

Computing and Intellectual Property #1

Lecture 6

Understand what intellectual property encompasses

Discuss some current computing related issues associated with the protection of intellectual property

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Agenda

- What is Intellectual Property?
- IP Protection Framework
- IP Protection Duration
- IP infringement and Fair Use

What is Intellectual Property?

Intellectual property

Consists of intangible creative work, not in its particular physical form

These intangible intellectual objects represent *literary/creative works* and *inventions* which are the manifestations or expressions of ideas

Protected by *copyright law, patent law, trademark law, and trade secret law*

Legal protection is given only to the **tangible** expression of an idea that is creative or original

Why Protect Intellectual Property?

Philosophical justification

- **Labor theory of property**
 - A property right is type of “natural right” that should be granted to individuals for the products that results from the labor expended in producing a creative work or a practical invention.
- **Social utility perspective**
 - Property rights are not natural rights but rather social constructs designed to encourage creators and inventors to better serve society in general by bringing forth their creative works and practical inventions into the marketplace.
- **Personality perspective**
 - Creative works and inventions represent the expressions and personalities of their creators and inventors, who should, have the right to determine how their works are displayed and distributed.



IP Protection Framework

IP Protection Frameworks

Copyright Law

Protects the expression of *original* ideas in *tangible* forms

e.g., literary work (e.g., written works),
dramatic works (e.g., scripts for firms and dramas),
musical works (e.g., melodies),
artistic works (e.g., paintings, photographs),
sound recording, films, television and radio broadcasts,
cable programmes,
Performances,
Etc.

Patent Law

A patent is a right that is granted for an invention.
It can take the form of a *new* product, process or
technical improvement to existing technology.

Patent protection can be applied to inventions and
discoveries that include “utilitarian or functional” devices
such as machines and “articles of manufacture.”

E.g., process, machines, manufacture, composition of
matter, designs, etc.

Types:

Utility patent: focus on practical function

Design patent: a new, original, and ornamental design
embodied in or applied to an article of manufacture.

IP Protection Frameworks

Trademark Law

A trade mark is a sign (e.g., a word, symbol, picture, sound, or colour) that you can use to distinguish your business' goods or services from those of other traders.

It can be represented graphically in the form of your company's name or logo.

E.g., trademarks, service mark, business slogan, etc.

Trade Secret Law

A trade secret is defined as business information that represents something of economic value, has required effort or cost to develop, has some degree of uniqueness or novelty, is generally unknown to the public, and is kept confidential.

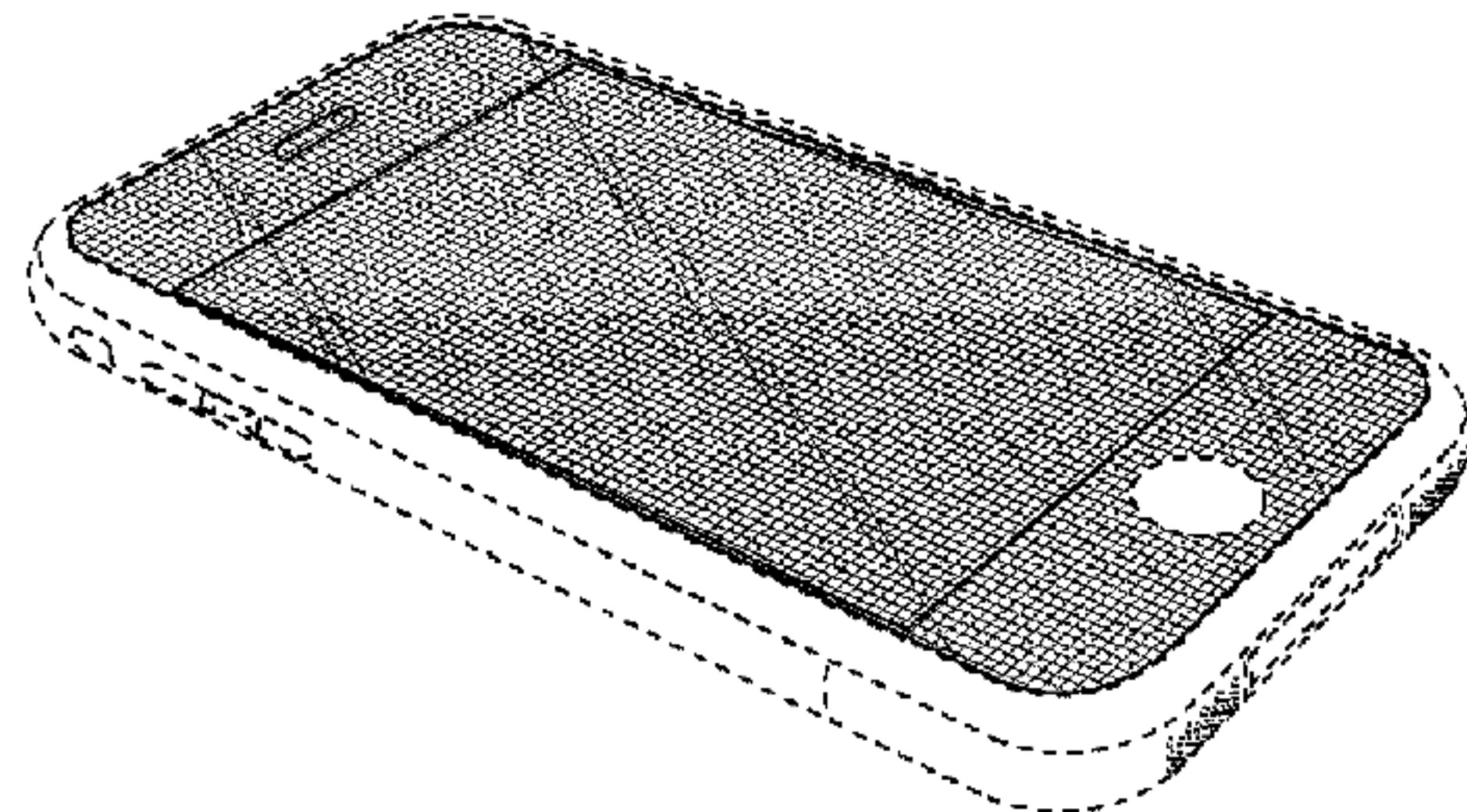
e.g., formulas, processes, proprietary designs, strategic plans, customer list, etc

