DRM in HTML5

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What is the W3C?

- The World Wide Web Consortium (W3C) is the main international standards organization for the WWW
- They exist today as a browser-neutral party
- The WWW was invented by W3C director Tim Berners-Lee
- The W3C is working to release a stable HTML5 Recommendation by the end of 2014

What is DRM?

- Digital Rights Management
- ...also known by end-users as

  Digital Restrictions Management
- It describes a method of hiding a decryption key from the user on his/her computer in a proprietary blob which communicates with a remote server, so that only the blob can decode content for use with whatever restrictions the server tells the blob to enforce.
- Restrictions might include limitations on viewing, copying, printing, and altering.
- In the USA (and many other countries via Free Trade Agreements), it is illegal to bypass this through technical measures due to the Digital Millennium Copyright Act.

Isn't DRM on the way out?

- Games: Digital distribution services - Good Old Games, Humble Indie Bundles, various publishers of games sold on physical media...
- E-books: NoStarch, O'Reilly, PacktPub, SitePoint, Smashwords, various magazines...
- Music: Even iTunes stopped using DRM
- Flash continues to lose support (not available for new Android devices, not available on iOS, no new GNU/Linux releases.
- Only ~0.3% sites use Silverlight.

Why haven't we made inroads to video streaming services yet?

Why DRM for video?

- Arguably, the primary purpose of DRM in video is not to prevent copyright violations.
- The purpose of DRM is to give content providers leverage against creators of playback devices.
- This is useful to enforce “unskippable” sections of content, prevent multiplexing, and force you to purchase content multiple times for different devices. The ultimate goal is, of course, to increase revenue streams.
- Contrast this with games, where there is no alternate device that can run the game without skippable content (technical challenges, lack of standards for implementing such content, etc.), multiplexing doesn't make sense, and games are typically incompatible with different types of devices by their nature (eg. a PS3 won't run PC games)
- Interesting post on this topic here: https://plus.google.com/107429617152575897589/posts/iPmatxBYuj2

