



## Intellectual Property: A Primer for Software Developers

After this lecture, you should be able to:

- Describe the forms of IP relevant to software
- Argue why a particular kind of IP protection should be used in a given scenario
- Describe what a software license is and why software licenses matter

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Based on slides from  
Paul Cyr (UBC UILO)





## What is Intellectual Property?

The principal rights governing the ownership and disposition of creations of the mind are known as “intellectual property” rights which are derived primarily from legislation granting patent, copyright, trademark and other protection

“Intellectual property refers to creations of the mind: inventions, literary and artistic works, and symbols, names, images, and designs used in commerce” - World Intellectual Property Organization (WIPO) Website

➤ *intangible assets*



## Outline

- Forms of IP
- Scenarios
- Using IP



## FORMS OF IP

Trade secrets

Trademarks

Copyright

Patents



## Trade Secrets

- Not legislatively based
- No time limit
- Require a due diligence process
  - Secure storage
  - Access and distribution control
  - Active prosecution of violators
- Information is protected through confidentiality agreements
- Examples – Coca-Cola formula, KFC recipe, Microsoft Windows source code
- Typically useful for “secret sauce” aspects of technology (i.e. key manufacturing or process step)



## What If...

You work in a company and come up with a new way to automatically generate the tasks for an agile sprint based on user stories.

You blog about it on the company's public web page.

A competitor reads the blog and starts using the approach. You find out about their use.

Can you sue them for using your trade secret?



## Trademarks

- A trademark is a word, a symbol, a logo, a picture, a design of goods, or a combination of these, used to distinguish the wares or services of one person or organization from those of others in the marketplace.
- Moderate Cost: \$1.5 - 3K per country
- Time Consuming: 1 - 2 years to obtain
- Lengthy: Indefinitely renewable
- Easy to Obtain: if distinctive mark chosen
- Must be used in commerce
- Must be enforced
- Must avoid genericism
- Expensive to enforce: litigation is costly





## What If...

You work in a company and come up with a new way to automatically generate the tasks for an agile sprint based on user stories.

You call this new approach Story2Task and add a description of Story2Task™ to your company's web page.

Can you...

- a) Register the Story2Task as a trademark?
- b) Just use Story2Task® without registration on a web page?
- c) Sue another company for creating a project called Story2Task that creates tasks from children's stories?



## Copyright

- Copyright protects:
  - literary works (including software); musical works; dramatic works; pantomimes and choreographic works; pictorial, graphic, and sculptural works; motion pictures and other audiovisual works; sound recordings; and architectural works.
- Narrow protection: expression, not ideas
- Inexpensive: free rights, low cost to register
- Quick: automatic & effectively worldwide
- Lengthy: term is 50 years from death of author (70 years in US)
- Easy to obtain: no ingenuity is required
- Expensive to enforce: litigation is costly



## Copyright Basics

### Copyright: “commercial” rights

- Right to reproduce
- Right to perform
- Right to 1st publication
- Right of adaptation
- Right of translation
- Right of telecommunication

Copyright may be waived, assigned or licensed in whole or in part

Copyright notice is NOT required

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## Copyright: Moral Rights

### Moral Rights: “personal rights”

- Right of paternity
  - Claim authorship
  - Remain anonymous
- Use a pseudonym
- Right of integrity
- Right of association

Moral Rights can only be waived by the original author. They cannot be sold or assigned.

## Digital copyright suits



## Can You...

Recreate similar APIs to another company's product APIs?



37 APIs



\$1 billion !?



## Oracle v Google

Oracle claimed infringement of patents and copyright for Google's use of 37 Java APIs in Android OS

Seeking \$1B in damages

Ruling of the court:

- No patent infringement
- Google had infringed the "work-alike" functionality of the APIs
- however ruled that APIs themselves are NOT copyrightable (only the exact code)
- Google found to have violated copyright in only 9 lines of code

Damages to be determined, however will be minor relative to that sought by Oracle





## Oracle v Google

*9 lines of code:*

```
private static void rangeCheck(int arrayLen, int fromIndex, int
toIndex) {
    if (fromIndex > toIndex)
        throw new IllegalArgumentException("fromIndex(" +
fromIndex +
        ") > toIndex(" + toIndex + ")");
    if (fromIndex < 0)
        throw new
ArrayIndexOutOfBoundsException(fromIndex);
    if (toIndex > arrayLen)
        throw new ArrayIndexOutOfBoundsException(toIndex);
}
```



## Amazon and e-books

- Customers purchased electronic versions of books from Amazon and downloaded to their devices
- The digital publisher (and Amazon) did not possess the rights to distribute certain copyrighted material
- July 2009: Amazon remotely deletes copies of '1984' and 'Animal Farm' from customers Kindle devices
- Oct 2009: Amazon settles suit for damages for "lost homework"
- Public relations incident



