Security : a snapshot from W3C

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July 2014

Menu ? 30 minutes to taste web, standard and security cocktail

(no drone, no demo, no hack, no code, just gossips)

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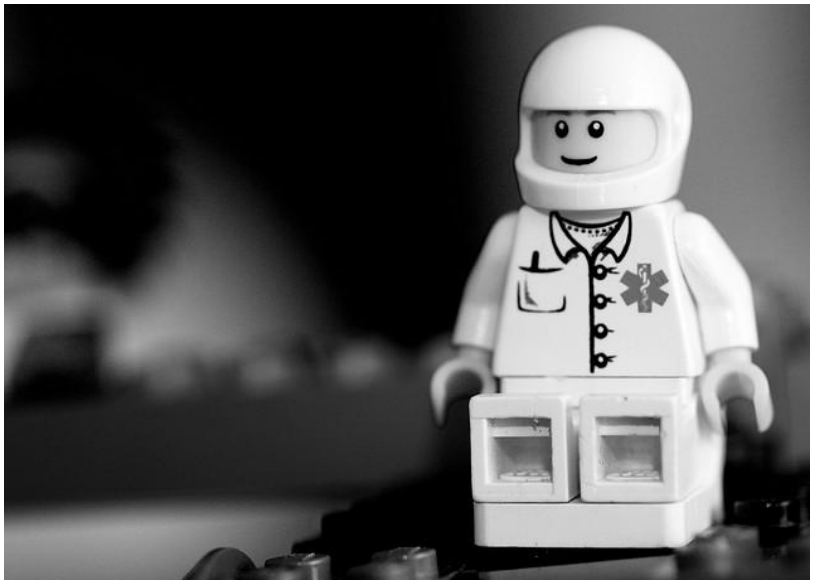
Virginie Galindo ...



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Web Security ?

Cumulating hardware, firmware, software , and servers holes

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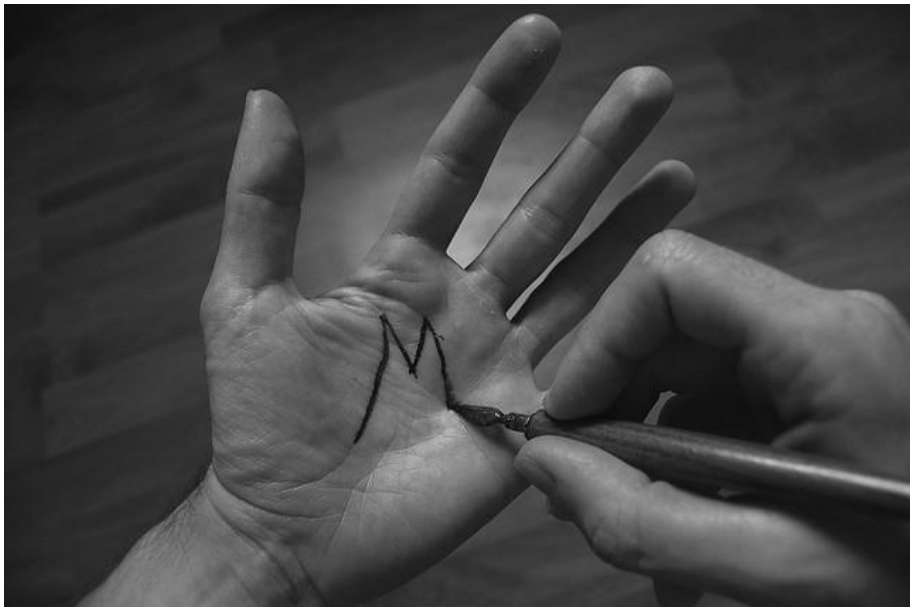
But, everyones going web...

Payment** with e-commerce, **Social** with collaborative web, **Content protection** (boooo), and **Mobile



Protecting business on the web is a real job, and a bit of coordinated effort may help...

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Standards

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Web Standards

IETF (basements)

OWASP (firemen)

W3C (browser temple)

FIDO, OASIS, ... (market specific)


MASSACHVSETTS
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AVENVE

Google, Microsoft, Mozilla, Apple, Opera, Adobe, Qualcom, Hachette, LG, Samsung, IBM, Akamai, Alcatel Lucent, Netflix, AT&T, Baidu, BlackBerry, Bloomberg, Boeing, BT, Canon, CDT, Dell, China mobile CISCO, DT, Dolby, Ebay, EFF, Facebook, Fujitsu, Genivi, Huawei, Ingenico, Intel, Irdeto, Jaguar, JQuery, KDDI, Mitsubichi, NEC, NTT, Nokia, Oracle, Pierson, Red Hat, SAP, Siemens, Sony, Standord University, Tencent, Apache Software Foundation, Toshiba, Twitter, Verisign , Verizon...

