What is Intellectual Property?

- Intellectual property can be defined as products of individuals’ minds - products that result from intellectual, creative processes.
- Legal Forms of Intellectual Property Include:
  - **Patents**, Trademarks, Copyrights and Trade Secrets
- Practical forms of Intellectual Property Include:
  - Ideas -> Inventions -> Innovations

Time Horizons for Protection

- Patent
  - 20 years from filing date
- Copyright
  - 70 years from death of author
- Trade Secret
  - As long as you can keep it a secret

Idea to Innovation

- Idea
  - Basic concept or general solution to a problem.
- Invention
  - Specific solution that can be described in a patent claim.
- Innovation
  - An invention that has achieved commercial potential.
Idea

- “There should be a way to smooth out snow trials. You could do it with a machine like a tractor but works better than the existing drag systems”

Invention

U.S. Patent 6,671,983

Basis for a Patent System

- U.S. Constitution: “to promote the progress of science and useful arts by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries”
- Enrich the fund of public knowledge
  - An invention is of no good to humanity until it is disclosed/used but once it is used it can be readily copied by others.
  - Granting a temporary monopoly will encourage disclosure and support commerce.
  - Requirement for disclosure of preferred embodiment.
Why are patents important?

- Granting exclusive rights to an inventor for a limited time will encourage others to invent (including “invent around”).
- Developing and commercializing technology is time consuming and expensive. Patents provide incentive to risk investment in leading development by providing for a limited period of time for the inventors to exclusively practice their invention and exclusively realize the commercial benefits.

Basic Protection Considerations

- Idea to Invention
  - Is the technology patentable?
- Invention to Innovation
  - How strong is the patent likely to be?
  - What is the size of the market for the technology?
  - Is that market enhanced by protection of the technology?

Commercial Opportunity Assessment

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<tr>
<th>Patent Strength</th>
<th>Market Opportunity</th>
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<td>Strong Patent but Niche Market</td>
<td>Large Market and Strong Patent</td>
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<tr>
<td>Niche Market and Weak Patent</td>
<td>Large Market but Weak Patent</td>
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If not patent then what?

- Trade Secret
- Know-how
- Back to the drawing board
- Run to the market…
Types of Patents

- **Utility patents**
  - may be granted to anyone who invents or discovers any new, useful, and non-obvious process, machine, article of manufacture, or composition of matter, or any new and useful improvement thereof.

- **Design patents**
  - may be granted to anyone who invents a new, original, and ornamental design for an article of manufacture.

- **Plant patents**
  - may be granted to anyone who invents or discovers AND asexually reproduces any distinct and new variety of plant.

Requirements for patentability

- **Novel**
  - The object of the patent must be new (not published, previously available for purchase, or available to the public in any way).

- **Non-Obvious**
  - The invention must not be obvious to those "skilled in the art".

- **Useful**
  - Must satisfy some productive purpose.

Patenting Algorithms and Computer Software

- Traditionally software was protected via copyright.
- Patenting of software is an evolving area.
- Cannot patent a "natural phenomenon" or a "mathematical result in pure form or number" - e.g. a rule of nature, a mathematical equation as itself, or the pure results of an equation.

Algorithms and Software (cont.)

- Rules Applied by U.S. PTO
  - Series of steps to be performed on a computer AND meets either of the following conditions:
    - Performs independent physical acts (e.g. controller software as part of the controlled system)
    - Manipulates data representing physical objects or activities to achieve a practical application (i.e. it must do more than calculate or process and produce data)
Anatomy of a Patent

- Title
- Background
  - Field of invention
  - Description of related art
- Summary
- Description of drawings
- Description of preferred embodiment
- Claims

Claims

- Must particularly point out and distinctly claim the invention.
- What the invention “is”, not what it “does”.
- Describe the metes and bounds of the invention – Define the “property” similar to a real estate claim.