## Patents

- Contract between the inventor, the assignee, and the state
- Full disclosure in return for a time & geographically limited monopoly to exclude others from using, making, and selling
- Terms are state specific but subject to international conventions
- Typically 20 year term

<b>United States Patent</b> (14)		C8602513100A	
<b>Parker et al.</b>		<b>Patent Number:</b>	<b>5,513,100</b>
		<b>Date of Patent:</b>	<b>Apr. 30, 1996</b>
(54) <b>VELOCITY CONTROLLER WITH FORCE FEEDBACK SYSTEMS CONTROL</b>		4,874,499	10/189 Balle, Jr.
(51) <b>Int. Cl.</b>		5,079,796	5/191 Ford
(52) <b>Int. Cl.</b>		5,040,022	5/191 Crenney
(53) <b>Inventors:</b> Shih B. Parker, Architect; Peter D. Lawrence; Stephen E. Schaffner, both of Vancouver, all of Canada		5,094,491	12/102 Gilmour et al.
(72) <b>Assignee:</b> The University of British Columbia, Vancouver, Canada		5,116,380	5/192 Ping et al.
		5,280,470	4/200 Williams et al.
		5,341,659	8/194 Butler
(31) <b>Appl. No.:</b> 74,545		<b>ABSTRACT</b>	
(32) <b>Filed:</b> Jan. 16, 1993		A force feedback velocity control system for the force adjustment of an arm being controlled and adjusts the stiffness of a manual controller to any one of a plurality of	
(33) <b>Pub. No.:</b> 344,647 A1			
(34) <b>U.S. Cl.:</b> 344,647 A1			

- Conditions for a patent
  - Patentable subject matter
  - Novel
  - Non-obvious
  - Utility



## Patents ...

- May be asserted to enforce a monopoly
- May be licensed to others for a royalty or other consideration
- May be sold, or used as collateral
- May prevent others from obtaining a patent
- May be a bargaining chip in commercial or legal negotiations (infringement, cross licensing)



## Non-patentable Matter

- Idea
- Scientific Principle
- Abstract Theorem
- Method of doing business (?!)
- Medical Treatment
- Invention with Immoral or Illicit Purpose
- Software ?

Jurisdictional  
differences



## Novelty

A patent must be novel:  
It cannot have been disclosed prior to patent application  
by anyone, **including inventor**

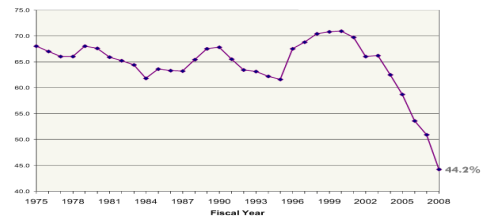
- Public disclosure can bar patent filing including:
  - Public talks
  - Formal printed publications
  - Internet publication
- Can be protected through confidentiality agreement (also known as secrecy or nondisclosure agreements)
- Limited number of “grace period” countries



## Non-obvious (inventive step)

- Invention cannot be a combination of published inventions or known in the art
  - Would technology be obvious to a hypothetical person of ordinary skill in the art?
- More difficult to meet in US
- Often used by patent office to reject patent applications

USPTO Allowance Rates



## Utility

- Invention must work
- Invention must be useful
- Very easy threshold to meet.....



## Cost of Patenting

- Expensive and lengthy process
- Successful prosecution of patents takes average of 3-5 years (or longer)
- Costs variable, depend on complexity of the case and what jurisdictions selected
- Just in the US likely \$25,000-\$40,000
- Broad international protection >\$350,000 over the patent life



## Suppose you...

Come up with a system for making a word processor that wasn't dependent on a specific way to encode the documents being handled by the word processor.

Let's say you called that patent "a system and method for manipulation of the architecture and content of a document separately from each other"

Is that patentable?



# *i4i*

>\$200MM,  
injunction



## **Question about patents**

Question: Frank has been granted a US Patent on his invention, a widget. Does Frank have the right to use, make and sell his widget in the US?



## Question about patents

Question: Frank has been granted a US Patent on his invention, a widget. Does Frank have the right to use, make and sell his widget in the US?

Answer: Not necessarily. Frank may require patent rights held by another patent holder (Frank's invention is an *improvement* on another invention). He requires a *license* from the other patent holder.



## Scenarios



## Scenario #1

Six months ago, you started a new software as a service company that helps students find tutors. The service has grown tremendously and you now have 100,000 users in Canada paying a small monthly fee to use the service. You are ready to launch your service in the U.S.

Will you seek any protection for intellectual property before expanding the service? If so, what protection will you seek?

Discuss with a neighbour for 2 min to come up with an approach.



