

Fundamentals of building and operating a Technology Transfer Office

Lessons learned from two decades at
the MIT Technology Licensing Office

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What we've learned through the years

Impact, not (primarily) Income

Mission

- To bring the results of the university's research into public use to:
 - Improve medical care
 - Improve the environment
 - Improve economic competitiveness through adoption of new technologies in industry
 - Economic development through entrepreneurship
- While preserving the academic mission of basic research and dissemination of scientific findings

Strategic Objectives

- Maximize the number of university technologies developed through investment by industry and venture capital
- Maximize participation by researchers in the technology transfer process
- Raise awareness of and skill in entrepreneurship
- Earn sufficient revenue to become self-sustaining in the long-term

Tech Transfer Office (“TTO”) Goals

- Develop ever-increasing skills in technology transfer (“One of the best”)
- Win faculty confidence, trust, and awareness of the mission’s importance
- Develop a portfolio of IP such that you are a “destination site” for industry and investors
- Develop contacts in industry and the investment and entrepreneur community
- Develop a reputation for “getting the job done”

Major Tasks for TTO

- Facilitate Industry-Sponsored research through knowledgeable, creative management of IP and university policies
- Licensing of technology to existing companies
- Facilitate Entrepreneurial spin-outs based on university IP

What every TTO needs to be successful

- Clear mission and support from upper management
- Clear policies
- Talented, motivated staff
- Sufficient budget to build a portfolio
- Good administrative support
 - Clerical (it's paperwork intensive!)
 - Good IT support!

And sufficient authority and autonomy

- To make most decisions in the TTO without further authorization
 - Within policy, of course
- To convey to faculty and licensees that appeals to “upper management” will seldom overturn TTO decisions
- To negotiate with authority “at the table” on licenses
- To be able to move deals quickly

Structure: Centralized or Local?

“Technology Transfer is a contact sport”

- Critical to maintain personal relationships with the inventors/faculty!
- For “university-stage” technology, one is selling not just the IP, but the **vision** of what that unproven technology can be
- The faculty member carries the vision and is the best salesperson

Centralized Offices far from the university
labs don't work!

Structuring a TTO for a multi-site campus

- Trading off “learning from each other” with local service to faculty and potential licensees:
 - **Requires continuous, skillful management to strike the right balance**
- Central facility with on-site local offices
 - Centralize administrative functions
 - Maximize use of communications and database technology for administrative functions
- Emphasize need for continuing personal contact
 - With faculty: near to their labs!!
 - With each other to maintain a “learning organization”

Industry-Sponsored Research

- Who sets the research agenda?
- What to charge (does industry pay “full cost” including overhead?)
- Publication rules
- Who owns the IP? (faculty, university, company?)
- What IP rights does the company get (if not ownership)

MIT Statistics

- About \$80 million in industrial sponsored research
 - (ca. 15% of on-campus research)
- 150-200 industrial agreements negotiated/year
- 8-10 “Umbrella agreements” in place
 - multi-year (5-10 yr), multi-\$million
 - all “project-by-project” (competitive proposals from faculty chosen jointly by steering committee)
 - No “department-wide” or “field-wide” agreements

Type of Relationship

- We do: Fundamental, publishable academic research of interest to the company sponsor
- We don't do:
 - “Testing” or “Work for Hire”
 - “Problem solving” for product development
 - Consulting (It's done privately without use of university facilities)
 - Classified or secret research at the university
 - Renting of laboratory space or facilities (except for facilities unavailable in private sector—e.g. nuclear reactor)

Short detour on spin-out companies

- We do not “incubate” spinout companies in our labs
- Nor will we accept research support (“collaborative research”) from the spinout company
 - Not even SBIR/STTR grants (govt grants for industry-university collaboration) from a spinout company

“Keeping a Chinese Wall between the university and its spin-out companies”

Rules of engagement

- Investigator writes proposal—agrees with sponsor on scope: Work Statement (usually quite brief) and budget
- Sponsor pays “full cost”:
 - Direct costs x 1.65 (“65% overhead”)
 - Same (audited) overhead rate as for US govt. grants—no “profit”
 - Full O/H critical: Government pays **only** fraction of total overhead same as fraction of Govt. grants’ direct cost
 - Thus, more industry support means LESS contribution of Govt to total overhead expenses

Intellectual Property

- MIT owns all inventions by its employees or students made under the grant
 - No exceptions, no assignment
 - Jointly owned with sponsor if (and only if) a co-inventor is a sponsor employee
- Sponsor gets:
 - Free non-exclusive license to practice inventions
 - Option to negotiate for a royalty-bearing exclusive license

Publication

- All research must be publishable
- Sponsor gets 30-60 day right of review prior to publication but only for:
 - Identification of confidential information **originating from sponsor** (may ask for removal)
 - Identification of patentable inventions (may request for filing of patent prior to publication, but not undue delay for filing)

Licensing: MIT Statistics

- 80-100 licenses per year
- 15-30 spinouts

Licensing and Spin-Out Strategy: do a lot, rather than try to pick big winners

The “Volume Strategy”

- Aim to maximize the number of technologies being developed
- Do a “Fair” deal—rather than the “Best” Deal— and get on to the Next deal!

