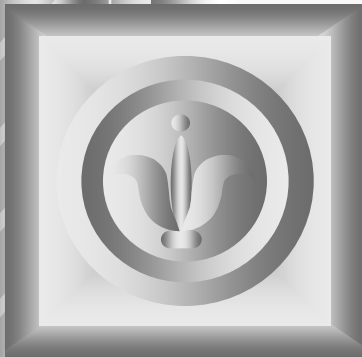


Intellectual Property Protection for Software



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Software Engineer's Mantra

“So what is so important about IP?”

America's Founder's Reply

The Congress shall have power ...

To lay and collect taxes, duties, ...;

To borrow money on the credit of the United States;

To regulate commerce with foreign nations, and among the several states, ...;

To establish a uniform rule of naturalization, and uniform laws on the subject of bankruptcies ...;

To coin money, regulate the value thereof, and of foreign coin, and fix the standard of weights ...;

To provide for the punishment of counterfeiting the securities and current coin of the United States;

To establish post offices and post roads;

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;

To constitute tribunals inferior to the Supreme Court;

To define and punish piracies and felonies committed on the high seas, ...;

To declare war, grant letters of marque and reprisal, ...;

To raise and support armies, ...;

To provide and maintain a navy;

To make rules for the government and regulation of the land and naval forces;

To provide for calling forth the militia to execute the laws of the union, suppress insurrections and repel invasions; ...

Roadmap of IP Discussion

- **Foundation for IP Rights**
- **What is “IP” & Why Is It Important?**
- **What Forms Does IP Take?**
- **Software IP Roadmap**
- **Software IP Pitfalls**
- **Software IP Tips**

What is IP?

● Overview

- IP is the creative “juice” which flows through all innovation – without it there are no products and no profit!
- As seen previously, the protection of IP has historically been viewed as a constitutional right – NOT a monopolistic money-grab as characterized by some today
- Traditionally, most infant democracies first setup protection for IP to encourage business development – without it there can be no infusion of investment capital
- S/W IP is a relatively recent development in the patent field

What is IP?

(continued)

PATENT

Protect the IDEA surrounding a product -
either the way it works (UTILITY)
or the way it looks (DESIGN)

TRADE/SERVICE MARK

Protects a business from unfair
competition associated with likelihood of
confusion between similar/identical marks
used to indicate source/quality of a product

COPYRIGHT (c)

Protect the ARTISTIC/LITERARY expression in a product -
only covers original works of authorship