## Scenario #2

With a co-founder, you created a company based on a process for cleaning data gathered from security cameras to be able to better perform facial recognition. Investors have put \$3M into your company. You have 1M left in the bank and are ~9 months from launching your software product, which will be sold as part of security cameras.

Will you seek any protection for intellectual property before expanding the service? If so, what protection will you seek?

Discuss with a neighbour for 2 min to come up with an approach.





## USING IP



## Commercialization strategy

Commercialization path depends on intentions and business plans:

- Will you develop and sell products/services?
- Will you sell your IP assets?
- Will you license your IP rights to others?
- Are you able/willing to enforce against infringers?

## Creating an IP Umbrella

- IP represents a business asset and competitive advantage
- Protect inventions and technology through a combination of:
  - Patents
  - Copyright
  - Trademark
  - Trade Secret



*How much IP is in there?*  
*Who owns all that IP?*



## Patents (and other IP rights)...

- May be sold, or used as collateral
- May prevent others from obtaining a proprietary position
- May be asserted to enforce a monopoly
- May be licensed to others for a royalty or other consideration
- May be a bargaining chip in commercial or legal negotiations (infringement, cross licensing)



## Assertion Models – Protecting your Turf

Many companies practice their patents, and actively assert their monopoly rights against infringers to protect the proprietary position the patent offers

Generally in this model, infringers are forced through legal avenues to stop infringing the patent

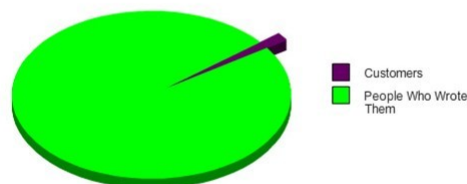
Under such models licenses are not typically granted to outside parties

Patent monetization is through the premium obtained by having a monopoly on those IP rights

## Licenses

- A license grants the Licensee certain rights to IP held by the Licensor
- The Licensor may be the owner of the IP rights, the creator, or a previous Licensee of these rights
- The Licensee is the "person" receiving these rights
- Types of licenses: commercial, academic, 'open source'
- Examples of common software licenses: MS Word shrink-wrap, iTunes executable click-through license, GPL

## Who reads The Terms of the Licence Agreement?





## Licenses

- License spells out what rights the licensee has to use the licensed IP, including:
  - Field of use/application
  - Jurisdiction
  - Fees and payment
  - Other obligations
  - Duration



## Open Source Licensing

- >2200 open source software licenses!
- OSI provides one accepted definition, has approved ~70 licenses
- A small number of licenses make up the majority of the usage
- Key license terms usually apply when software is “distributed”
- Attribution, endorsement, liability, right to distribute are usually addressed
- The GNU GPL and LGPL versions make up large portion of all OSS licenses, the MIT license is becoming increasingly popular

<http://www.opensource.org/>



## Some Open Source Licenses

MIT

GPL

LGPL



## Open Source: MIT

**The MIT License (MIT)** Copyright (c) <year> <copyright holders>

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## Open Source: GPL

- Using internally not restricted, but distributions are restricted under the license
- GPL-type licenses “a/infect” other software: combining GPL source code with your source means the new code falls under the GPL license
- GPL requires distribution of source code for free, and grant of rights to all users (“copyleft”)
- Difficult to commercialize IP licensed under GPL



## Open Source: Lesser GPL

- Applies to “libraries” of code
- Requires distribution of source code of library and object code of other modules
- Licensee (user) must be able to modify/improve LGPL library and recompile it with other modules.
- LGPL does not apply to other modules
- More commercialization friendly than GPL



## Open Source

You should know:

- What is in your code
- Where it came from
- Terms and conditions of any applicable licenses



## Open Source in the Supply Chain



**BusyBox**

Popular utility, under the  
GPL v2 license



**COMTREND**  
Leading the Communication Trend



**Western  
Digital**

Device makers put code in  
components they produced



Sold the TVs. The SFLC  
sued 14 OEMs/retailers



**Westinghouse**

**JVC**

HDTV makers put components in TVs

**Settlement:** Westinghouse assessed monetary damages and legal fees, lost revenue due to injunction, and lost inventory (all HDTVs donated to charity).





## Open source – key items

- Useful/essential tool for developers
- Open source doesn't mean "free"
- Know what is in your code!
- Read the licenses carefully and track sources
- Improper use of open source can seriously derail your efforts ("How far do you want to take the technology?")
  - Impact product
  - Impact company



## Summary

- IP matters!
- Core IP components: patents, copyright, trade mark, trade secrets
- Products often protected by a combination of IP rights
- IP as assets and business tools
- Businesses must pay great attention to the IP rights they need to produce and sell their product
- Open source software provides pros and cons, licensing terms are important