Advantages of the “Volume Strategy”

- Maximizes participation of faculty and students in the technology transfer process
- Maximizes number of technologies invested in by companies and VC's
- Maximizes probability of hitting a home run
- **Technology is probably too early to be able to pick the winners!**

Licensing Tasks

1. Receiving invention disclosures
2. Evaluating for patentability and marketability (“Should we file a patent?”)
3. Filing for patents; maintaining patent portfolio
4. Seeking potential licensees or spin-out entrepreneurs/investors
5. Negotiating License Agreements
6. Maintaining License Agreements

Recruiting/Receiving Invention disclosures

- Raise awareness of faculty
 - Upper administration gives visible support of the tech transfer mission and function
- Keep barriers to entry low
 - Simple disclosure forms; don't ask the faculty to justify their invention disclosures!
- **Responsiveness** by the TTO
 - Answer enquiries quickly and knowledgeably
 - Respond immediately to new disclosures
 - Meet with faculty to understand objectives
 - Finish evaluations quickly—and give answers quickly and personally

Evaluating Inventions: should you spend the money to file a patent?

Two questions to answer:

1. Is it patentable in light of the “prior art”
 - And will the patent claims be broad enough to be valuable
2. If we are able to get a patent, is anyone likely to invest in developing the technology?
 - And is the potential return large enough to justify the investment in the patent?

Answering the questions:

- Patentability
 - A reasonable probability of a correct answer from literature search and professional (legal) assessment—if time allows
- Licensability
 - Much more difficult to answer
 - “Market research” very time consuming
 - And the more innovative the technology, the less likely the “market” knows what it wants!

Assessing Marketability

- Does the technology potentially offer a **SIGNIFICANT** improvement over present technology—and competing new technology
- Is it potentially practical to manufacture?
 - At a cost practical for the market?
- Is the potential market “tiny”, small, large, or huge? (Don’t need finer precision)
- Can it be developed within a reasonable time (years, not decades)

And “marketability” of the inventor

- Reputation in the scientific field?
- Previous successful technology transfer (if done before)
- Willing to cooperate in speaking to potential licensees or investors
- Persuasive vision of where the technology can lead
- Realistic expectations of financial returns

Finding Licensees/Investors

- The faculty member is OFTEN a source of “leads”--if you ask!
 - Consulting, scientific meetings, publications, former students in industry, visitors, etc.
- Market the TTO—particularly in fields where the university has **special expertise**
 - Become a “destination site” in certain fields for companies seeking technology
 - Develop contacts in industries related to the university’s strong areas of expertise
- ANSWER INQUIRIES—quickly, responsively, and knowledgeably

Marketing: Using the Internet

- Listing of technologies is usually **ineffective**
 - unless the technology is fairly well developed
 - Possible exception in special areas of expertise where people will seek you out
- The TTO's website, however, is important for people seeking to contact you; make it easy to find, and to get to you.
- Marketing tool for the TTO to find potential licensees—getting better every day
 - But be sure to contact the RIGHT person at the companies you find.
 - And don't do “mass mailings”—pinpoint whom you contact

Key Terms in a Licensing Agreement

What are you Licensing?

- Patent
- Copyright
- Tangible material
- Know-how?
- Trade secret?
- Trade mark?W

What else? (Caution!)

- Only what exists now?
- Future “improvements”? (how broad?)
- “Related technology”?
 - What is “Technology”
 - And whose technology?
- “Background patents?” (Whose?)

Some ways a university license is very different from a license from a company

- Professors see themselves as “separate entities”, not employees in a communal venture
 - When can you mix inventions from different faculty in a single license?
- University must preserve freedom of action for future research direction and sponsorship
 - Can’t promise all future inventions “in the field of the license” or in “related technology”

What type of License?

- Exclusive or non-exclusive?
 - or limited-time exclusive?
- All fields or defined field-of-use?
- Sublicenseable?
- World-wide or territory-limited?

Performance Milestones ("Diligence")

The university has an obligation to see that the technology is developed

- What targets must the licensee meet to show adequate commitment and progress?
- Are they realistic?
- Are they measurable and enforceable?

Licensing: How much is the IP worth?

For early stage technology: **You can't forecast, with any reasonable accuracy**

- Fortunately,
 - **You don't have to know** unless you plan to sell the IP for a one-time upfront sum (not usually done for early stage technology).
 - Royalties are within a “market range” of rates, and the ultimate return is proportional to the sales (so you can wait and see)

Similarly for equity

- “X%” of the company will be proportional to the company’s success—so you don’t have to know in advance how much the company is “worth” at the beginning

Financial Terms: Typical for MIT

- Payment of patent costs—past and future
- License issue fee: \$10,000-\$100,000
- Yearly license maintenance fee (creditable against royalties) \$10,000-\$100,000
- Running royalties on net sales: 1-5% (occasionally higher for software)
- Occasionally milestone payments of \$100,000 or more—rare; pharmaceuticals

Differences for Spin-Outs

- Reimbursement of patent costs
- License issue and maintenance fees somewhat lower (“sparing cash”)
- Running royalties somewhat lower
- Small amounts of equity (2-5% after “A” round of funding; usually common shares)

Unusual for us to do “all equity” deals

And we do NOT assign patents

“Get it Done”

- Aim for a fair deal
- Aim for preserving relationships
 - A license is a long-term relationship, not a simple sale!
- Be Creative—but don’t stretch policy
 - Be flexible, but preserve standards
 - “Exceptions” to policy will haunt you!
- Preserve a reputation for integrity and fairness
- Have fun! It’s a demanding, creative, fulfilling job.

Thank you