Standard for IP Protection

| | Copyright | Patent | Trademark | Trade Secret |
|----------|---|--|---|---|
| Standard | <ul style="list-style-type: none">• Originality | <ul style="list-style-type: none">• Usefulness/Utility• Novelty• Non-obviousness | <ul style="list-style-type: none">• Distinctiveness | <ul style="list-style-type: none">• Information not generally known or available;• Reasonable efforts to maintain secrecy• Commercial value |

Standard for Patent Protection

Smartphone Design: black rectangle shape with rounded corner ?

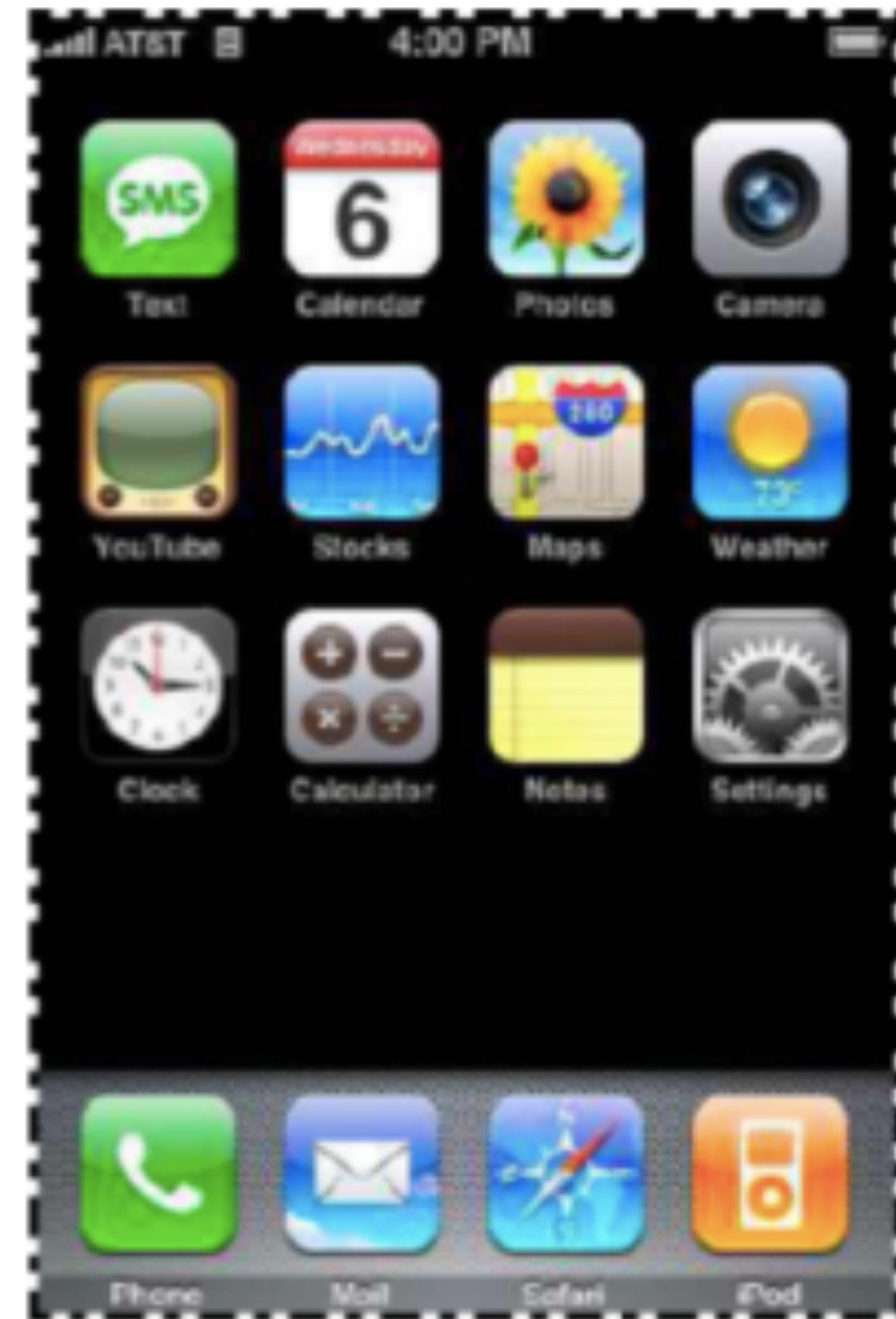


Patent

- Usefulness/Utility
- Novelty
- Non-obviousness

Standard for Patent Protection

Smartphone Design: graphical layout of icons on the phone



Patent

- Usefulness/Utility
- Novelty
- Non-obviousness

Patent War

Apple vs. Samsung

Search

Bloomberg

Sign In

Technology

Photographer: Takaaki

Apple, Samsung Declare Peace in Biggest Modern Tech Patent Fight

By Susan Decker, Mark Gurman, and Joel Rosenblatt

28 June 2018, 2:32 AM SGT Updated on 28 June 2018, 6:29 AM SGT

- Battle started with Steve Jobs's threat to go 'thermonuclear'
- Companies waged global litigation over smartphone technology

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In this article

The biggest patent battle of the modern technology world has finally come to an end after seven years.

Apple Inc. and Samsung Electronics Co. told a judge Wednesday they'd resolved the first filed but last remaining of the legal disputes that once spanned four continents. The string of lawsuits started in 2011 after Steve Jobs, Apple's co-founder who died that year, threatened to go "thermonuclear" on rivals that used the Android operating system. The companies didn't disclose the terms of the accord.

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Software and Copyright

Software

Consists of lines of programming code (or codified thought), is not exactly expressed, or “fixed” in a tangible medium as literary works are.

To complicate matters, a program’s code takes many forms: source code, object code, and the final executable code. Although software programs seem to be like inventions that could be patented, they also resemble algorithms, which, like mathematical ideas or “mental steps,” are not typically eligible for patent protection.

