

# **Overview of Patents and How To Conduct a Patent Search**

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# Outline of presentation

- Types of IP
- Patents as competitive advantage
- CMU patenting process
- Standards for patentability
- Patentability vs. freedom to operate
- Patent search resources
- Reading a patent
- Patent search strategies
- Practice time/feedback on patent searches

# Types of IP

- **Patent:**

- Three types:

- **Utility patents:** For a "useful, novel and non-obvious" invention.
    - **Design patents:** For ornamental design only.
    - **Plant patents:** Horticulture engineering.

- **Trademark/Service mark**

- Exclusive right granted by a government for owner to use a specific name/symbol in association with a class of products or services.

- **Copyright**

- an original work of expression (including software code, designs, etc.).

- **Trade secret**

- Information used in business that offers the holder a competitive advantage when kept secret. Not a right granted or enforced by government.

# Patents as competitive advantage

- Patents provide a monopoly 'right to exclude' for 20 years, in return for 'teaching' how to practice (empowered in U.S. Constitution)
- Patents may be narrow or broad
  - Do the claims protect an advantage that matters in the marketplace?
  - How easy to do an 'invent-around'?
- Patent may not give you 'freedom to operate'
- Investors look for patent 'picket fences'

# Protecting your invention—CMU process

- Invention disclosure
- Evaluation
  - Patent search, market assessment
- Provisional patent application?
  - One year ‘place-holder’
  - Inexpensive to file; can do yourself but be careful
- Full patent application?
  - \$10-15K initially, ~\$20-30K over life
  - Similar amount per country

# Protecting your invention: timing

- If patent application (even provisional) is filed prior to first public disclosure: options are preserved to file anywhere in world
- If public disclosure occurs prior to filing of patent application, opportunity to file patent is lost in most countries, but one year grace period in U.S.
- May file provisional prior to public disclosure, then abandon and file new prior to 1 yr after public disclosure—put off big \$ for 2 yrs but lose international options

# Standards for Patentability

- **Useful:** Invention must be useful to someone in some context;
- **Novel:** Invention must not be prior art in public domain. This also means that the invention itself must not appear in the public domain before patenting;
- **Non-obvious:** If the invention would be clearly evident to those with "ordinary skill in the art" who faced the same problem as the inventor, then the invention is considered obvious and not patentable. Of course, this criteria can be a source of disagreement.

# Public disclosure and patents

- Inventions must be novel to be patentable
  - Typical understanding: “not previously invented”
  - Hidden pitfall: “not previously known to the public”
- What does ‘known to the public’ mean???
  - If you have disclosed enabling details of the invention, its no longer considered to be novel, and therefore it cannot be patented!!

# Public disclosure (cont.)

- Exceptions:
  - Disclosure must be ‘enabling to one skilled in the art’
    - Can someone recreate the invention from the details that you have disclosed? Sometimes just the title is enough!
  - One year ‘grace period’ in United States
    - Can still file a patent up to one year after public disclosure
    - **NOTE: IN MOST OTHER COUNTRIES, THERE IS NO GRACE PERIOD AND PATENT RIGHTS ARE LOST IMMEDIATELY UPON PUBLIC DISCLOSURE!!!**

# Public disclosures

<u>Obvious public disclosures</u>	<u>Less obvious public disclosures</u>
Publishing in a journal or book	Federal grant application after approval (FOIA)
Speaking at a conference	Student theses, dissertations in library
Offer product for sale	Web site
	Conversation with 'outsider' —e.g. company
	Conference posters, abstracts
	Emails

# Research practices to manage disclosures

- Patent, THEN publish (more later on this)
  - File invention disclosure with adequate time for review and patent filing (e.g. submit before or at same time that manuscript is submitted)
    - Be conscious of impending publication dates (which may occur electronically before a conference or print edition is available)
- Don't reveal 'enabling' details
  - E.g. in abstracts and posters
- Do use confidentiality agreement in dealings with 'outsiders'
- Mark critical, enabling details in grant applications as 'Confidential'

# Patent search- novelty/non-obvious

## Search by:

- **Keywords**
- **Assignee** (owner—competitive landscape)
- **Inventor** (e.g. after finding research article)
- **Classification** (after finding similar inventions)
- **References cited** (go back in time to start new search tree)
- **Referenced by** (go forward in time to find later inventions)
- **Patent number** (e.g. if referenced in product lit.)

# Patent search resources

- [www.uspto.gov](http://www.uspto.gov)
  - <http://patft.uspto.gov/netahtml/PTO/index.html>
- [www.google.com/patents](http://www.google.com/patents)
- WIPO:  
<https://patentscope.wipo.int/search/en/advancedSearch.jsf>

# Reading a patent/search strategies

- Surtrac patent 9,159,229
- Keyword search “smart traffic lights” “smart traffic signal” “dynamic control AND traffic signal”
- Classification search
  - 340/907
  - 340/922
  - 701/117
- Competitor search
  - Rhythm Engineering

# Practice patent search

- Find relevant patent(s)
- Find competitor patents
- Find relevant classification code(s)
- Do a PublicPAIR search
- Distinguish your work from prior art