Commercialization of University Technology

Innovation, Technology Transfer and Licensing

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Myths

- Royalties are a significant source of revenue for the University
- Expect a quick return of technology transfer investment
- Companies are eager to accept new technology from universities
- You should broadcast availability of technology for licensing
- The technology transfer office finds the licensee

Reality

- With the exception of the occasional "blockbuster," licensing revenue is small.
- Don't expect product royalties for 8 -10 years
- Most companies want quick time-to-market
- Publishing lists of available technology is not effective
- The inventor is the best source for leads

M.I.T. TLO Emphasis

- Service to inventors rather than a goal of maximizing revenue
- Work with inventors to help them realize their entrepreneurial ambitions
- Strategy of closing a lot of deals rather than getting the “best” deals
- Protect M.I.T.’s interests; get “fair” return

Patenting Decisions at MIT

- Inventor/Faculty discloses inventions
  - At their own discretion
  - Self-selection for entrepreneurial interest
- TLO Licensing Officer decides to file patent application:
  - In consultation with inventor/faculty
  - Informal market analysis
  - Applications filed for ~½ of all invention disclosures

“Choosing” a Licensee

- Small & start-up company bias
  - Large companies are rarely interested
- Licensing “leads” come from:
  - 50% inventors
  - 30% companies approach TLO
  - 20% TLO Licensing Officer marketing
- TLO actions & responsibilities:
  - Licensing Officers propose terms and can commit M.I.T. at negotiations
  - License agreements are reviewed and signed at the TLO

Why Exclusive Licenses?

- University technology is embryonic:
  - Product development feasibility unknown
  - Market potential unproven
  - Product development will require extensive risk capital
- Exclusive license provide:
  - Incentives to make high risk investment by giving “first mover” protection from competition for a period of time

Start-Up opportunities

- Not yet “ready for prime time” (i.e. large companies not yet interested)
- Basic and broad technology to spawn a whole business…not just a product
- Some short-term potential but with extremely high longer-term potential
- Enthusiastic (and realistic) inventor able to assist in transfer of the technology

Success Factors

- Quality technology
- Enthusiastic and cooperative inventors
- Experienced, technically trained, business-oriented staff with industrial experience
- Clear policy, straightforward procedures – rapid and efficient
- Flexible licensing terms
- Willingness to adapt to changing circumstances

Marketing Factors

- Targeted marketing
  - Focus on the few companies for which the technology is relevant
  - Build relationships with inventors, licensees, entrepreneurs, venture capitalists
  - Follow-up inquiries
  - Answer the telephone

License Agreement Factors

- Given a potential licensee, tailor terms to fit
  - Shared risk
  - Low initial fees
  - Equity in partial-lieu of up-front fees
  - Modest royalty rates
  - Diligence provisions
    - Investment, personnel, milestones (development and sales), sublicensing requirements