Conceptual muddles and confusion surrounding the nature of programming code

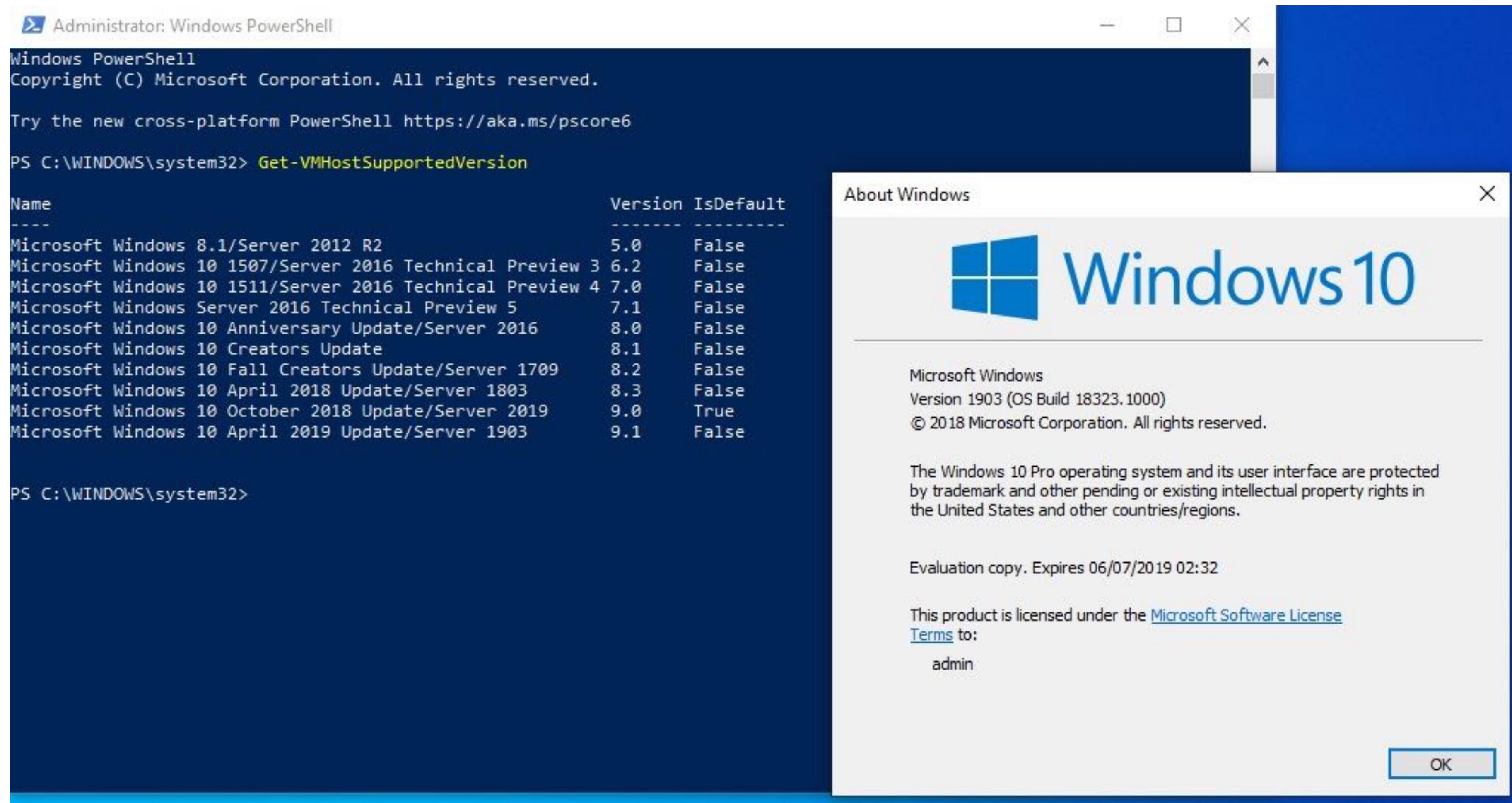
Copyright Law

Has proven to be extremely flexible in covering new technologies

e.g., softwares, video games, multimedia works, and webpages

Software and Copyright

Example



The screenshot displays two windows side-by-side. On the left is a Windows PowerShell window titled 'Administrator: Windows PowerShell'. It shows the following text:

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\WINDOWS\system32> Get-VMHostSupportedVersion
Name                Version IsDefault
----                -----  -----
Microsoft Windows 8.1/Server 2012 R2      5.0    False
Microsoft Windows 10 1507/Server 2016 Technical Preview 3 6.2    False
Microsoft Windows 10 1511/Server 2016 Technical Preview 4 7.0    False
Microsoft Windows Server 2016 Technical Preview 5 7.1    False
Microsoft Windows 10 Anniversary Update/Server 2016 8.0    False
Microsoft Windows 10 Creators Update        8.1    False
Microsoft Windows 10 Fall Creators Update/Server 1709 8.2    False
Microsoft Windows 10 April 2018 Update/Server 1803 8.3    False
Microsoft Windows 10 October 2018 Update/Server 2019 9.0    True
Microsoft Windows 10 April 2019 Update/Server 1903 9.1    False