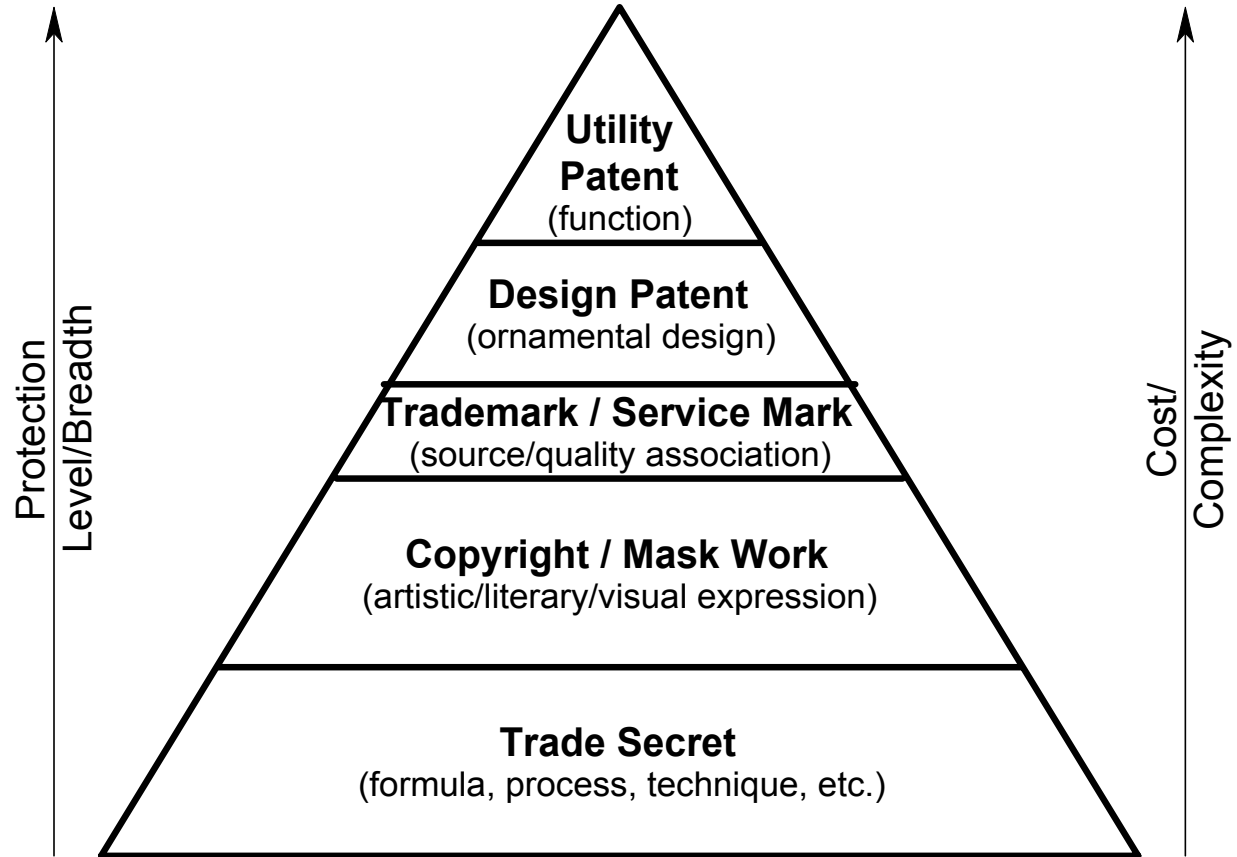
TRADE SECRET

Protects the NON-PUBLIC secrets used
within a given business context -
cannot protect items in the public domain
or items that are reverse engineered

Forms of IP Protection

What is IP?

(continued)



IP Protection Pyramid

What is IP?

(continued)

● **Examples**

- **Secret Formulas/Algorithms (buried in code but possibility of reverse engineering or independent creation exists)**
- **Unique work of authorship in software
SOURCE, OBJECT, and EXECUTABLE CODE**
- **Screen Layout (artistic component only)**
- **Screen Icons (artistic component only)**
- **Software & adjunct data used to drive same as embodied on computer readable media**
- **Computer systems running software**
- **Methods (procedures) embodied in software**
- **Products made under software control**

What is IP?

(continued)

- **Key Features of IP**

- **Has limited lifetime**

- **Trade Secret** – as long as kept secret/unknown
- **Trademark** – as long as used/enforced
- **Copyright**
 - Last living author's life + 70 years; or
 - MIN(120 yrs from creation, 95 yrs from publication)
- **Patent**
 - Utility/Plant – 20 years from filing date
 - Design – 14 years from filing date

- **Attributes of personal property**

- it may be bought/sold/devised/etc.
- It may be subdivided/restricted

- **May be owned by persons and businesses**

Forms of IP

- **Trade Secret**

- Formulas, techniques, etc. generally held in secret (embedded in software)
- Protection varies by state (& federal law)
- No protection against reverse engineering or independent creation
- Example: formula for COKE® is a closely held company secret
- Trade secret must be protected from disclosure to the public – cost to protect varies with the technology involved
- Remedies are generally contractual or quasi-contractual and difficult to enforce

Forms of IP

(continued)

● Copyright

- Copyright protection subsists ... in original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device. Works of authorship include:
 - literary works;
 - musical works, including any accompanying words;
 - dramatic works, including any accompanying music;
 - pantomimes and choreographic works;
 - pictorial, graphic, and sculptural works;
 - motion pictures and other audiovisual works;
 - sound recordings; and
 - architectural works.
- In no case does copyright protection for an original work of authorship extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such work

Forms of IP

(continued)

- **Copyright** (continued)

- Protects expressive artistic work
- Does NOT protect the idea behind the work or any functional aspect of the work
- Copyright protection attaches at the point the work is created
- © provides NOTICE to the public that the work is not in the public domain
- Work is owned by the “author” who may be the creator of the work or his/her employer
- General length of term is life +70 years
- Cost of copyright registration is \$30/filing

Forms of IP

(continued)

- **Copyright** (continued)

- © owner has the exclusive rights to do and to authorize any of the following:

- to reproduce the copyrighted work in copies or phonorecords;
- to prepare derivative works based upon the copyrighted work;
- to distribute copies or phonorecords of the copyrighted work to the public by sale or other transfer of ownership, or by rental, lease, or lending;
- in the case of literary, musical, dramatic, and choreographic works, pantomimes, and motion pictures and other audiovisual works, to perform the copyrighted work publicly;
- in the case of literary, musical, dramatic, and choreographic works, pantomimes, and pictorial, graphic, or sculptural works, including the individual images of a motion picture or other audiovisual work, to display the copyrighted work publicly; and
- in the case of sound recordings, to perform the copyrighted work publicly by means of a digital audio transmission

Forms of IP

(continued)

- **Trademark / Trade Dress ®**
 - Protects association of SOURCE/QUALITY with a manufacturer or service provider
 - Search of existing marks mandatory for proper protection
 - Mark must be used in Interstate Commerce for federal registration ®, but need not be done for state registration
 - Marks may be noted with TM/SM designation to indicate their use as trade/service marks
 - Trademarks may outlive patent/copyright protections associated with a given product
 - Cost of TM registration is ~\$350/filing

Forms of IP

(continued)

● Patent

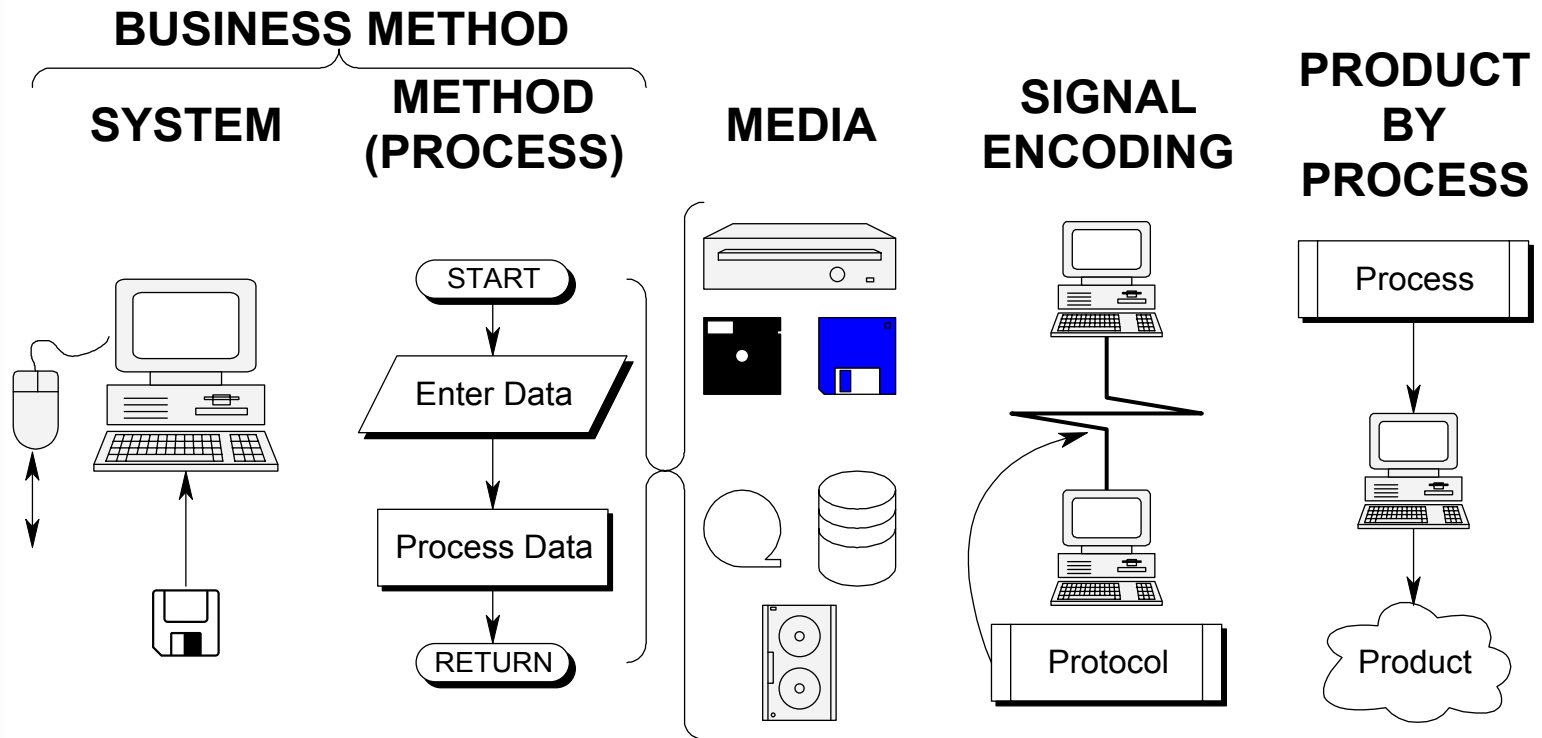
- Protects inventive “idea” behind discovery
- Three types of patents:
 - Utility – protects the way something WORKS (primary vehicle for software protection)
 - Design – protects the ORNAMENTAL DESIGN only (may be used to protect screen icons, & visual components)
 - Plant – protects asexually reproduced PLANTS
- Five major areas covered in Utility Patents:
 - System (hardware controlled by software)
 - Method (procedures embodied in software)
 - Computer Media (procedures embodied in media)
 - Transmission Signal (signalling scheme)
 - Product-by-Process (product made by software)
- Cost ranges between \$80(provisional) to \$10K-\$30K

