Prof. Thomas Roemer's Product Design Course

Intellectual Property(IP) Strategies to Achieve Sustainable Competitive Advantage

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Outline

- Types of IP and their Characteristics
- <u>Why IP protection is important</u>
- A simple example of a valuable patent
- Obtaining a patent overview
- Other IP types
- IP Tools used to control and exploit IP
- Avoiding common IP mistakes
- So you can develop a sustainable competitive IP strategy

TYPES of IP

Type of IP:

Protects:

- Patents
- Trademarks
- Copyrights
- Trade Secrets



- Inventions
- Logo, Mark
- Physical expression of ideas
- Marketplace and Existing Technology Knowledge
- Other Know-how

Patents

- A patent is a government-issued document that provides its owner with the right to prevent competitors from profiting from the invention defined by the claims.
- A patent does not give its owner an affirmative right to make, use, or sell the invention defined by the patent claims. THIS IS VERY IMPORTANT

Questions for You

- How many have applied for a patent?
- How many have thought "I should patent this" but didn't?
- Have worked for a company based on key patents?
- How many have started a company based on a patent?

Why is IP protection important

- Adds market value particularly for startups and small companies, sometimes >50% of value
- Source of income through licensing (IBM ~ 1/9)
- Permits blocking or hindering competitors from practicing your IP
- IP attracts funders, strategic partners, customers, and employees

Why is IP important (cont.)

- Maintain product or service advantage
- Reduces the risk of innovating
- Enhance branding, market effectiveness

"Skills and knowledge have become the only source of sustainable long-term competitive advantage" Lester Thurow Lets take a simple idea to illustrate the key points of "inventing around"

- Insulated sleeve for a coffee cup
- How could so simple an idea be patentable in '92?
- Why wasn't it patented before?
- But has been very profitable for David....
- What about the corrugation patent?
- Does David need a license to the corrugated patent?.....No....patent has expired
- Available free to anyone to practice

David's broadest patent claim

- See US 5,205,473....
- 1. A recyclable, insulating beverage container holder,
- comprising a <u>corrugated</u> tubular member
- comprising <u>cellulosic</u> material and
- at least a first opening therein for receiving and retaining a beverage container,
- said corrugated tubular member comprising <u>fluting</u> means for containing insulating air;
- said fluting means comprising fluting <u>adhesively</u> attached to a liner with a <u>recyclable</u> adhesive.

Infringing a patent

- A patent is infringed IF
- Each and every element of a claim is present in the infringing product or process

Your task

- Design another way to achieve the same effect
 - Must Insulate
 - Be Inexpensive
 - Be Easy to use
 - Be Easy to store
- Take 5 minutes and discuss in teams of two
- Don't infringe

What has actually occurred

- Notice that 53 patents refer to David's
- Folded holes
- Dimpled
- Others
- Which is best?

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Components of a patent

- Describe "prior art"
- Describe the invention
- List advantages vs existing
- Give examples of use
- Specify the "best mode"
- List "claims"

– What is... what isn't... the invention

Criteria for granting a patent

- Useful
- Novel, i.e., different from existing
- Not previously sold or publicly described
- Not obvious "to one of ordinary skill in the art"
 - Commercial success can validate nonobviousness
 - Prior art "teaches against"

Bars to obtaining a patent

- In US must file within 1 year after publication
- Oral disclosures are not bars to obtaining a patent
- Slides, posters and blackboards are bars
- Outside the US must file before first public disclosure
- Oral disclosure are bars to obtaining patents!
- Once file in US have 1 yr to file outside the US
- USE NON-DISCLOSURE AGREEMENTS !!
- (Then it's not a public disclosure.)

Criteria for practicing a patent

- The patent owner can prevent others from "making, using, selling, or importing"
- No dominating patents
 - Another patent dominates yours if you practice at least one claim of theirs
- OK if you have permission to infringe from the owner of the dominating patent, i.e., a license
 NB: You may need this anyway

Deciding to file

- Is it Incremental, Disruptive, or Platform Technology?
- Number of potential markets and their sizes?
- What resources are needed to commercialize?
- Who would fund, license, or partner?
- Can claims be written to capture the value created?
- Will prior art limit potential claims available?
- Can claims be written to prevent "design around" patents?
- Can you identify potential infringers easily?
- How is value created counted?...by whom?
- How dependence is it on other technology, legislation, research

Types of patents

- Provisional
- Utility
 - Machine
 - Process
 - Article of Manufacture
 - Composition of Matter
- Design
- Plant

Obtaining a US patent

<u>Steps</u>

- Conception
- Disclosure
- Reduction to practice
- Prior Art Search
- Patent Application
- Office Action (rejection)
- Grant
- Maintenance fees
- Total

<u>Cost</u>

- Nominal
- Nominal
- Variable
- \$500 to \$2000
- \$7.5 or ~\$10K
- \$3K to \$5K/per action
- \$1,240
- \$850, \$1,950, \$2,990
 (3.5, 7.5, 11.5 years)
- \$15,000 \$25,000

Obtaining foreign patents

- File specific country or file under PCT
- Must file before 1st disclosure (absolute novelty)
- If filed in US, then < one year.
- Request search and/or examination
 - Defer national phase
- Enter national phase
- Respond to any challenges
- \$25K to \$200K depending on # and countries

Wild Cards!

