Topic 15: DRM

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Outline

• Copyright & Fair Use
• What is DRM?
• Computer Game DRM
• Criticisms of DRM
Legal Jargon

- **Copyright**: protects authored work
  - *Books, articles*

- **Patent**: protects ideas, designs
  - *Machines, devices*

- **Trademark**: protects brand names, logos
  - *Nike swoosh (worth $26 billion)*
History of Copyright

• 1787: The Congress shall have Power… To promote the Progress of Science and useful Arts, by securing for limited Times to Author and Inventors the exclusive Right to their respective Writings and Discoveries.

• United States Constitution, Article 1, Section 8
History of Copyright

• 1845: first mention of “Intellectual Property” in US court decision

• **IP**: certain creations of the intellect (e.g. an invention) are assigned to a designated owner

• More expansive and exclusive than rights associated with traditional physical goods
History of Copyright

• Copyright Act of 1976
  • *Major copyright revision*
  • *Establishes new lengths of copyright protection*
  • *Covers unpublished works*
  • *Fair Use added (previously common law)*
Fair Use

Fair use of a copyrighted work, including such use by reproduction in copies or phonorecords or by any other means specified by that section, for purposes such as criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship, or research, is not an infringement of copyright.
Fair Use Test

1. Purpose and character of use
   Advances knowledge, or progress the arts through addition of something new; e.g. nonprofit education vs. commercial use

2. Nature of copyrighted work
   Fact vs. fictional: facts/ideas not protected

3. Amount and substantiality
   Portion used in relation to the whole

4. Effect of the use on potential market for/value
   Prove use as direct market substitute, or interference in licensing market
BetaMax Decision

• BetaMax records TV shows
• 1976: Universal sues Sony
• 1984: Supreme Court decision
• Time shifting: recording TV to view later
  • Deemed “Fair Use”
• Technology that could be used to commit crime was not criminal technology if exist “substantial non-infringing uses”
More Fair Use

• 1983: School system taping shows and distributing throughout system?
  • Unfair use

• Other examples: commentary, search engines, criticism, parody, news reporting, research, and scholarship
  • Criticism reduces market value, but protected
DMCA

• 1998: **Digital Millennium Copyright Act**
• Unlawful to break encryption
• Outlaws manufacture, sale, or distribution of code-cracking devices used to illegally copy software
  • *Except for educational or security purposes*
• Criminal to bypass DRM, even if no copyright infringement occurs
DRM

• Digital Rights Managements
  • *Any effort made to protect data from copying*

• Intends to:
  • *Prevent direct duplication (e.g. CD copying)*
  • *Prevent loading on multiple computers*

• May also
  • *Prevent older devices from playing media*
  • *Install “spyware programs”*
  • *Introduce flaws in Operating Systems making computers vulnerable to exploit*
DRM

• Regulating access to copyright material
•  *Protects against unauthorized duplication and distribution of copyright media*

• Controls how you use your media
•  *Limits number of times it can be used*
•  *Limits number of devices it can be used on*
•  *Limits amount of time it can be used*
Earliest: Encryption

• Locking music CDs, movie DVDs, etc. with an encryption key
  •  *Only official CD- or DVD-player companies given key*
  •  *Very easy to defeat*

• Region blocking

•  *CDs in one region (more prone to piracy) can’t be sold in another*
Sony BMG Scandal

• 2000: Sony Pictures Entertainment VP
  • Steve Heckler: Industry take whatever steps to protect its revenue, “no matter what”
  • Surely, that’s taken out of context!

• Quote:
Sony BMG Scandal

The industry will take whatever steps it needs to protect itself and protect its revenue streams... It will not lose that revenue stream, no matter what... Sony is going to take aggressive steps to stop this. We will develop technology that transcends the individual user. We will firewall Napster at source - we will block it at your cable company. We will block it at your phone company. We will block it at your ISP. We will firewall it at your PC... These strategies are being aggressively pursued because there is simply too much at stake.
Sony BMG Scandal

• 2005: Sony copy protection & XCP
  • XCP: eXtended Copy Protection
  • Some installed even if “no” to EULA
  • Some not mentioned in EULA
  • So intrusive, could be used as a rootkit
  • Masked, backdoor access to your computer
Computer Game DRM

• **SafeDisc** (for Windows CDs)
• Not terribly invasive, easier to bypass
• *Just disc protection, not installed software*
• *2007: Windows driver vulnerability (1 month)*
Computer Game DRM

• **SecuROM** (Sony)

• Maximum security, many problems

  • *Sometimes fails, doesn’t work with certain software installed, hardware incompatibility*

• *NOT removed when game uninstalled*

• *BioShock (2007) two-activation limit*

  • Increase by calling phone # (incorrect one printed)

• *Mass Effect (2008) reactivate every 10 days*

• *Spore (2008) internet activation → pirated*
Computer Game DRM

- **StarForce** (Russian software developer)
- Most effective, very unpopular
- Record for longest time to ever crack a game (424 days, *Splinter Cell: Chaos Theory*)
- Also installed content with game that is NOT uninstalled when game is
- Claims of disk drive performance loss
- Consumers prefer SecuROM? (via polls)
Online Authentication

- Popular technique to combat game piracy
- Online distribution
  - Valve Steam
  - EA Origin
  - Games for Windows LIVE
- Always-On DRM
  - Constantly checks your version online
Criticisms of DRM

- Electronic Frontier Foundation (EFF)
  “Corporations claim that DRM is necessary to fight copyright infringement online and keep consumers safe…But there’s no evidence that DRM helps fight either of those. Instead DRM helps big business stifle innovation and competition.”
Criticisms of DRM

1. DRM systems don’t work
2. DRM systems are bad for society
3. DRM systems are bad for business
4. DRM systems are bad for artists
Criticisms of DRM

• Mainly:

No longer buying content, just renting or borrowing it for a fee. (Since content is still owned/controlled by someone else.)
Alternatives

• DRM-free
• *Do not utilize DRM in any products*
• Cheap pricing
• *Lower barrier to entry for goods*
• Crowdfunding
• *Consumers help pay for development*
• Cloud/subscription-based
• *Pay low subscription fee for access*
Irony

• 2009: Amazon deletes copies of George Orwell’s 1984 and Animal Farm from Kindles without user consent
  • Third party added to Kindle without rights to the book
  • Amazon refunds cost
  • 1984… Big corporation controlling content without permission… Yay for irony!
Relevant Acronyms

- RIAA: Recording Industry Association of America
- MPAA: Motion Picture Association of America
- EFF: Electronic Freedom Foundation