W3C terminology of proposed DRM facilitating technology in HTML5

EME = Encrypted Media Extensions

think DRM hooks or an API, which interface to

CDM = Content Decryption module

- proprietary DRM plug-ins, effectively, which the W3C is not standardizing

DRM in HTML5, clarified

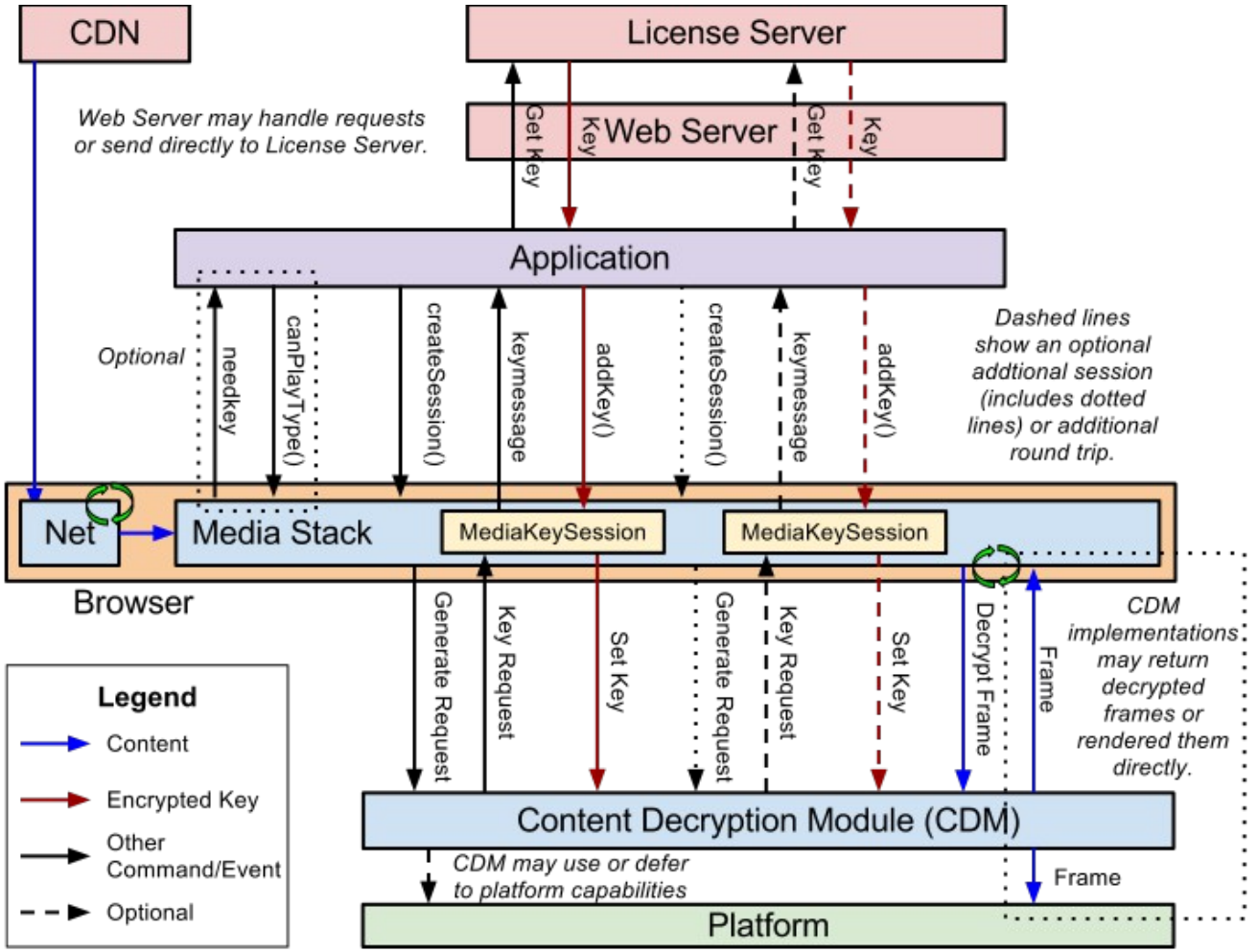
So now, you understand what is meant when the W3C says:

“No "DRM" is added to the HTML5 specification”

https://dvcs.w3.org/hg/html-media/raw-file/eme-v0.1/encrypted-media/encrypted-media.html

Technically this is true. It is also technically true that without DRM, there is no point in EME specifications at all.

Technical Diagram



Source: http://www.w3.org/TR/2013/WD-encrypted-media-20130510/

Encrypted Media Extensions, W3C First Public Working Draft 10 May 2013

How does this benefit us?

- No need for traditional proprietary plug-ins for DRM video playback such as Silverlight, Flash or Java
- Some argue that big media companies will never support non-DRM content...

  (lengthy rebuttal here: http://blogs.computerworlduk.com/open-enterprise/2013/02/bbc-attacks-the-open-web-gnulinux-in-danger/index.htm)

Problems and concerns

- CDMs must be proprietary by their nature.

  “Transferring data from Alice to Bob, when Bob's not allowed to know how to decrypt it, requires Bob's device to have a secret that Bob doesn't have access to.”

  http://www.w3.org/community/pua/wiki/Digital_Rights_Management

  DRM restricts the user by keeping secret decryption keys.
- Instead of having one proprietary plug-in to stream DRM video from many sites (eg. Silverlight), we now may require a separate proprietary CDM for every streaming video site.
- CDM with alternate rendering engine (why stop at audio/video when we can DRM everything?)

  https://www.w3.org/Bugs/Public/show_bug.cgi?id=20960
- How will browsers support installing the CDM? Will it be as obvious as installing a browser extension, or as seamless as installing a cookie? Super-cookies, anyone?
- Binary compatibility - GNU/Linux on PPC? Free-BSD on sparc64? Or will we all need to run Java – thus defeating the point?
- By having support for DRM in a standard, it effectively endorses and encourages it. Companies may be tempted to ship DRM content when they would not have otherwise.