Software IP Roadmap

- **Software is Rich in IP**
 - © can protect code, packaging
 - ® can protect source/quality of S/W and company logos
 - ™ can protect source/quality in state context as well
 - Patent protection is extremely rich
 - Design patents (screen icons)
 - System/method/media/signal/product claims within Utility patents

Software IP Roadmap

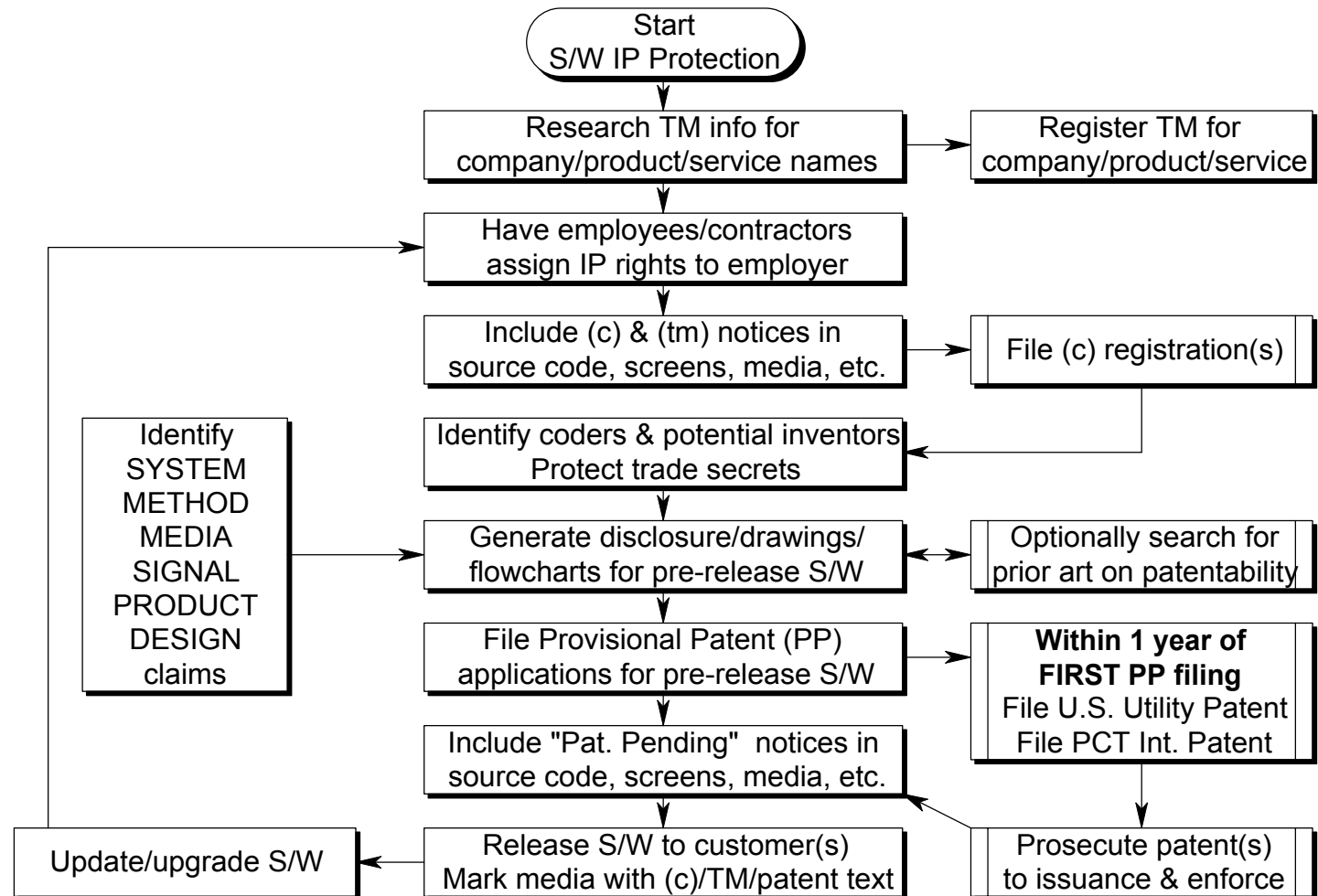
(continued)



