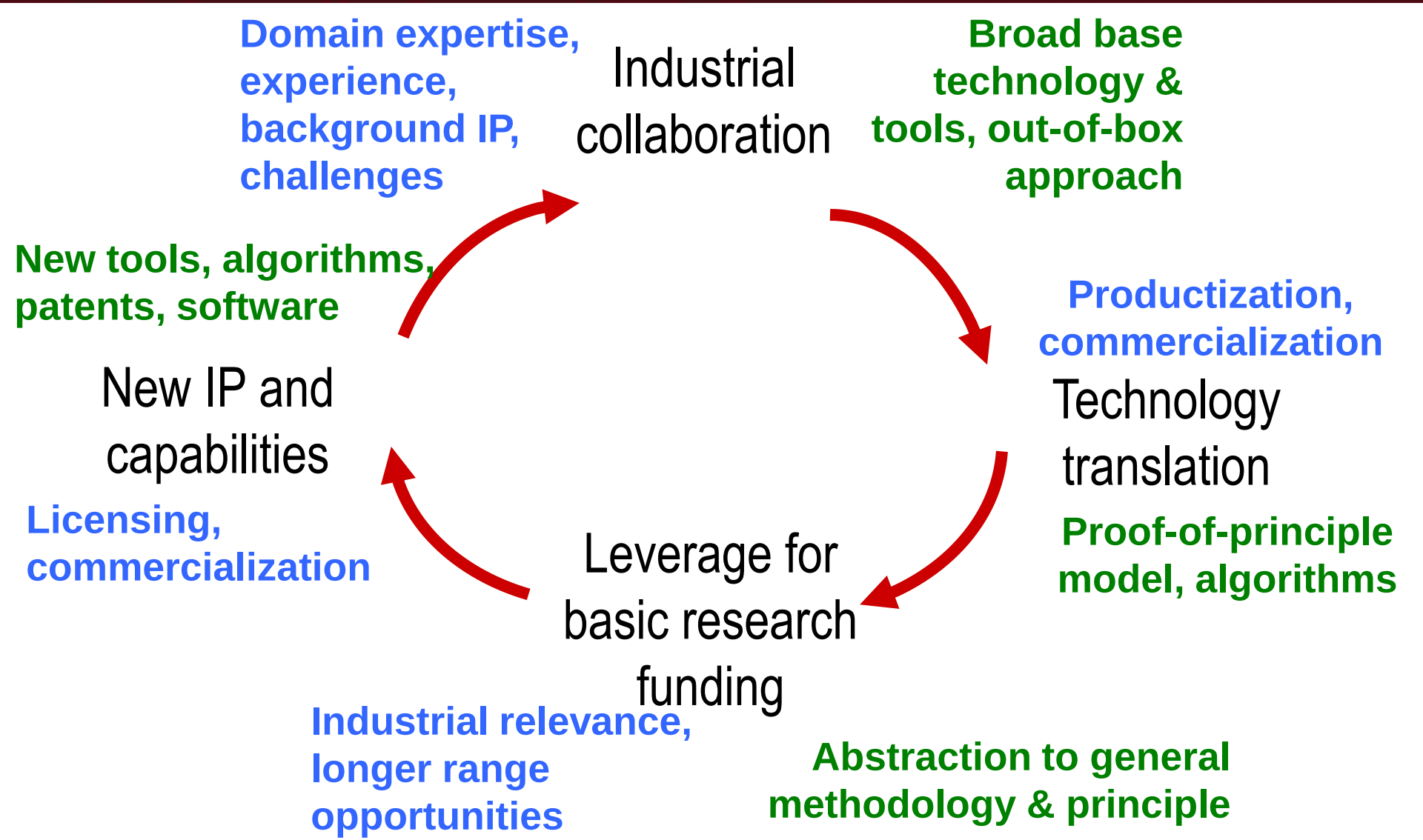
CATS: the Automation CAT



- 50 faculty, 40 students in 9 depts
- 5 research staff + biz dev staff
- NYS metric: economic impact.
  FY 12: $45M revenue 45 new jobs
- Dedicated infrastructure and support

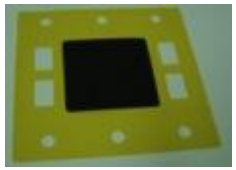
How to balance applied research and company-specific focus with basic research for fundamental discovery?