Who is proposing it

- Netflix* (similar business model to Quickflix in Australia)
- Google*
- BBC
- Microsoft*

- Apple, Opera and Mozilla have been strangely quiet...

*Editors of the W3C First Public Working Draft

Why Netflix?

- Netflix doesn't want to write a specific app for every kind of mobile and desktop device.
- They do not want to distribute video without DRM – even when the content owners don't want it!

  Nina Paley: My Decision To Turn Down Netflix Due To DRM, https://www.techdirt.com/articles/20100423/1318119159.shtml
- However this could possibly be related to contractual obligations with major content producers, or the overhead in programming an exception for such movies in their streaming service application.

Why Google?

- Gets more content into the browser (reduces chances of people switching away to dedicated apps)
- Seen as an innovator (they shipped native Netflix support first)
- Selling point for their Chromebook
- Forces people to use the Chrome browser to watch Netflix, which helps the browser compete

Why Microsoft?

- CDMs can make calls to the operating system to support playback (eg. to obtain necessary codecs or perform security checks)
- Possibly, Microsoft could use EME to encourage content delivery services to take advantage of their platform (or perhaps even including a CDM by default in Windows). No required manual plug-in installation would be required by the end-user.
- This method could be used to discourage content delivery services from creating additional CDMs to support other operating systems (where far more work might be necessary).
- Maybe they intend to create a streaming media server solution?

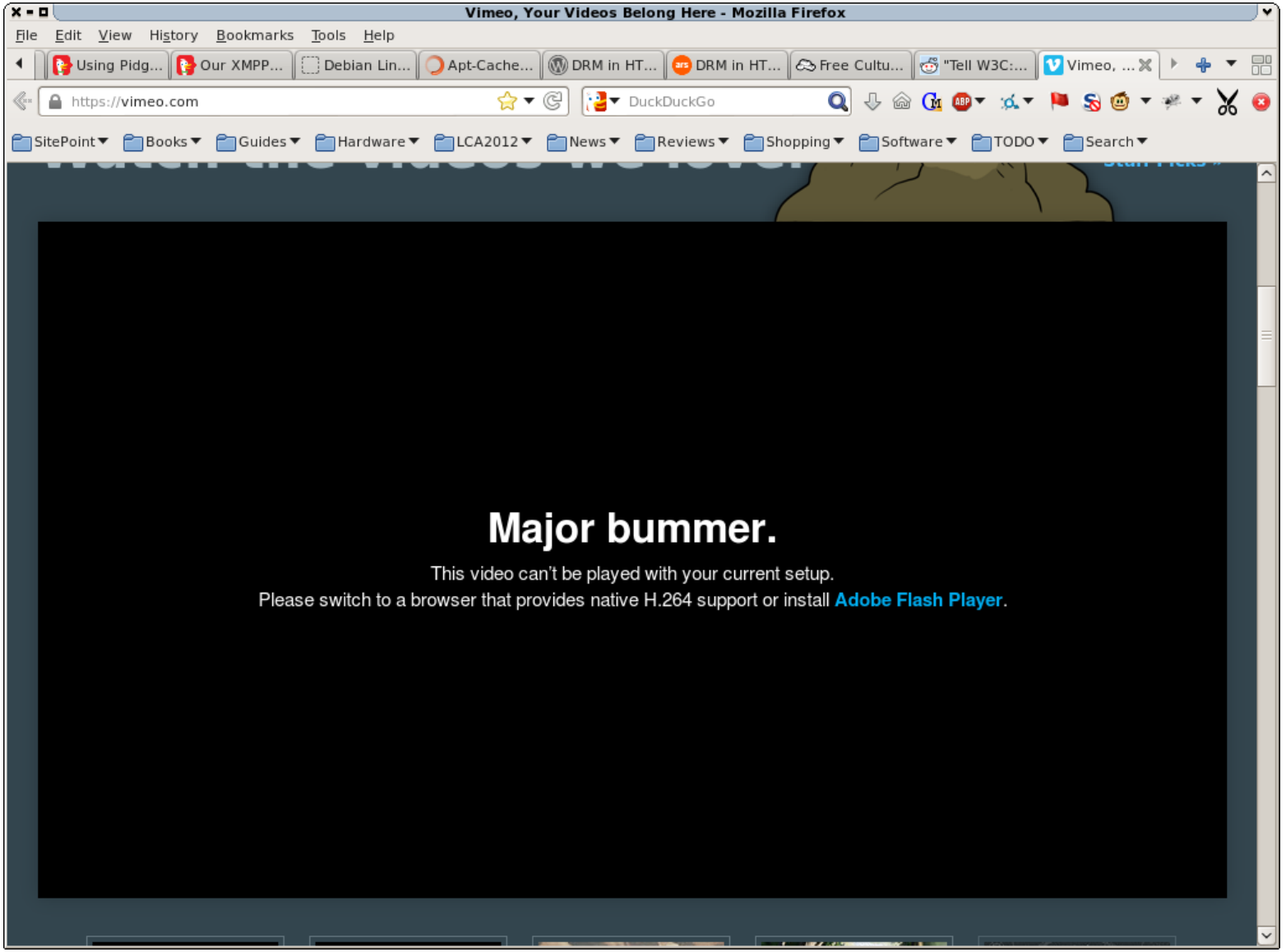
What's in it for the W3C?