PS C:\WINDOWS\system32>
```

On the right is the 'About Windows' dialog box. It features the Windows logo and the text 'Windows 10'. Below it, it displays:

Microsoft Windows
Version 1903 (OS Build 18323.1000)
© 2018 Microsoft Corporation. All rights reserved.

The Windows 10 Pro operating system and its user interface are protected by trademark and other pending or existing intellectual property rights in the United States and other countries/regions.

Evaluation copy. Expires 06/07/2019 02:32

This product is licensed under the [Microsoft Software License Terms](#) to:
admin

OK

Software Patent

A software patent claims as its invention some feature or process embodied in instructions executed by a computer.

Prior to 1981 in USA, the courts regularly turned down such patent requests holding the position that a computer program is a mathematical algorithm, not a process or a machine. After that, more software patents are granted.

Europe Patent Convention expressly excludes computer program *per se* from the patentable subject matter.

Varies in different countries.

Software Patent

A software patent claims as its invention some feature or process embodied in instructions executed by a computer.

Tips when considering patent protection of software-related inventions.

1. Do you really need a patent for your software-related invention? Think twice before preparing a patent application.
2. What do you wish to protect from your competitors? Identify the core part of your innovation.
3. Is your innovation patentable? Not all types of software-related innovation can enjoy patent protection.
4. Do you need to protect your innovation abroad? Patentability requirements are not always the same in each country.
5. Consult an intellectual property expert who is familiar with the relevant national law and practice.

https://www.wipo.int/sme/en/documents/software_patents_fulltext.html

Singapore IP Protection Framework

Singapore Acts

Copyright Act

Patent Act

Trademark Act

Relevant law for confidential information

Resources

Intellectual Property Office of Singapore (IPOS)

<https://www.ipos.gov.sg/understanding-innovation-ip/other-ips/confidential-information-trade-secrets>

| | | |
|--|---|--|
| Patent Protect your invention that is new, original and useful, with a patent. Discover More | Trade Mark Distinguish your brand from others through a trademark. Discover More | Design Protect the visual appearance of your product by registering a design. Discover More |
| Copyright Works such as music, books, art, videos and more, are protected by copyright. Discover More | Other IPs Other IPs include plant varieties, geographical indications and trade secrets. Discover More | |

IP Protection Duration



IP Protection Tension

Tension

The need to reward the creators of intellectual property by giving them exclusive rights to their ideas

VS

the need to disseminate these ideas as widely as possible to benefit the public



"If I have seen further than others, it is by standing upon the shoulders of giants."

Sir Isaac Newton

IP Protection Duration

General duration time

Copyright Law

Copyright shall continue to subsist until the expiration of **70 years** after the expiration of *the calendar year in which the author of the work died*.

If, before the death of the author of a literary, dramatic or musical work is not published, the copyright in the work shall continue to subsist until the expiration of **70 years** after the expiration of the calendar year in which the work is first published, performed in public, or broadcast, or included in a cable programme, or records of the work are first offered or exposed for sale to the public, whichever is the earliest of those events to happen.

"works for hire": minimum of 95 years after publication or 120 years after creation, whichever endpoint is earlier

IP Protection Duration

U.S.A

Copyright Term Extension Act 1998



- a.k.a Sonny Bono Copyright Term Extension Act, Sonny Bono Act, or (derisively) the **Mickey Mouse Protection Act**