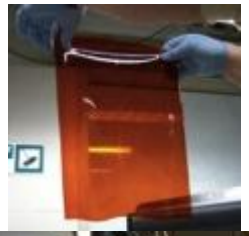
Our Approach: Cycle of Partnership



Example: Fuel Cell

Concept to Production to Systems





Concept

PEMEAS
Fuel Cell Technologies

Prototype

UTC Power
A United Technologies Company

Systems level
modeling and control

Production PMD
PROGRESSIVE MACHINE & DESIGN

Leveraging for
Research Support

NSF

DEPARTMENT OF ENERGY

BASF
The Chemical Company

NYSERDA

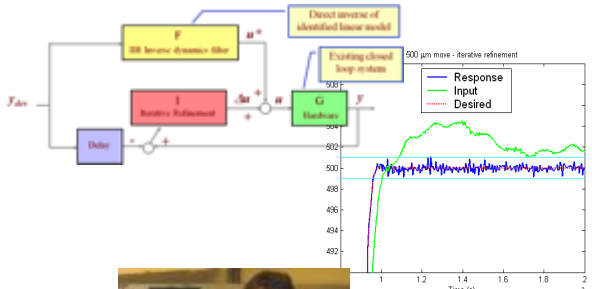
New Technology
Expanded Projects

SONO·TEK

Example: Active Optics

Company Specific Problem

Problem Solving to New Product & Research



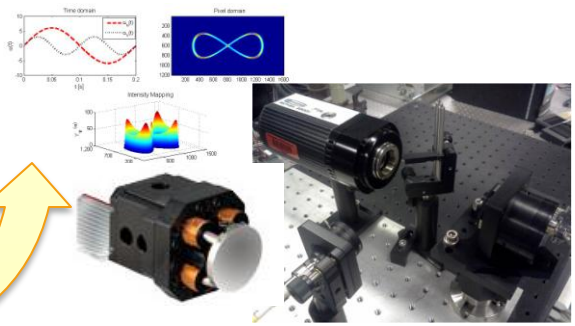
High Impact Solution

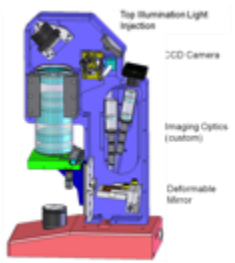
Joint publication, patent

Leveraging for Research Support

New Technology/IP, Licensing, and Award

New Research Directions

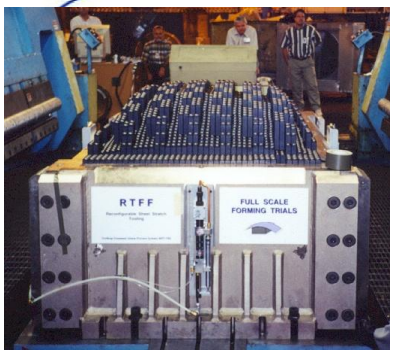




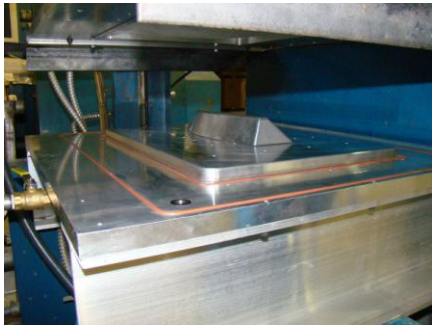
Example: Composites

Specific Needs to New Collaboration

NORTHROP GRUMMAN

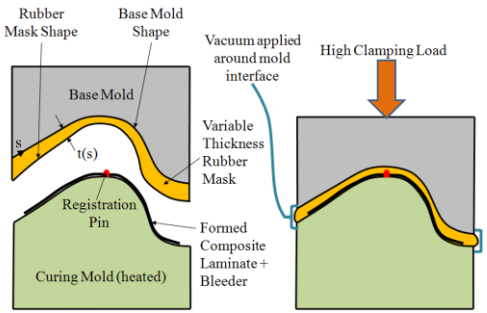


Company Specific Need: composites forming

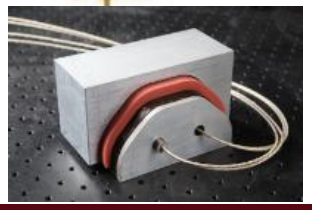


Joint development: double diaphragm forming

New Research Collaborations



Leveraging for Research Support



Challenges

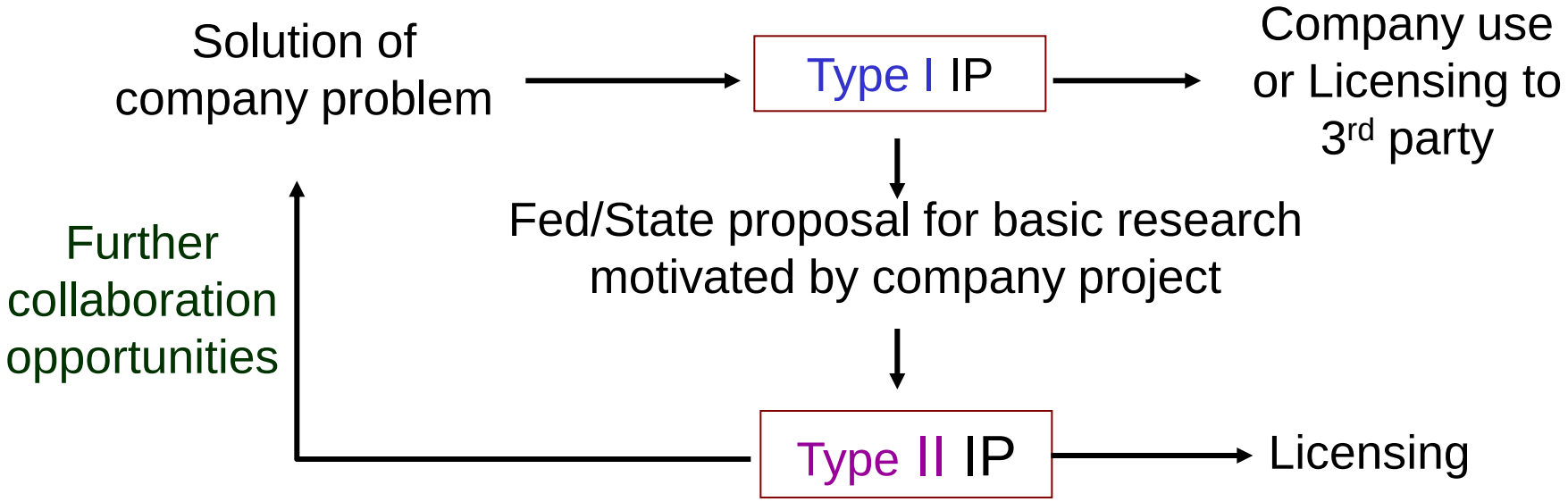
- Intellectual property