Software Utility Patent General Claims Structures

Software IP Roadmap

(continued)



Software IP Roadmap

(continued)

- **Disclosure**

- Inventor may have disclosed only one element of invention matrix (typically the system/apparatus component)
- Include support for ALL applicable elements of invention matrix (system, method, software, signal, product-by-process)
- Beware of the situation in which the system is disclosed but another element of the invention matrix is key to commercialization (system claimed but method / software / product / signal is commercialized)

Software IP Roadmap

(continued)

● Drawings

- Many tools available for S/W system drawings and method flowcharts, but one tool (rfflow) is available at www.rff.com
- **GOOD DRAWINGS** are the key to good patents and greased allowances
 - “A good patent reads like a comic book – the Examiner should be able to grasp the invention and agree with the novelty of the invention by inspection of the drawings alone”
 - “Claims project from the drawings alone and not from the disclosure text”
 - “You play like you practice – sloppy drawings generally mean a sloppy patent”

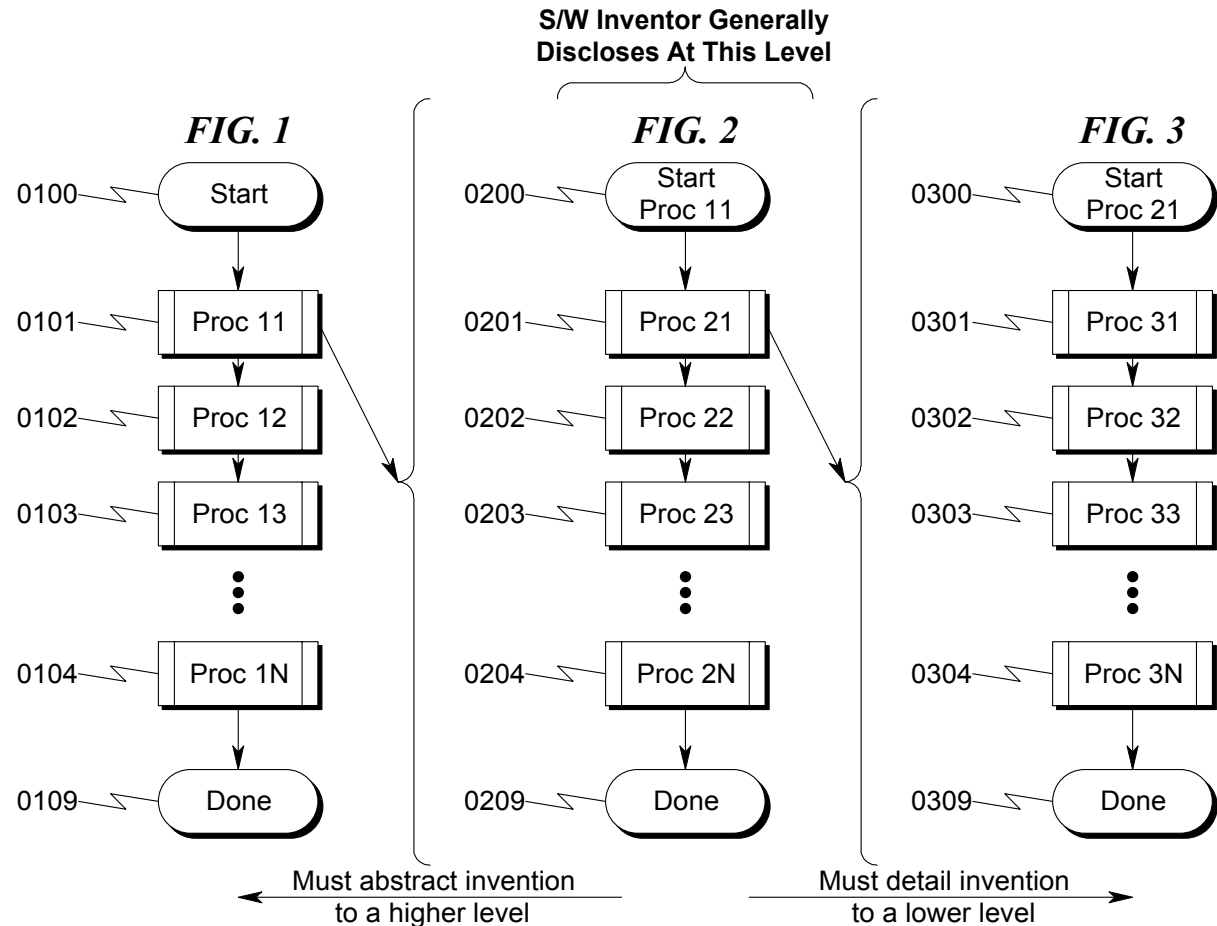
Software IP Roadmap

(continued)

- **Drawings (continued)**
 - Frequently the invention is not adequately disclosed because the drawings provided by the Inventor are too narrow in scope
 - Common mistake in computer-related apps is failing to provide systems basis for software claims or ignoring upper/lower level flowcharts for critical method claims
 - Fix by including abstraction FIGs in PP
 - Generate first (only) claim in PP based on abstracted FIG

Software IP Roadmap

(continued)



Abstraction/Detailing of Software Inventions

Software IP Roadmap

(continued)

- **Drawings (continued)**
 - Beware of the trap of failing to detail and/or annotate the drawings – new matter cannot be added except via the filing of a new PP/UP
 - Sloppy drawings may not adequately detail material that may be considered “new matter” in a subsequent PP/UP
 - Drawings need not be formal, but remember that formal drawings are preferred for UP to prevent delays and preserve term extensions
 - If you can’t generate a drawing, you probably don’t understand the invention, and the text probably isn’t enabling

Software IP Pitfalls

● Publication / On-Sale Bar

- A person shall be entitled to a patent **unless:**