Type

- Interference?
- Infringement suits?
- Enforcement?
- Other Lawsuits?

Costs

- \$50K to >\$1,000K
- \$100K to >\$1,000K
- Auditing costs, etc.
- Validity? ~\$???K

Trademarks

Strength of trademark depends on its "nature"

In order of weakest to strongest:

- Generic
- Descriptive
- Suggestive
- Arbitrary
- Fanciful

- Unprotectable
- "Brilliant" for a light
- "Stronghold" for nails
- "Apple" for computers
- "Exxon" for gas

Trademarks (cont.)

- BMW may have purchased Rover primarily for their Marks
 - Land Rover
 - Triumph
 - Austin
 - Range Rover

Copyrights

- Exclusive right to reproduce an <u>original</u> work
- If... fixed in a tangible medium of expression
- Right to prepare derivative works
- Right to perform or display the work
- Does not protect:
 - idea, procedure, process, system, method of operation
 - concept, principle, or discovery
 - regardless of the form in which it is described, explained, or embodied

Life of IP

- Patents
- Copyrights
- Trademarks
- Trade Secrets

- 20 yrs from filing
- ~ 50-150 yrs
- Indefinitely with active use
- Indefinitely with active protection

Strategic TOOLS for IP

Publishing

- Cheapest way to prevent competitor from gaining an improvement patent that could block you
- Provided you already have protection
- Or if you expect to make future inventions

Assignment

- Required of all employees prior to hiring
- Agree to assign ownership of future inventions to company
- Need to insure inventor is free to sign
- Required at M.I.T. if "significant use" and/or use of M.I.T. administered funds

Non Compete (NC)

- Employee prevented from joining competitors for 6 months to 3 years
- Employee prevented from disclosing sensitive information to future employers
- Other terms

Material Transfer Agreements (MTA)

- Control how, where, and for what purpose proprietary materials can be used
- Can provide for sole or joint ownership of future inventions made with material

Non Disclosure Agreements (NDA)

- Prohibits disclosure that could bar patentability
- Restricts use to specific purpose
- Prohibits commercial use of information
- Provides for knowledge from 3rd party

Joint Invention Agreements (JIA)

- How to share expenses, income
- Who prosecutes which patents
- Who takes the lead in licensing
- If no JIA exists then
 - In the US, each party can operate independently
 - Outside the US each must obtain the other's approval for licensing (few exceptions)

Options

- Generally 6 months to 1 year
- Assumption of ongoing patent costs
- Modest up front signing fee
- Exclusive or Non-exclusive
- Protects right to take a license
- Allows for time to evaluate technology and markets

Typical license terms

Components

- Issue fees
- Maintenance fees
- Diligence
- Royalty as % of Sales
- Patent costs
- Equity share
- Research partnership

Typical costs

- \$1K to \$450K
- 25-50% of expected
- Can't leave on shelf
- .1% to 20%
- \$25K to \$200K
- 1 to 9% thru X M\$
- Variable

License CHOICES

TOOLS

- Field of Use
- Exclusive or Non-Ex
- Licensed Product
- Diligence
- Sublicensing
- Warrantees
- Grant backs

CHOICES

- Focus on strengths
- Exploit vs Seed
- Royalty based on ?
- \$, dates, goals
- Mandatory?
- No dominating patents
- Share know-how, IP

Summarizing TOOLS for controlling IP

Types

- Publishing
- Assignment
- Non-compete
- Material Transfer
- Non-disclosure agmt
- Joint Invention
- Options
- Licenses

Uses

- Cheap way to block patents
- Assigns invention to company
- X key employee to competitor
- Control use of proprietary
- Protect patenting rights
- Provide for independence
- Maintain temporary access
- Control for life of IP
CHOOSING which TYPES and TOOLS to use

- Ability to maintain confidentially: trade secret?
- Short product life cycle : copyright?, trade secret?
- \$ for patent prosecution: partner?
- Early examination for enforcement, "stake"
- Generate \$ early through field of use (FOU) outlicensing: keep key FOU to exploit
- Existing dominating patents: in-license?, partner?

