Why University-Industry Engagement Matters
And what universities should do to make it better

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What we will discuss

• What’s new at the U-I interface
• Why work with Industry
• The importance of accurately defining the project space

• Intellectual property
• COI - principled partnerships
• Co-location
• COI
• Contract continuum

• IP matters
• ID of strategic partners
• Managing expectations

• Is it true?
What’s happening at the U-I interface?

- Changing T&P policies Texas A&M
- Crowdfunding GaTech – Techstarter
- Easier access/Concierge model MN Front Door
- Express Licenses Chapel Hill
- Go in Peace Licenses Carnegie Mellon
- Monetize Foreground IP Iowa State
- Masters Student Contract Program RIT
- Patent Auctions Penn State
- Student Consulting Illinois
Rationale for working with industry

- Faculty run a small business ($250k to >$1M in annual burn)
- Industry funding (even for mundane projects) may be critical for running the business
- Great opportunities for your students
- Increasingly important to government funders (i.e., ERC program)
- Economic Development Mission of many schools
The importance of accurately defining the project space

• Industry works with university researchers in a myriad of ways
  • Some financial
  • Others not

• Industry will engage researchers via:
  • RFPs (Samsung GRO)
  • Unsolicited requests
  • Institution-Institution engagement
  • Research or service

• Industry doesn’t seek “best efforts” rather clearly defined deliverables to be met

• Align SOW with budget
The importance of accurately defining the project space...

**STATEMENT OF WORK** defines the WHO, WHAT, WHEN, WHERE, WHY and HOW of the project effort, governing and providing direction for the conduct of research.

Know the difference between SOWs for industry vs gov’t proposals.
REMEMBER:
UNDER PROMISE & OVER DELIVER
Why does it matter? It’s all about relationships!
Focus on sponsored research

**Grants & Contracts**
- Basic Research
- Contracts
- SBIR & STTR

**Collaborations**
- Applied Projects
- Development
- Facilities Use

**Licenses**
- Company Licenses
- Investment in Start-up

**Collocation**
- Researcher Exchanges
- Embedded Labs
The agreements that support engagement between a university and a company vary across the technology development continuum.

Intellectual property terms may reflect the ongoing rights of the parties to background technology, licensed technology, and new technologies that improve existing technologies.
The Technology Development Continuum

- Basic Research & Application Formation (TRL 1)
- Proof of Concept (TRL 2)
- Technology Development (TRL 3)
- Technology Demonstration (TRL 4)
- Product Demonstration (TRL 5)
- Product (TRL 6)
Georgia Tech’s Contracting Continuum

- **Basic Research**: Explore fundamental challenges in a technical area
- **Applied Research**: Identify solutions to real-world challenges
- **Demonstration**: Improve existing technology
- **Specialized Testing**: Test new and existing products
Georgia Tech’s Contracting Continuum

When Georgia Tech collaborates with industry via a Basic Research agreement, the industrial partner has the opportunity to license the results of the research, often leading to the development of new products that benefit the company.

Under an Applied Research agreement, the company pays a defined fee to gain access to intellectual property that is generated during the project. The company then has rights for exclusive or non-exclusive access to the IP for a specified period. This enables industry partners to develop and launch ideas with a low risk, gaining a mover advantage. After the exclusivity period is over, the company can 1) extend exclusive rights or 2) continue with a non-exclusive license.

The Demonstration project is a straightforward intellectual property policy for industry partners participating in a Georgia Tech project. The sponsoring company will own all test results. The company shall have exclusive rights to any improvements at no additional cost. For companies that have licensed a Georgia Tech innovation, any improvements to the licensed IP shall be incorporated into the terms and conditions of the original licensing agreement.

The Specialized Testing agreement also offers a straightforward intellectual property policy for industry partners. The sponsoring company will own all test results. Demonstration project, the company shall have exclusive rights to any improvements at no additional cost. For companies that have licensed a Georgia Tech innovation, any improvements to the licensed IP shall be incorporated into the terms and conditions of the original licensing agreement.
As one of the nation’s top research universities, Georgia Tech is committed to conducting basic research that advances our fundamental understanding of the world. This form of research is typically driven by scientific questions that lay the foundation for technological progress.

When Georgia Tech collaborates with industry via a Basic Research agreement, the industry partner has the opportunity to license the resulting intellectual property (IP). These early collaborations are often the foundation for new products that spark business growth for companies.

The Applied Research agreement enables Georgia Tech researchers to help industry partners identify solutions to real-world challenges. Under an Applied Research agreement, the company pays a defined fee to gain access to IP that is generated during the project. The company obtains rights for exclusive access to the IP for a specified period of time within a defined field of use. This enables industry partners to develop and launch a product with very low risk, gaining a first-mover advantage. After the exclusivity period is over, the company can (1) extend the exclusive rights or (2) convert to a non-exclusive license.

For industry partners working on product development, the Demonstration agreement enables Georgia Tech researchers to help a company improve existing technology. The Demonstration agreement offers a straightforward and advantageous intellectual property policy for industry partners. Simply put, when a company introduces a new product under a Demonstration project, the company can have exclusive rights to any improvements at no additional cost. For companies that have licensed Georgia Tech innovation, any improvements to the licensed IP shall be incorporated into the terms and conditions of the original licensing agreement.