- Under the **1909 Copyright Act**, the character was entitled to **56** years of copyright protection before it would enter the public domain. Mickey Mouse made his first appearance in **1928** in the film "Steamboat Willie." Under the 1909 Copyright Act, the character would enter the public domain in **1984**.
- In 1978, 6 years before Mikey Mouse IP protection expires, Congress radically reshaped the Copyright Act in an effort to have it **conform with regulations in Europe**. Among other changes, an extension to copyrighted works came with 19 years added to the previous terms. Mickey Mouse would now be protected for **75** years in total. In other words, the character would enter the public domain in 2003.
- In 1998, 5 years before Mikey Mouse IP protection expires The Copyright Act extended these terms to life of the author plus **70 years** and for works of corporate authorship to **120 years after creation or 95 years after publication, whichever end is earlier**. Copyright protection for works published before January 1, 1978, was increased by 20 years to a total of 95 years from their publication date. In other words, he character would enter the public domain in 2023.

IP Protection Duration

U.S.A

The Washington Post
Democracy Dies in Darkness

The Switch

15 years ago, Congress kept Mickey Mouse out of the public domain. Will they do it again?

By **Timothy B. Lee**
October 25, 2013

For most of history, a great character or story or song has passed from its original creator into the public domain. Shakespeare and Charles Dickens and Beethoven are long dead, but Macbeth and Oliver Twist and the Fifth Symphony are part of our shared cultural heritage, free to be used or re-invented by anyone on the planet who is so inclined. But 15 years ago this Sunday, President Clinton signed the Sonny Bono Copyright Term Extension Act, which retroactively extended copyright protection. As a result, the great creative output of the 20th century, from Superman to "Gone With the Wind" to Gershwin's "Rhapsody in Blue," were locked down for an extra 20 years.

It was a windfall to the families and corporations that owned these lucrative copyrights. But it meant these iconic works would be off-limits to those who wanted to reuse or reinvent them without permission. And hundreds of thousands of lesser-known works aren't available at all, because there's no cost-effective way to obtain permission to republish them.

The copyright extension Clinton signed will expire in five years. Copyright holders like the Disney Corp. and the Gershwin estate have a strong incentive to try to extend copyright protection yet further into the future. But with the emergence of the Internet as a political organizing tool, opponents of copyright extension will be much better prepared. The question for the coming legislative battle on copyright is who will prevail: those who would profit from continuing to lock up the great works of the 20th century, or those who believe Bugs Bunny should be as freely available for reuse as Little Red Riding Hood.



Without the 1998 Copyright Term Extension Act, the book *Gone with the Wind* would have fallen into the public

IP Protection Duration

Patent Law

A patent continues in force until the end of the period of **20** years beginning with the date of filing the application for the patent or with such other date as may be prescribed. Some extensions might be provided for certain types (e.g., extension up to 5 years for drugs, medical devices and additives)

Trademark Law

A trade mark shall be registered for a period of **10** years from the date of registration.

Trade Secret Law

There are no registration processes for confidential information, and there is **no time limit** within which the confidential information is protected.

Singapore IP Protection Duration

Singapore Context

| | Copyright | Patent | Trademark | Trade Secret |
|---------------------|--|------------------------------|---|---------------|
