

# Copyright, Code and Creativity A Note of Caution About DRM in JPEG

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### **Outline**

### **Problems with DRM**

Technical and Security Problems Legal and Social Problems

### Alternatives to DRM

Technical and Security Alternatives Legal and Social Alternatives

### Introduction

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- This would not be effective at protecting intellectual property rights in images and would have unwanted side-effects
- Most other objectives of the JPEG Privacy & Security activity can be achieved without resorting to DRM

### **Problems with DRM**

**Alternatives to DRM** 



### Cryptographers Don't Believe That DRM Works

"Digital files cannot be made uncopyable, any more than water can be made not wet."

- Bruce Schneier
  - To allow use of DRM-protected works requires distributing both the "lock" and the "key" to the user
  - It only ever takes time for the key to be extracted!

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  - To allow use of DRM-protected works requires distributing both the "lock" and the "key" to the user
  - It only ever takes time for the key to be extracted!
  - At worst, the analog hole can always be used



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- Allows anti-competitive conduct like region coding
- Even archives often (wrongly) claim copyright-like rights in public domain images





### DRM Doesn't Achieve Standardization Goals

DRM does not actually protect media, but it does:

- Restrict media from being used with free and open source tools.
- Make interoperability more difficult to engineer.
- Expose coders and researchers to additional legal risk.
- Extend a bad precedent for the extension of DRM to other forms of digital content.



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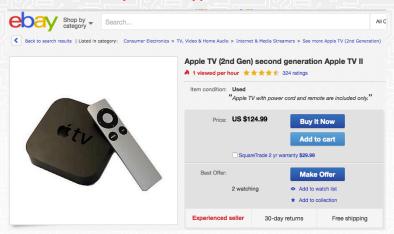
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### EME standardization at W3C

EME has not produced a reliable solution – it's a support/implementation nightmare that members can't make sense of.

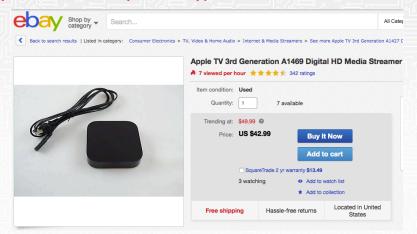
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 The end-result: long-lived critical vulnerabilities that are never reported for fear of prosecution

# **DRM Infringes Freedom of Expression**

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- Dmitry Sklyarov prosecution
  - A Russian programmer was charged with violating the DMCA for speaking at DEF CON about breaking e-book encryption (even though this was legal in Russia!)

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### The bottom line:

DRM is considered antithetical to the public interest

**Problems with DRM** 

**Alternatives to DRM** 

# Cryptography

- Many use cases for JPEG Privacy & Security only require signing not encrypting metadata
  - Integrity of an original version of the image
  - Tracking of modifications
  - Integrity of the metadata (date, copyright)
- For encryption of the entire image file to prevent access, common container formats for this exist already
- For encryption of plain text metadata only, this can be done without locking the whole image

# **Rights Management Information**

- Even without technical protection for metadata, the law already limits removal of rights information
  - InfoSoc Directive Article 7(1)(1), DMCA Section 1202
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- Watermarking
- Stegonography



### Licensing

- Good (if unsurprising) news — licenses are enforceable
- All active Creative Commons image licenses include an Attribution condition



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### Recommendations.

- 1 Online platforms should be encouraged to preserve image metadata (the law may even require this)
- 2 Those concerned with attribution should utilize an appropriate license that allows reuse with attribution
- 3 JPEG Privacy & Security group should work on extensions to allow signing of image metadata
- 4 JPEG Privacy & Security group should not create a DRM-protected image format that inhibits access



### **Summary**

IPEG Privacy & Security has some worthwhile aims

- Validating (not preserving) image and metadata integrity
- Encrypting plain text metadata for protection of privacy

It also has some which are probably not achievable

- Protecting intellectual property rights
- Preserving the economic value of protected images

For those that are not achievable, alternatives exist

- Existing protection of copyright law and license terms
- For preventing copying, encrypt the image in a container

### **Questions?**

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