 - **the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States...**
- **When does the 1-year “time bar” clock start?**
- **Supreme Court ruled that the clock starts when invention is “ready for patenting”**
- **This rule dictates that a patent be filed BEFORE disclosure of the invention or even offer of disclosure (alpha/beta test code, etc.)**
- **No “grace period” for foreign patents!!!**

Software IP Pitfalls

(continued)

- **Authorship/Inventorship vs. Ownership**
 - Rules governing ownership of patents and copyrights are not intuitive and are different
 - **Copyrights**
 - Ownership in a copyrighted work originates with the “author”, who may be the creator of the work OR the creator’s employer (work made for hire)
 - Joint authors are required to provide an accounting of revenue/profit from the sale/license of a copyrighted work
 - **Patents**
 - Ownership in the patent originates with the named inventor(s) listed in the patent application
 - An “inventor” is any person who makes a material contribution to one or more claims in the patent
 - All “true inventors” MUST be listed in the patent
 - **Absent a written agreement, joint owners of a patent need not account to other patent owners**

Software IP Pitfalls

(continued)

● **Contractor Relationships**

- Much software is generated using contract programmers, creating unique IP issues
- Since ownership in a © work originates with the author, contract programmers “own” the copyright in software written for third parties, much as do photographers “own” the © in pictures taken at a wedding
- This default rule is unacceptable
- Solution is to have contractor acknowledge the “work made for hire” relationship in the S/W generated and also assign all © rights over to the employer

Software IP Pitfalls

(continued)

- **Contractor Relationships (continued)**
 - Similar problems exist WRT patents, except that a written assignment of patent rights is mandatory to protect employer's IP rights
 - S/W improvements that are patentable will be owned by the contractor exclusively unless a written assignment agreement is in place
 - Worst case scenario:
 - Employer contracts for S/W improvements
 - Contractor invents/patents software improvement
 - Contractor then forces former employer to pay royalty for patent license OR sells patent license to employer's competitor

Software IP Pitfalls

(continued)