CHOOSING TYPES and TOOLS: (continued)

- Inability to identify infringers: contingency firms, partner?
- Possible interferences: obtain common ownership?
- Reduce time to market?, in-license
- Trade patents to gain "freedom of action"

Common MISTAKES

- The first words out of our mouths!
 Inventions, licensing, etc., etc., etc.
 - A sound business plan is paramount
- Poor search to identify dominating patents, prior art
- Not writing claims to cover how others might circumvent your patent
- Not rewarding key inventors

Common MISTAKES (continued)

- Filing on each invention made
- Filing in more countries than needed
- Assuming US laws are same as ROW
- Assuming all developed countries have same respect for IP
- Forgetting that application will be published
 18 months after filing

Common MISTAKES (continued)

- Invalidating your patents by
 - Making a public disclosure prior to filing
 - Not documenting invention and date
 - Not getting documentation witnessed
 - Not citing all known prior art
 - Not describing best mode
 - Including erroneous or excluding valid inventors

Resources

- www.wipo.org/pct
- www.uspto.gov
- www.delphion.com
- www.les.org
- www.autm.net
- Patent attorneys
- Licensing agents

Postlude

- Look around M.I.T. before you leave
- Since M.I.T. was founded in 1861
- Graduates and Faculty have:
 - Started 4000 companies
 - That Employ > 1,000,000
 - With Sales of > \$230 Billion/yr
 - If a nation = 24^{th} largest country in the world
 - Bank of Boston Study -1997

Filing a Provision Patent

- A provisional application is a U. S. national application for patent (35 U.S.C.§111(b))
- See: <u>http://www.uspto.gov/web/forms/sb0016.pdf</u>
- No claims, declaration, or information disclosure needed
- Establishes an early effective filing date (35 U.S.C. §111(a))
- Allows the term "Patent Pending" to be applied

Provisional Patent

- Only lasts 12 months from filing -cannot be extended
- Must file a non-provisional (NPA) within 12 months
- Must be made in the name(s) of all of the inventor(s)
- Must be filed before 1yr from first offer for sale, sale, public use, or publication of the invention
- Effectively extends the patent term by 12 months
- The written description, drawings must support all the subject matter to be claimed later in the utility

Provisional Patent

• Specifications must:

- disclose the manner and process of making and using the invention
- So that any person skilled in the art to which the invention pertains
- Can make and use the invention
- In the best mode contemplated for carrying out the invention. (35 U.S.C. 112, 1st paragraph)

Provisional Patent

- Must include the filing fee (37 C. F. R. 1.16(k))
- A cover sheet identifying: the name(s) of all inventors; inventor residence(s); title of the invention; name and registration number of attorney or agent and docket number (if applicable); correspondence address; and any US Government agency that has a property interest in the application.

Provisional applications

- Provisionals are not examined on their merits Can't claim an earlier date of another application
- Each inventor must have made a contribution individually or jointly to the subject matter disclosed in the application
- The NPA must have one inventor in common with the inventor(s) named in the provisional.
- Can't be filed for design inventions
- Can't be amended after filing
- Can't file an information disclosure statement
- But is kept in confidence without publication

Provisional applications

- Applicant can obtain USPTO certified copies
- Multiple provisional applications can be filed and later consolidating into a single NPA for patent
- Can submit additional inventor names by petition if omission occurred without deceptive intent

– deletions are also possible by petition).

 If invention is "in use" or "on sale" (see 35 U.S.C. §102(b)) in the US during the provisionalapplication loses the right to ever patent the invention if not filed within 12 months

Steps in Patenting Process

- At MIT submit a Technology Disclosure Form to TLO, otherwise need to
 - Document date of invention and have description of invention witnessed
 - These steps provides no protection
- Conduct literature and patent search 4 to 8 hrs
- Prepare and file a patent application 40 hours
- Patent Office responds ("Office Action")
 - Often takes > 1yr before hear back from USPTO
 - 1st "office action" generally rejects most or all claims
 - Need another one or two "responses" before issue

Steps in Patenting process

- Notice of Patent Allowance Issued one to two months before issue
- Patent issued
 - Typically 3 years after application was filed
- Duration: 20 years from date application was filed
- No "patent protection" until the patent issues

Technology Licensing Office

- Responsible for protecting inventions and encouraging their practice through licensing
- Decides whether to file
- Decides how to prosecute applications
- Identifies potential licensees
- Negotiates options, licenses