| Protection Duration | <ul style="list-style-type: none"> Literary, dramatic, musical and artistic works: 70 years from the end of the year in which the creator died. Specifically for photographs, or if the work is published after the death of the author, it lasts for 70 years, from the end of the year in which the work was first published. Published editions of literary, dramatic, musical and artistic works: 25 years from the end of the year in which the edition was first published. Sound recordings: 70 years from the end of the year in which the sound recording is first published. Broadcasts and cable programmes: 50 years from the end of the year of making the broadcast or cable programme. Performances: 70 years from the end of the year of the performance. | 20 years after first filling | 10 years only trademark can be renewed | No time limit |



IP Infringement and Fair Use

Exclusive Rights of a IP Holder

| | Copyright | Patent | Trademark | Trade Secret |
|------------------|--|--|---|--|
| Exclusive Rights | <ul style="list-style-type: none">• To make copies• To produce derivative works, such as translations into other languages or movies based on books• To distribute copies• To perform the work in public (e.g. music, plays)• To display the work in public (e.g. artwork, movies, computer games, video on a Web site) | <ul style="list-style-type: none">• Making• Using• Selling | <ul style="list-style-type: none">• Using | <ul style="list-style-type: none">• Confidential information for own usage |

Fair Use Doctrine

Balance scheme

Copyright law tries to strike a balance between protecting an author's rights and enabling public access to copyright works (broader interests of society)

Fair use doctrine

It allows the use of copyrighted material without first seeking permission. every author or publisher may make limited use of another person's copyrighted work for purposes such as criticism, comment, news, reporting, teaching, scholarship, and research.

Four factors to consider:

1. the **purpose & nature** of the use (commercial, non-profit educational, etc)
2. the **nature** of the copyrighted work (published vs. unpublished)
3. the **amount** and significance of portion used
4. the **effect of use** on market for or value of copyrighted work

Computing and Intellectual Property

How can we determine whether certain action is infringing copyright or it is fair use? (cont.)

Not straightforward process, disagreements over whether or not a work is faire use or not lead to litigation.

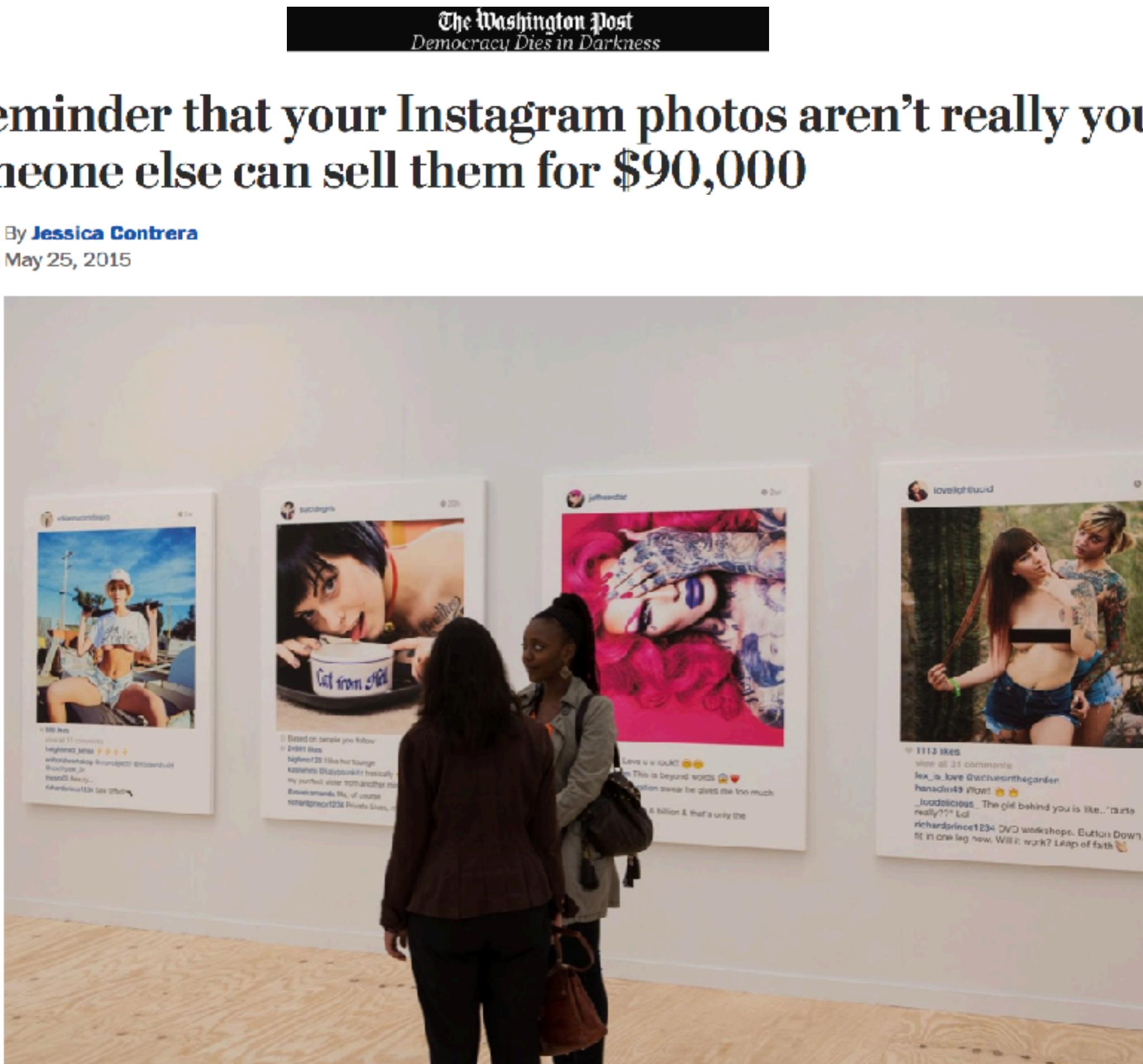
IPOS: <https://www.ipos.gov.sg/understanding-innovation-ip/copyright/exceptions>

Fair Use Analysis

| | First Factor What is the purpose and character of the use? | Second Factor What is the nature of the work to be used? | Third Factor How much of the work will be used? | Fourth Factor What is the effect of the use on the market for the work? | It's... If... |
|--------------------------|--|---|---|---|---|
| Favors Fair Use | <input type="checkbox"/> Nonprofit <input type="checkbox"/> Educational <input type="checkbox"/> Personal <input type="checkbox"/> Teaching <input type="checkbox"/> Criticism & Comment <input type="checkbox"/> Scholarship & Research <input type="checkbox"/> News Reporting | <input type="checkbox"/> Fact <input type="checkbox"/> Published | <input type="checkbox"/> Small Amount | <input type="checkbox"/> No Effect <input type="checkbox"/> Licensing/Permissions Unavailable | Fair use More than likely fair use May be fair use Not fair use |
| Favors Permission | <input type="checkbox"/> Commercial <input type="checkbox"/> For Profit <input type="checkbox"/> Entertainment | <input type="checkbox"/> Creative <input type="checkbox"/> Unpublished | <input type="checkbox"/> Large Amount <input type="checkbox"/> Heart of the Work | <input type="checkbox"/> Major Effect <input type="checkbox"/> Work is Made Available to the World | 4 factors favor fair use 3 factors favor fair use 2 to 2 tie. You have to assess the risk 1 factor favors fair use |

https://www.lib.purdue.edu/ucd/CopyrightBasics/fair_use.html#analysis

Copyright and Fair Use Case #1



Richard Prince's Instagram screenshots at Frieze Art Fair in New York. (Marco Scozzaro/Frieze)

[https://www.washingtonpost.com/news/arts-and-entertainment/
wp/2015/05/25/a-reminder-that-your-instagram-photos-arent-