- **Multi-Dimensional IP Protection**
 - The goal in IP protection is to provide layers of protection surrounding the product
 - No one layer can guarantee protection, but the goal is to provide a minefield of protection so that an intruder has a high likelihood of tripping a mine should he/she attempt to usurp the gist of the product
 - Common mistakes are to
 - Ignore use of copyrights to protect software
 - Ignore IP aspects of visual elements (icons, etc.)
 - Fail to pursue © and design patent protection
 - Fail to consider computer media, signal transmission, and product-by-process claims
 - Ignore product marking & trade/service marks

Software IP Pitfalls

(continued)

● Disclosure

- **Note that on sale “time bar” clock starts whenever anything associated with the invention is disclosed PRIOR to filing a patent application**
- **Common problem is to file a patent application, improve the invention, disclose the improvement, and then attempt to get patent coverage on the improvement**
- **Proper procedure is to file a NEW patent application after each improvement is made but BEFORE invention is disclosed, offered for sale, alpha tested, etc.**
- **Common mistake is to give a presentation and then file for patent – at this point foreign patent protection has been forfeited!**

Software IP Pitfalls

(continued)

- **IP Divisibility – Fracturing of IP Rights**
 - Note for © material that the author at creation has an interest in ALL future media embodiments of the artistic/literary work
 - Consider scenario where S/W is embodied on CDROM and employer contracts for CDROM embodiment. Employer later wants DVDROM embodiment. Employer must license this from contractor unless contract specifically includes language to incorporate all future media embodiments. Similar arguments hold for public display of © work.
 - **CONTRACTS MUST ANTICIPATE NEW MEDIA TYPES AND INCLUDE © ASSIGNMENTS**

Software IP Pitfalls

(continued)

- **Enforcement - Copyrights**
 - Copyright rights exist from the time that the work is embodied in a physical form, whether or not notice is given to the public via use of © symbol.
 - Use of © symbol obviates “innocent infringer defense” and permits enhanced damages
 - Registration of © work is a prerequisite for commencement of lawsuit protecting rights
 - Statutory damages of up to \$150,000 are possible without a showing of lost profits
 - a powerful weapon for S/W developers!

Software IP Pitfalls

(continued)

- **Enforcement – Trade/Service Marks**
 - Most common mistake is to select trade/service/product names without performing search beforehand
 - Typical scenario is registering a company name with the Secretary of State, building and expanding a company, then realizing the name is not available on a nationwide basis
 - Failure to do a search and earmark federal TM is a costly mistake that has a high cost in the marketplace
 - Important to consider registration of company and TMs both at state/federal level

Software IP Pitfalls

(continued)

● Enforcement - Patents

- **Whoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States or imports into the U.S. any patented invention during the term of the patent therefor, infringes the patent.**
- **Whoever actively induces infringement of a patent shall be liable as an infringer.**
- **Generally, damages in a patent action cannot commence until the patent issues AND the infringer has notice of the infringement**
- **Thus, “U.S. Patent #” notices on S/W media and display screens are key to enforcing S/W patents**
- **Damages in a patent action are either actual or at a minimum those associated with a “reasonable royalty”**

Software IP Tips Summary

- **Mark software/listings/media with © notices, ® notices, and patent notices:**
Copyright © 2002 by John S. Doe.
All Rights Reserved.
U.S. Patent 6,396,137 and other patents pending
XYZ® is a registered trademark of ABC, INC.
- **Ensure contractors assign copyright interest in software to their employer**
- **Register software copyright with Library of Congress (www.loc.gov)**
- **Update © filings as software is upgraded**

Software IP Tips Summary

(continued)

- **File Provisional Patent (PP) covering any software invention PRIOR to sale, offer for sale, quotation, or distribution of software (whether alpha, beta, or production release)**
- **Refile PP for software updates/upgrades**
- **Consider filing PP applications with CDROM of source code and operating executable of the software invention**
- **Key to disclosure is DRAWINGS, preferably with FLOWCHARTS**

Software IP Tips Summary

(continued)

- **File Utility Patent within 1 year of first PP filing, along with PCT patent application**
- **Do not use software trademarks (for your invention) in patent application – defined/use an alternative identifier**
- **Clarify inventorship issues for all filings**
- **Revisit IP assignment contracts for employees/contractors**
- **Do not ignore potential IP overlap issues (e.g., copyright AND design patent)**
- **Do not ignore state/federal TM issues**

Conclusion

IP protection is a reality for software

-

**S/W IP protection is a
multidimensional process,
not an event**

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**S/W IP protection is the future
currency for the S/W Industry**