

Intellectual Property: Ownership, Protection and Commercialization

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What is Intellectual Property (IP)?

- **Invention (machine, process, composition of matter, or business method)**
- **Written material**
- **Code**
- **Marks (trade, service)**
- **Know-how (difficult to define)**
- **Creative Works**

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How is IP protected?

- **Patents**
 - Inventions
- **Copyrights**
 - Written material
 - Code
 - Creative Works
- **Trade/Service Marks**
- **Trade Secrets**

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How is IP protected?

- **Is computer software patentable?**
 - Code is not patentable per se
 - Computer programs/ software may be patentable as a business method, provided it “does something” (broadly interpreted)
- **May not be economically feasible**
 - Patent time to issue
 - Cost considerations (make vs. buy)

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How is IP created?

- Research
- Coursework
- Curriculum Development
- Creative Endeavors
- Work Product

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Who are potential inventors?

- Faculty
- Post Doctoral Researchers
- Graduate Students
- Staff
- Students

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What constitutes inventorship?

- (Technical) Contributors to claims of a patent.
- Conception or Reduction to practice of novel product or process.
- Directed work is NOT inventorship
- Managing the work of others is NOT inventorship
- Incorrect listing of inventors (over-inclusive or under-inclusive) can present an opportunity for patent invalidation.

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Who owns IP?

- Inventors?
- Employer?
- Funder?
- Licensee?

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CMU IP Policy

- **Retained Rights/ Owned by Inventor**
 - Creative Works
 - Authored papers/ books
 - Curriculum (generally)

- **Owned by CMU**
 - Work product (created as a result of employment, i.e. programmer)

- **Follow the Money!**
 - Research

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CMU IP Policy

- **Types of Funding**
 - **External**
 - + Federal
 - + Other Governmental
 - + Foundation
 - + Corporate
 - **Internal**
 - + CMU Specified
 - + CMU Departmental/ Unspecified (depends)
 - **None**

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CMU IP Policy

- **Federal Funding = Bayh-Dole Act of 1980**
 - Required Universities to take ownership of inventions arising from Federally Sponsored Research
 - Gave Universities the rights to patent and license same
 - Government retains non-exclusive internal use license
 - March in rights
 - Compliance issues for University
 - Pass through to Licensees

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CMU IP Policy

- **University claims ownership if**
 - Developed with external funding,
 - Developed with internal funding,
- **University does not claim ownership if**
 - No external or internal sponsorship and no substantial use of university facilities.
 - Can be assigned
- **Inventor has “first rights” if**
 - No external or internal sponsorship, but there is substantial use of university facilities. Inventor has to choose, must commercialize.
- **Public domain/ Open source**
 - Okay if not prohibited by sponsor agreement.

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CMU IP Policy

- **Share proceeds from Licensing: CMU 50%, Inventors 50%, less**
 - Patent expenses
 - Direct docket expenses
 - Share by non-CMU inventors (another university, etc.)
- **If inventors commercialize under “first right”**
 - CMU gets 25% of inventor proceeds
 - Release (needs permission from Federal agency)
- **Purpose = Dissemination!**

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Start up Guidelines

- **Royalty: 1% non-exclusive, 2% exclusive**
- **Equity: 5% non-exclusive, 6% exclusive**
- **3 year patent cost deferral**
- **3 year (or \$2M investment, IPO or buyout) royalty free**
- **Anti-dilution warrant to \$2M investment**
- **Other shareholder rights (common)**
 - Pre-emptive
 - Piggyback
 - Co-sale

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Start up Guidelines

- **Premised on**
 - CMU owns or is assigned technology.
 - CMU founders are involved in company and waive rights to proceeds under IP Policy.
 - If some waive, some don't, economics change accordingly.
- **Example, 2 inventors, 50/50 contribution; one goes with company, one does not. Non-exclusive license to company.**
 - 1% royalty becomes 1.5%
 - 5% equity becomes 7.5%

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Questions?