really-yours-someone-else-can-sell-them-for-90000/?
noredirect=on&utm_term=.fddf8520b20e](https://www.washingtonpost.com/news/arts-and-entertainment/wp/2015/05/25/a-reminder-that-your-instagram-photos-arent-really-yours-someone-else-can-sell-them-for-90000/?noredirect=on&utm_term=.fddf8520b20e)

Copyright and Fair Use Case #2



World Business Markets Politics TV

TECHNOLOGY NEWS NOVEMBER 14, 2013 / 11:05 PM / 5 YEARS AGO

Google defeats authors in U.S. book-scanning lawsuit

Jonathan Stempel

5 MIN READ



NEW YORK (Reuters) - Google Inc on Thursday won dismissal of a long-running lawsuit by authors who accused the Internet search company of digitally copying millions of books for an online library without permission.

U.S. Circuit Judge Denny Chin in Manhattan accepted Google's argument that its scanning of more than 20 million books, and making "snippets" of text available online, constituted "fair use" under U.S. copyright law.

Chin wrote that the scanning makes it easier for students, teachers, researchers and the public to find books, while maintaining "respectful consideration" for authors' rights.

He also said Google's digitization was "transformative," meaning it gave the books a new purpose or character, and could be expected to boost rather than reduce book sales.

The judge noted that Google takes steps to keep people from viewing complete copies of books online, including by keeping some snippets from being shown.

"In my view, Google Books provide significant public benefits," Chin wrote. "Indeed, all society benefits."

Reversed Engineering

The process of taking something apart in order to understand it, build a copy of it, or improves it.

Applicable for both hardware and software

Reverse engineering of software involves analysing it to create a new representation of the system in a different form or at a higher level of abstraction.

Software license agreements increasingly forbid reverse engineering.

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- work around any technical limitations in the software;
- **reverse engineer, decompile or disassemble the software**, except and only to the extent that applicable law expressly permits, despite this limitation;
- make more copies of the software than specified in this agreement or allowed by applicable law, despite this limitation;
- publish the software for others to copy;
- rent, lease or lend the software; or
- transfer the software or this agreement to any third party.

IP Protection Confusion



Intellectual Property Protection

Misconceptions

1. Do you automatically have IP protection when you create original work? In other words, do you need to register your original work?

copyright: no, no need apply
a work becomes copyrighted when it is fixed in a tangible medium of expression
Singapore no copyright notice or registration office
patent: yes, need apply
trademark : yes, need apply

Intellectual Property Protection

Misconceptions

2. Do you automatically own the copyright of the work that you authored?

no ownership not equals authorship
owns copyright except:
employees create work, employer owns
journalists: employer has right to publish work

Intellectual Property Protection

3. Can copyright or patent be transferred to others?

yes

4. Can copyright or patent be licensed to others?

yes

Intellectual Property Protection

5. How to avoid patent infringement in product design and manufacturer in an efficient way?

cross licensing agreements

large software companies agrees not to sue each other over patent infringement

Recommended Materials

Copyright Term Extension Act, https://en.wikipedia.org/wiki/Copyright_Term_Extension_Act

Disney vs. The Public Domain: How Mickey Mouse Continues to Protect His Copyright, <https://lucentem.com/2018/12/05/disney-vs-the-public-domain-how-mickey-mouse-continues-to-protect-his-copyright/>

Tavani, Herman T. 2007. “Balancing Intellectual Property Rights and the Information Commons: A Lockean Analysis.” In J. Weckert, ed. Computer Ethics. Aldershot, UK: Ashgate, pp. 85–94.

Merges, Robert. Justifying Intellectual Property. Cambridge, MA: Harvard University Press, 2011.