386 in total ...

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W3C scope and operations...

- All about interoperable browsers (browser feature, web apps, APIs, ...), independently from the underlying platform
- Advisory Council, Advisory Board, W3C team
- IP free (all specs can be implemented for free)
- Working in public (even on github sometimes)
- Some specs documentation are starting to be issued in CC

"[...] When submitting an extension specification to the Working Group, individuals may propose that W3C publish the document under the Creative Commons Attribution 3.0 Unported License (CC-BY) as well as the W3C Document License (Dual License). [...]"

There is a security roadmap in W3C

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Snowden effect...

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Business on the web …

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The W3C groups dealing with security

XML Security WG

Web App Sec WG

Web Crypto WG

Web Security IG

All is here http://www.w3.org/Security/wiki/Main_Page

XML Security WG – the xlm guys

This is all about syntax and process for signature and encrypted data in XML

All is done, they rock …

Web App SecWG – security core

Challenging Same Origin Policy and creating new security features

- CSP level 1, level 2, user interface security directives

http://www.w3.org/TR/CSP11/ and http://www.w3.org/TR/UISecurity/

- CORS

http://www.w3.org/TR/cors/

- SubRessource Integrity

http://www.w3.org/TR/SRI/

Web App SecWG

CORS

Recommendation

CSP 1.0

User Interface Security Directives CSP

Candidate Recommendation

SRI

CSP 1.1

Last Call Working Draft

Public Working Draft

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CORS implementation …

Cross-Origin Resource Sharing - Recommendation

Method of performing XMLHttpRequests across domains

*Usage stats:	Global
Support:	82.6%
Partial support:	7.06%
Total:	89.66%

Show all versions	IE	Firefox	Chrome	Safari	Opera	iOS Safari	Opera Mini	Android Browser	Blackberry Browser	IE Mobile
								2.1		
								2.2		
						3.2		2.3		
						4.0-4.1		3.0		
	8.0					4.2-4.3		4.0		
	9.0					5.0-5.1		4.1		
	10.0	29.0	34.0			6.0-6.1		4.2-4.3	7.0	
Current	11.0	30.0	35.0	7.0	22.0	7.0-7.1	5.0-7.0	4.4	10.0	10.0
Near future		31.0	36.0	8.0	23.0	8.0		4.4.3		
Farther future		32.0	37.0		24.0					
3 versions ahead		33.0	38.0							

Notes | Known issues (3) | Resources (5) | Feedback — Edit on GitHub

Supported somewhat in IE8 and IE9 using the XDomainRequest object (but has limitations)

Source : Can I Use http://caniuse.com/#search=cors

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Web Crypto WG – crypto trolls