- Continuity of expertise and infrastructure
- Industry vs. university timeline
- Multi-disciplinary team

Recognizing Value of IP

Type I IP: Company brings domain expertise, problem specification, background IP to address specific problem.

Type II IP: University led IP generation through internal, government, or industry funding.

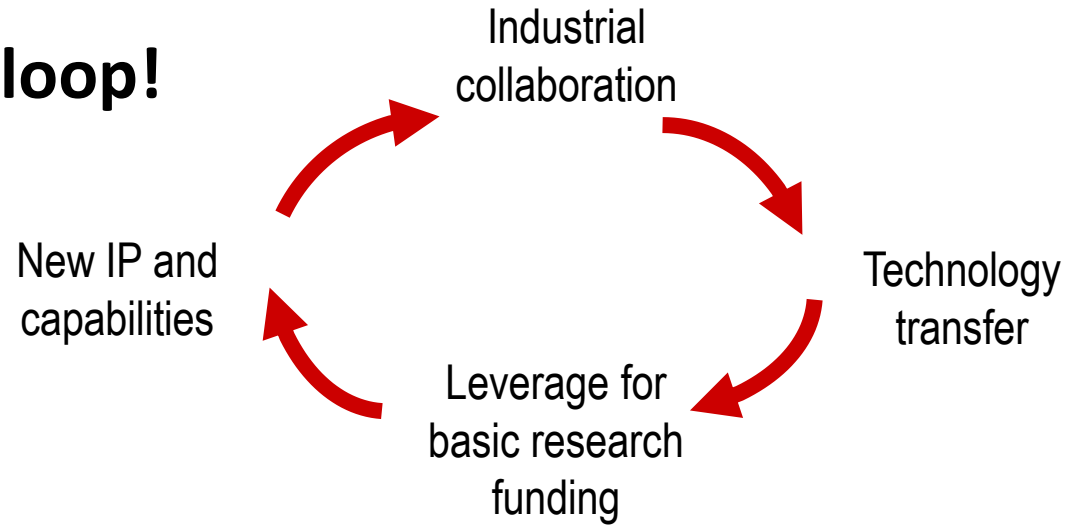
Academia/University Collaboration: Transform Type I IP to Type II IP



Lesson Learned

- IP navigation (needs the EASY button!)
- Sustained long term base funding
- Research staff: project management
- Quantifiable outcome
- Skin in the game: matching fund, reduced overhead rate
- Multi-disciplinary team: research enterprises within university, partner external organizations – avoid zero-sum mentality!

Close the loop!



Opportunity to Build Partnership

First Annual CATS/CEG Advanced Manufacturing Conference

April 16-17, Troy Hilton Garden Inn

Keynote: Dr. Patrick Gallagher, Director of National Institute of Standards and Technology and Under Secretary of Commerce of Standards and Technology

- Solution Fair
- CEO Round Table
- Biomimicry and Energy
- Poster Session
- Technical and Business Tracks:
  - Smart Manufacturing
  - Energy Systems
  - Supply Chain Management
  - Small/Medium-Size Enterprise Funding
  - …