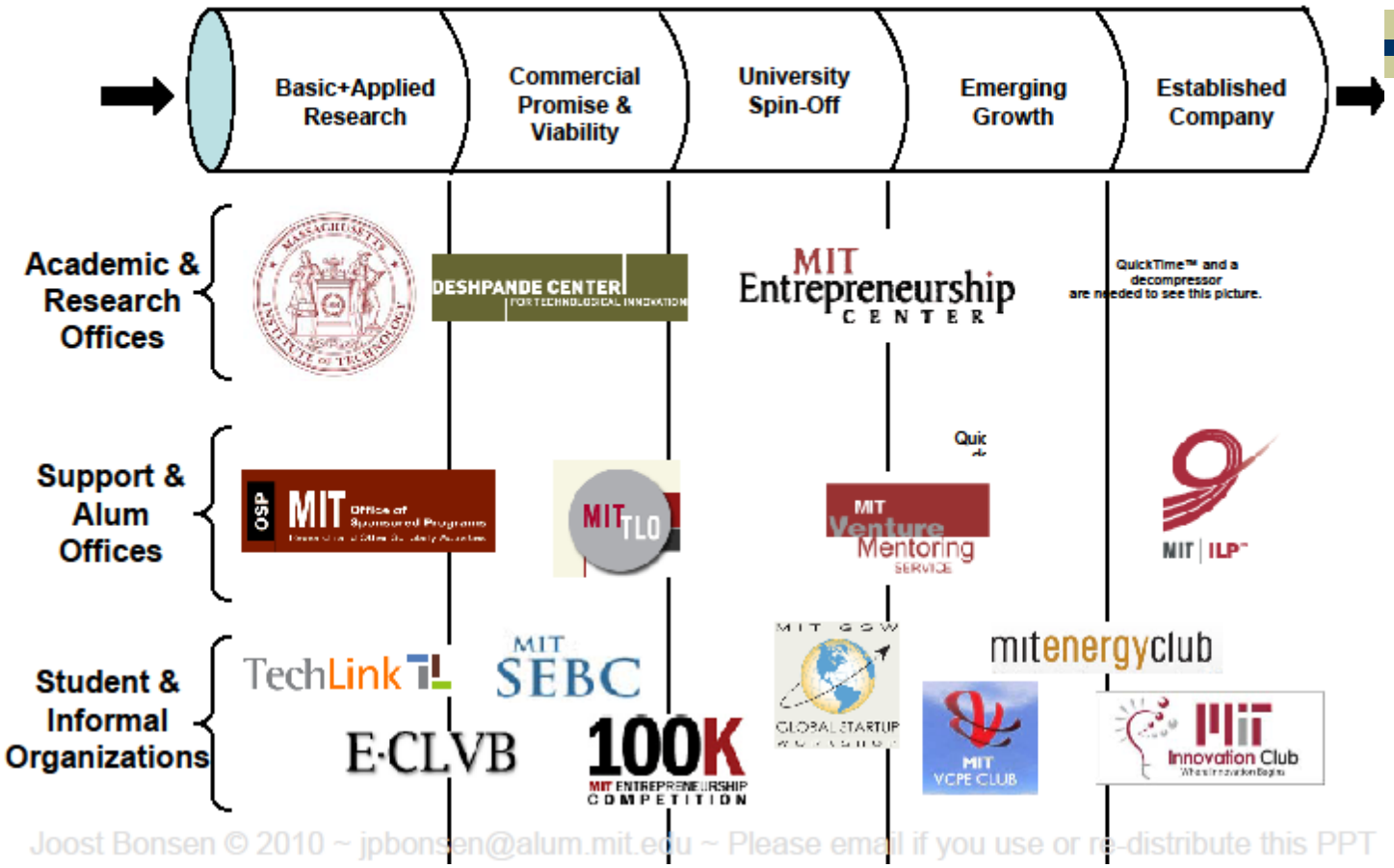
University Factors

- Strong support for technology transfer office
  - Clear definition of mission and policies
    - “Impact, not income”
  - Ability to hire experienced staff
  - Financial support for office infrastructure
  - Long-term investment in patents
  - Willingness to stand behind aggressive enforcement of patent rights

MIT Policy

- MIT owns the patent or copyright
  - Federally funded research – Bayh-Dole Act
  - Industrially sponsored research
- Industrial sponsor license rights
  - Non-exclusive, royalty-free, pays patent costs
  - Royalty-bearing, limited term exclusive, pays patent costs
- Royalty Distribution (after expenses)
  - ⅓ to inventors
  - ⅔ inventor's Department and MIT General Fund

MIT Innovation Pipeline



Finding Licensees: What works for us

- Interviewing the faculty member for leads
- Having companies/investors come to us to ask "what do you have?"
  - We spend a LOT of time simply "interviewing" companies/investors—and having them interview us.
- Contacting people at companies/investors whom we already know
- Occasionally doing very targeted cold calls

Inventor is the best sales person!

- Try for an early introduction of the inventor to the RIGHT person in the company or the RIGHT investor
  - Sell the Vision—not just the patent application!
- If the inventor won't meet with the potential licensee, abandon the patent!
  - But don't waste the inventor's time!

Elements of the License Agreement

- Definitions, especially field of use
  - Example: "…automotive safety applications related to occupant sensing."
- Grant of rights
  - To make, have made, use, offer to sell, sell, and import
  - To sublicense
- Retained rights
  - For research, teaching and educational purposes by M.I.T. and other non-profits
  - For government (if government sponsored)
  - For industrial sponsor (if industrially sponsored)
- Exclusivity
  - For specific field of use, if appropriate
  - Limited term (sometimes)

Elements of the License Agreement (continued)

- Diligence
  - Business plan
  - Obtain $xx Million capitalization
  - Fund $yy million in research (internal or at M.I.T.)
  - Perform against product development plan
  - Working model by <date>
  - Cumulative product sales (units and/or $$) by <dates>
- Failure to perform as specified may result in loss of license!
- Royalties
- Patent cost reimbursement

Valuation

- Embryonic technology
- Large risk to company
- Difficult to convince company to invest
- IP is essential
- Exclusivity

University Valuation Perspective

(Accurate valuation not very important)

- Minimal investment (patent costs)
- If licensed at all, university will recover patent costs
- License issue fee provides early return on investment
- Modest royalty provides handsome reward if commercially successful

Industry Valuation Perspective

(Accurate valuation is very important)

- Patent cost plus license issue fees
- Large research and product development cost
- Market and sales expense
- Patent may not issue or be substantially weaker
- Competing products
- Perceived market demand may erode

Typical Terms

- Exclusive
- Field of Use: Limited when appropriate
- License Issue Fee: $25K - $100K
- Royalty: 3-5%
- Minimum annual royalty: escalates over time
- Equity (in lieu of issue fee): 5% after significant funding
- Patent expense reimbursement

MIT Licensing Office 2012

- Staff 36
  - Officers & Associates 20
  - Associates & Support 16
- Invention Disclosures 694
- Patents filed (new US utility apps) 194
- Patent issued (all US utility) 199
- Licenses and Options 107
  - Licenses (start-ups) 81(16)
  - Options 26
- Active agreements 940

Success Stories

- OmniGuide – Optical waveguide for laser surgery
- Liquid Metal Battery – Energy storage
- 1366 – Low cost photovoltaic cell
- QD Vision – Quantum dots for spectral shitfing
- LiquiGlide – Surface treatment to reduce adhesion
- Svaya – Layer-by-layer application of thin films
- GVD – Thermal chemical vapor depostion
- Xtalic – Nanostructured alloy coatings of metal surfaces
- 24M – Next generation lithium batteries
- N12 – Carbon nanotube composites
- Siluria – Virus-created scaffolds to create catalysts for production of petrochemicals from natural gas.

Conclusions

- Innovation must be pervasive at the University
- Technology transfer is a service which facilitates innovation, entrepreneurship and economic development; it should not be viewed as a source of revenue.
- Targeted marketing of inventions is essential
- Favorable license terms induce investment
- University technology can be a powerful engine for economic development

MIT Licensing Office FY 2012

- Royalty income $54.1 million
- Lump-sum payment
  for future $80.2 million
- Equity cash-in $ 2.8 million
- Operating expense $ 4.1 million
- Patent expense $16.5 million
  (Reimbursement = $10.4 million)
- Inventors $32.6 million
- Other institutions $ 7.0 million
- MIT (DLCs and GIB) $62.5 million