- Ability to search and index content more easily than proprietary alternatives. In their mind they seem to think that this is helping to make the web more “open”.
- The desire to appear relevant in the face of giants like Google and Microsoft.
- The desire to replace the Flash feature set, and render Flash obsolete (apparently W3C sees Flash's DRM functionality as a feature).

Which is the important browser?

- Hint: It's the one that isn't controlled by commercial interests, but has enough users to influence a decision.
- If all browsers adopt the W3C draft, it doesn't matter what the EFF, FSF or even the W3C do.

Mozilla must not cave (like last time)



When is this going to happen?

- It's already here. See the *New Samsung Chromebook*
- W3C have released a first public working draft
- In other words, it would seem “very soon” if W3C decide to endorse it

Quotes regarding DRM in HTML5

- “When I first heard that Tim Berners-Lee was even considering a proposal [for EME], I felt like sitting in the corner of the room and dying”
- “If the proposal went through, I'd probably quit the Internet”
- “The W3C is now considering a proposal that would, for the first time, standardize a feature intended solely and explicitly for mistreatment of users.”

  https://www.fsf.org/blogs/rms/w3c-soul-at-stake

- “Alright, so we're agreed? We fork the W3C.”

  http://www.reddit.com/r/programming/comments/1e8iq2/w3c_insists_webdrm_is_needed_despite_raised/

  (not unprecedented – Apple, Mozilla and Opera formed the WHATWG in 2004 with the purpose of doing just that)

What can you do?

- Sign the petition
  http://www.defectivebydesign.org/no-drm-in-html5
- Support browsers from vendors other than Google and Microsoft
- Join the W3C public-html-media@w3.org mail list

  http://lists.w3.org/Archives/Public/public-html-media/

FreedomHTML

- FreedomHTML is an initiative to develop and maintain a profile of HTML5 that is aligned with freedom principles and in particular the need to protect the fundamental rights of Internet users.
- http://freedomhtml.org/

Links

- Latest W3C Encrypted Media Extensions draft
  http://www.w3.org/TR/encrypted-media/

- EEF: Defend the Open Web: Keep DRM Out of W3C Standards
  https://www.eff.org/deeplinks/2013/03/defend-open-web-keep-drm-out-w3c-standards

- Defective by Design

  http://www.defectivebydesign.org/no-drm-in-html5