Georgia Tech offers expertise and state-of-the-art equipment that can be leveraged in the final stages of development to test products and help a company ensure that they are market-ready. The Specialized Testing agreement provides a cost-effective and secure way for companies to access this equipment without making a large capital investment. This work is often instrumental in enabling a successful product launch.

The Specialized Testing agreement also offers a straightforward intellectual property policy for industry partners. The sponsoring company will own all test results.
Then there is the real estate!
But it’s more than just a lease...

- **Open collaboration**
  - Student engagement
  - Non-proprietary
  - Pre-competitive

- **Company space**
  - Proprietary research
  - Administratively more difficult (but generally possible)
    - Private inurement
    - Tax exempt bonds
    - State Institutions
  - Internship Opportunities for students
  - Incubators

*NOTA BENE: Visitors on Campus*
Personal Financial Conflicts of Interest

Organizational Conflicts of Interest

Institutional Conflicts of Interest

Conflict of interest
What is required and why it matters in engineering research with industry

What
• Written annual disclosure
• Potential conflicts in design, conduct or reporting must be reduced, eliminated, or managed
• Travel, consulting, etc.

Why it matters
• Transparency
• Objectivity
• Proper use of university resources
• Industry must also meet federal regulatory requirements
Northrop Grumman Today

• Leading global security company
• $24.7 billion sales in 2013
• $36.2 billion total backlog
• Leading capabilities in:
  • Unmanned Systems
  • Cyber
  • C4ISR
  • Logistics

Focus on Performance
Engagement / Promotion of R&D

Internal R&D ~$500M/yr
- Capability Focused
- Technology Driven to advance internal Systems
- To promote critical Product and System Demos

Contract R&D
- Emerging Gov’t Missions
- Leading Edge Material and Component Technology
- Subcontracts to > 100 Universities

Intellectual Asset Mgmt
- Maximize IA Value
- Technology Transfer
  - Out Licensing
  - In Licensing

Strategic Alliances
- Industrial Affiliates Programs
- Master Research Agreements
- Industrial Partnerships

Research activities are critically important to seed early stage technology focus areas, build select technology platforms and help create future technology discriminator positions.
Higher Education Support Activities

- IR&D Sponsored Research
  - MURI’s
  - GOALI
  - I/UCRC’s
- CRAD
  - DARPA
  - ONR
  - AFRL
  - NSF
- ERC’s Development & Investment
- Industrial Affiliates Program (32)
- Small Technology Transfer Research (STTR)
- Philanthropy
  - Aid to Higher Education
- Scholarships
  - GEM (Grad Diversity Eng)
  - NG Eng/NM Scholars
  - Local Univ Fellowships
- Internships (1K)
- Co-Ops (800)
- Student Design Projects (70) $5K Avg
- Cyber Research Consortiums (4)
- Donations
  - Test & Eval Equipment
  - Intellectual Property
Considerations for aligning with the right university partner

Most favored (Research) Partners:

- **Conduct broad-based research** aligned with NG business interests
- **Have a strong and engaged champion** with experienced business acumen
- **Can agree to essential elements of a Term Sheet** within a reasonable time
- **Actively pursue CRAD** (Cooperative Research) with Government R&D agencies
Key points regarding IP

Pre-publication Clearance
• Company needs 45-day window to review research results before publication, with additional time necessary to begin the patent filing process

Patents/IPR
• University (or both parties jointly) may own patent(s) resulting from the research. However, as quid pro quo, company expects to obtain an automatic NE right to FIP developed under contract
• An “Option Period” to negotiate an exclusive license in our field of use with right to sublicense

Costs/Fees
• Patent filing and prosecution costs should be included as part of a license fee, not collected separately
• Royalties on the commercial sale are standard practice, attributable to the end licensed product and paid commencing upon the first product sales by NG
Managing Contractual Expectations

• Company recognizes that all research conducted is based on “Best” or “Reasonable” efforts, however expectations of deliverables should be narrowly defined

• Company will always support an adequate cure period in case of breach

• Company recognizes that access to Background IP is separate and distinct from Foreground IP development
  • available pending no other encumbrances via negotiation of a separate license with similar terms

• Provisions should allow each party independent ownership of Improvements they make

• Company will always want the first right to enforce “potential infringement” for an Exclusive License to university innovation (recommend the 75/25 rule for reimbursement)
Key takeaways

• As a Large company in the rather narrow Defense & Aerospace market, technology plays a key role in discriminating one player from the next.

• In 2013 we engaged with over 100 separate Universities with the bulk of the spending targeted to a Top 15 highly aligned group.

• Owning and filing publically on Intellectual Property is not a motivator to NGC for enhancing University engagement activities.

• A primary driver for NG in selecting partners is the relevance of work our University partners do with Government R&D organizations.

• There is a significant internal effort ongoing now to better align NG’s HR and Research activities as “One NG”.

Is it true?

- Companies work with universities so they can get access to our great ideas and hire our students.
- The median size of an industry award is over $150K.
- Universities cannot negotiate license terms up front when receiving an industry contract.
- Industry funding is less competitive than federal funding.
- Companies want detailed budgets that describe fringe benefits, tuition costs, and indirect costs.
- Companies only work with (and hire from) the elite schools.
- Companies want to get rights to my IP.
- Companies don’t want me to publish.
Mark your calendars!

UIDP 20

Purdue
March 31 – April 2

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