MIT's Patent and Licensing Goals

- Ensure that ideas are practiced broadly so that the general society benefits
- Create companies and jobs
- Enhance the educational process
- Protect M.I.T. right to receive govt funding
- Provide funds to patent future ideas
- Reward inventors by sharing income
- Provide modest income to MIT
- If commercial goals conflict with academic, academic goals take precedent

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Licensing Office Staffing

- 31 People on staff:
 9 Licensing officers
 6 Licensing associates
 1 Staff attorney
 15 Support
 - Accounting
 - Information Systems
 - Records management
 - Government compliance
 - Administrative Assistants

Typical Year Disclosures to Licenses

- ~ 400 inventions disclosed to MIT
- ~ 250 filed
- ~ 180 issued (fewer applications were filed in past)
- ~ 125 licenses/options
- Most licensed before patent issues

Typical Year MIT Startups

- 20 to 30 startups/yr
- ~2/3's still in business over last 10yrs
- ~1/3 have had liquidity event
- Many bought by larger organizations

TLO Decision Making Process

- TLO's are on straight salary, no incentives
- Pursue any technology that can make it
- Don't maximize \$ return/license but # of technologies commercialized

TLO Decision Making Process

- One person manages disclosure to expiration
- No committee to review licenses
- Director signs each license
- Some variance TLO to TLO in deal terms

The MIT TLO Provides

- Patent management and marketing
- Advice, counseling and conflict resolution

 Inventors, faculty and student
 entrepreneurs
- Introduction to sources of funding
- The license agreement and its management

The MIT TLO Does Not Provide

- Money
- Space
- Management
- Business Plan Writing
- Formal Guidance (No Board Seats)

MIT IP Ownership Policy

- MIT owns the patent or copyright if:
 - significant use was made of MIT facilities or
 - MIT administered funds were used
 - Textbooks are an exception
- Never assigns ownership to a licensee or research sponsor
- Guarantees sponsors first rights to inventions made using their funds

MIT IP Ownership Policy

- MIT can waive invention to inventor if
 <u>– No sponsor's rights and</u>
 - No significant use of MIT facilities and
 - No use of MIT administered funds and
 - No plans to use MIT facilities to reduce to practice

Deciding to file at M.I.T. TLO

- Probability of making it to prototype stage
- Number of potential avenues for success
- Future work planned by investigator
- Industry practices
- Inventor's personality

M.I.T. IP Policy

- If Government or industry sponsored must be owned by M.I.T. in order to protect rights of sponsor
- Can't delay publication or promise rights to future inventions
- TLO will take on inventor owned technology, but only under standard royalty sharing policy

Sponsored Research Policy

M.I.T retains ownership of any invention-M.I.T files patent at M.I.T. expense-If requested by sponsor, M.I.T. files at sponsor's expense

Sponsors Rights

- Granted a free internal research license
- Within 6 months of a future patent filing company gets to choose one of the following:
 - Royalty-free non-exclusive license for payment of patent costs (\$3,000) but without right to sublicense
 - Royalty-bearing exclusive license in field(s) of use with right to sublicense
 - Option to waive rights back to MIT and to receive 25% of MIT's future licensing income from patent licensing

M.I.T. Royalty Distribution

Deduct 15% for operating expenses of TLO Decuct out-of-pocket, usually patent costs, expenses Distribute one-third of what's left to inventors, Equally unless agreed otherwise Adjust remainder based on TLO actual expenses Subtract out-of-pocket expenses for unmarketable patents (write off bad inventory) One-half remainder to departments The other half to M.I.T. General Fund

Conflict of Interest Issues for Faculty

- Educational responsibility to students come first
- Startup can't take time away from faculty's prime responsibilities
- If inventor has equity: M.I.T. won't accept research funding if
 - Inventor owns dominating patent
 - inventions will be dominated by licensed patent
 - research will be done in the inventor's lab
 - inventor's students will participate in the research

Bayh-Dole Act (BDA) of '80

- Previously government owned all patents
- Only licensed non exclusively
- Few patents were commercialized
- BDA gave ownership of IP to universities
- Permitted universities to license exclusively
- Dramatically accelerated their commercialization

Bayh-Dole Act (cont)

- University must demonstrate effective technology transfer capability
- Preference for licenses given to small businesses
- Requires substantial manufacture in the United States for products used in the US
- Exemptions are possible if US manufacture is "not commercially feasible"
- Government has additional rights to ensure that the inventions funded by the federal government will be used to benefit the public
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Bayh-Dole Act Requires Universities to:

- Retain ownership of patents created under government funding
- Provide government with royalty-free nonexclusive license to use, make, or have made on behalf of federal government (limited to government use)
- Develop programs to commercialize these patents to benefit society
- Share royalties with the inventors
- Invest licensing income in research

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