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Reference Slides

Research
\$31.7 billion



Discovery
12,638 disclosures
1 per \$2.5 million



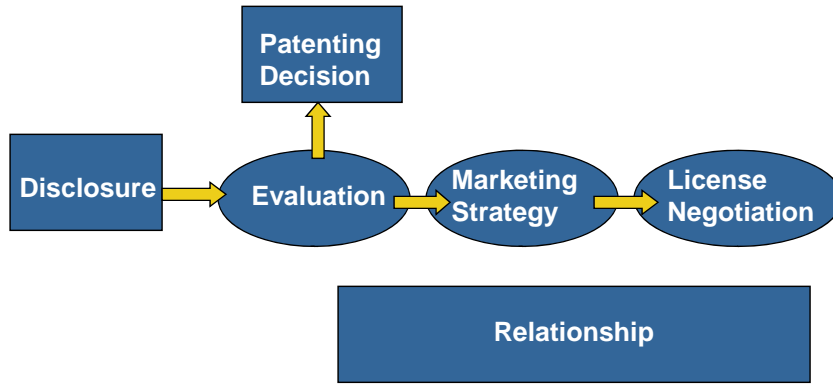
Intellectual Assets
10,632 new patent applications
1 per \$3 million

2002
AUTM Survey

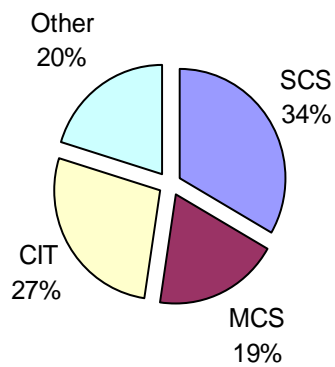


Transfer for Commercialization
3,739 licenses and options (1 per \$8.5 million)
364 company start-ups (1 per \$87 million)

How Does Tech Transfer Work?



Disclosures by school



What are the usual methods of tech transfer?

- **Licensing to existing companies**
 - Small vs. large
 - Exclusive license vs. non-exclusive license
 - Field of use
- **Creation of new companies based on the new technology**
- **Material Transfer Agreements**
- **Research Use Licenses**
- **Open Source**
- **Publication**

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Required License Elements

- **A business or marketing plan that describes the commercialization path (due diligence)**
- **Non exclusive license**
 - Best efforts
 - Running royalty
 - 50% reimbursement of patent costs
- **Exclusive license**
 - Best efforts and milestones
 - Upfront fee
 - Running royalty and annual minimums
 - Full reimbursement of patent costs

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What does the licensee get in return?

- A high risk, high potential, disruptive technology that can leap frog the competition
- A US patent (or application) that enables exclusion of the competition and the right to enforce
- A twenty year (or life of the patent) term
- Access to inventors/ institution/ students

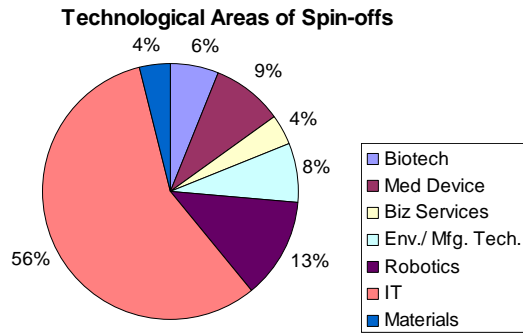
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Why create start ups?

- University research results are often either “too early” in product cycle or “far ahead of the market” for corporations.
- Large companies tend to focus sales and marketing to established customers and not disruptive technologies.
- Regional economic growth & job creation.
- Growth & retention of entrepreneurial faculty.
- Potential to share in “upside” via equity arrangements.

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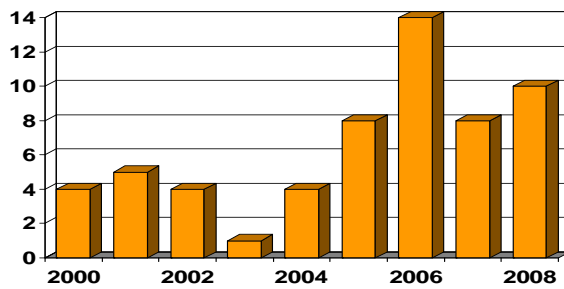
Areas of Start ups



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Start up data

- Number of CMU related Start-ups (1993-2007): 195
- Large majority founded in Pittsburgh (~75%)
- Number of direct spin-offs from CMU research (1993-2007): 128
- Direct spin-offs from CMU research (2000 – 2008* projected):



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Gap Fund Programs

- **Seed Program from Keystone Innovation Zone Grant**
 - Funds are provided in the form of a simple promissory note at Prime plus 1%,
 - Repayable at the time of the first outside funding.
 - The average for these grants is \$10k.
- **Gap Fund: Heinz Endowments**
 - Funds are provided as grants,
 - Uses: build early prototypes, conduct experiments to strengthen patent claims, or combine several technology concepts into a system,
 - Expected grant size is \$10-30k.
- **University Innovation Grant (UIG)**
 - Represents collaborative program between IW and local universities.
 - Provides grants of up to \$25k prior to the formation of a start-up. The primary goal of the UIG program is to enable assessment of the market size and other factors impacting the potential for a start-up.

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