Example Claim

A snow groomer for use on a snow-covered landscape, said snow groomer comprising:
- a movable platform adapted to move in a forward direction;
- a prime mover mounted to said platform;
- a grooming drum rotatably mounted to said platform, said grooming drum including a central axis, a plurality of axially spaced apart and radially protruding ribs extending circumferentially around said drum, said ribs including circumferentially spaced apart apertures, the apertures of each rib being substantially aligned with the apertures of at least one other rib, and a plurality of elongated cutting teeth, each cutting tooth extending through axially aligned apertures of said ribs, said cutting teeth including a cross-sectional area; and
- a power transmission assembly operatively interconnecting said prime mover with said grooming drum,
- wherein in response to operation of said prime mover, said drum counter-rotates with respect to the forward direction and wherein said apertures are larger than said cross-sectional area to permit said cutting teeth to move with respect to said ribs as said drum rotates to agitate and groom snow on the snow-covered landscape.

Inventorship

- Inventors are those that came up with the inventive concepts described in allowed claims.
- Individuals that helped demonstrate the concept are not necessarily inventors. They must have contributed inventive concepts during the demonstration process.
- Inaccurately listing inventors can result in invalidation of a patent.
Important Considerations

- Public disclosure
  - results in forfeiture of foreign patent rights.
  - U.S. patent applications must be filed within one year of the disclosure date.
- Record keeping
  - accurate and verifiably dated records are very important in determining inventorship and priority in the event of competing applications in the U.S.

Patent Searching

- May be prospective or retrospective
- Ultimately best done by search firm at Patent Office.
- Search by:
  - Keywords
  - Assignees
  - Inventors
- Look at:
  - Description - relevant to prior art
  - Claims - relevant to freedom to operate
  - Drawings

Searching cont.

- Classification system assists in constraining necessary search space
- Example
  - Class 136 Batteries: Thermoelectric and Photoelectric
  - Subclass 243 photoelectric
  - .244 panel or array
  - ...246 With concentrator, orientator, reflector, or cooling means
  - ...247 Fluorescent concentrator

Simplified Patent Process

1. Disclosure prepared
2. Prior Art search
3. Market assessment
4. Patent prepared
   - attorney fees for prep
5. Patent filed - US PTO and PCT (global)
   - patent office filing fees
Simplified Patent Process (cont.)

6. Foreign National Filings (1-2 years)
7. Office actions
8. Response to office action
   attorney fees for prosecution
9. Final office action
   allowance of all or some claims
   final rejection
10. Appeal

Proprietary Rights for Employees

- Employees are typically required to assign rights of inventions to their employer as a condition of employment.
- Assignment is typically for nominal consideration (although modest compensation programs are being developed).
- Agreements are not necessarily restricted to efforts on working hours.
- Agreements also may have “non-compete” clauses.

Invention Disclosure

- Document that describes the invention and documents its conception (priority).
- Should be signed, dated, and witnessed.
- Should be reasonably “enabling” – have a basic description of how to create the invention, including drawings.
- Supplement with notebooks and other documentation as necessary.

When should an invention disclosure be submitted

- As soon as you have developed the concept and have some assurance that it works and meets the criteria for novelty and non-obviousness.
- Documented dates of disclosure submission can be important if there are competing applications.
What can you do with a patent?

- A patent in and of itself is simply a document.
- The value in a patent exists in what it allows you to do (or exclude others from doing) and must be extracted either through a license agreement or using it to enhance the competitive position of your business.

Licensing

- A license is a limited right to something for a limited period of time in return for some consideration.
- Companies license technology in as a means to do business and license technology out as a means to generate additional revenue.
- Key Licensing Terms
  - Exclusivity: field of use, geography
  - Performance
  - Royalty Rate: gross vs net, function of: sales, time, ...

Career Opportunities Related to Patents

- Patent Attorney
- Patent Agent
- Patent Engineer
- Licensing Manager
- Technology Portfolio Manager
- Inventor
- Entrepreneur

Michigan Tech process

- Invention disclosure prepared and submitted to intellectual property office
- Disclosure reviewed for market potential and patentability and discussion held with inventors regarding their desires and intentions
  - Inventor can request return, subject to business justification (Michigan Tech receives 10% of subsequent licenses)
- If not returned and technology appears patentable and marketable - patents filed and licensees sought
- License negotiated and executed (existing company or start-up)
University Process/Services

- File and pay for patents
- Negotiate licenses
- Network of potential licensees
- University legal resources

Additional Resources

- Web Resources
  - www.uspto.gov
  - www.delphion.com
  - www.patentcafe.com

Contact Information:
www.admin.mtu.edu/iptc
jrbaker@mtu.edu
487-2228