Trying to make available crypto to web apps

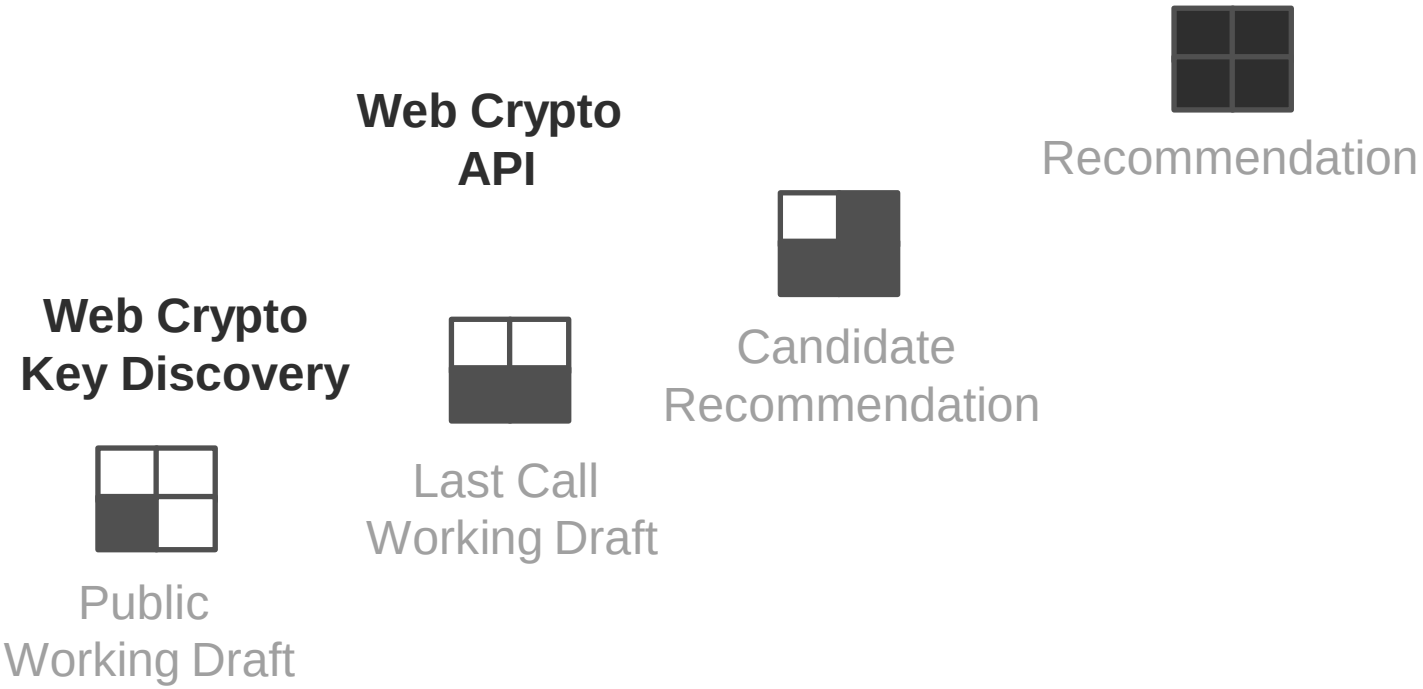
Web Crypto API

http://dvcs.w3.org/hg/webcrypto-api/raw-file/tip/spec/Overview.html

Web Crypto Key Discovery

https://dvcs.w3.org/hg/webcrypto-keydiscovery/raw-file/tip/Overview.html

Web Crypto WG



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Web Crypto API : first implementations

Netflix – NfWebCrypto project blog and github

Google – statement and corresponding issue by the Chromium team.

Internet Explorer – Developer documentation for IE11 preview and plugin for other browsers

WebKit – Implementation is tracked as bug 122679

Firefox – Implementation is tracked under bug 865789

Web Crypto API in few lines

With the Web Crypto API one can

- Generate a random
- Generate a key
- Derive key (or bits)
- Import or export a key
- Encrypt, decrypt, sign, verify a signature, create a digest

A key is characterized by

- Key type
- Key usage (encrypt, sign, ...)
- Key algorithm (from registered algorithms)
- Extractable or not

Recommended algorithms

The specification describes how to manage operations with a large number of algorithms

https://dvcs.w3.org/hg/webcrypto-api/raw-file/tip/spec/Overview.html#algorithms

But recommends some of them to be implemented by UA – while this not being normative

- HMAC using SHA-1
- HMAC using SHA-256
- RSASSA-PKCS1-v1_5 using SHA-1
- RSA-PSS using SHA-256 and MGF1 with SHA-256.
- RSA-OAEP using SHA-256 and MGF1 with SHA-256.
- ECDSA using P-256 curve and SHA-256
- AES-CBC

But this is not the end...

- Questions about key storage, dynamic algorithms, other algorithms, certificate management, integration of hardware token...
- Will be part of 2015 work...

Web Security IG – labs and research

To strengthen the open web platform and clarify the next steps

- Security reviews

- W3C next steps

Security reviews

Process under construction

Aims to make systematic security reviews

Candidates – but no resources

- EME
- HTML5
- Manifest
- Web RTC

Next steps

Collect W3C members wishes

- Protocol Security Enablers
- Device Trusted Enablers
- Securing resources
- User Security Indicators

By the way, privacy is also a hot W3C topic

Tracking Protection WG

Privacy Interest Group

All is here http://www.w3.org/Privacy/

Did you hear that ?

Webizen ....

https://www.w3.org/wiki/Webizen

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Thanks!

Keep in touch

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Credit photos

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