Weird Browsers

The second state of the se

Niels Leenheer @html5test









HTML5te	est - How well c $ imes$ +			
	html5test.com	art html5	?	
HTM	LETEST how well does your brows	ser support nume	news device l	ab
-	other browsers compare			
уо	urbrowe			
	YOUR BROWSER SCORES	405	OUT OF 555 POINTS	
	You are using Edge 14 on Windows 10		Share P D	ona
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	following the HTML5 parsing rules for minder it.	Yes 🗸	Video codecs	
and the second	prowser our	Yes 🗸	MPEG-4 ASP support	



desktop browsers results on <u>html5test.com</u>



desktop browsers results on <u>html5test.com</u>







desktop browsers results on <u>html5test.com</u>

new since internet explorer 6

Ir ES6: Promises Pointerlock Full Screen Vide Device Orientation Semantic elements Adaptive streaming URL API JSON encoding and decoding CSS bord File API's Audio Canvas 2D graphics Mutation Observer SVG graphics ObjectRTC HTML5 parser Color input type

ternationalisation	Blend mode	s Video		
eo subtitles	App-	App-cache offline support		
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	Page Visibility			
Streams	V	VebAuthentication		
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ES6: Generators	IME API	ES6: Subclas	ssing			
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A	ccess the webcam		Async script execution		CSS unset	
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Session history	Message Channels	Web Sockets	WebAudi	0	WebGL	
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AS	M.js		CSS Filters		Device Motion	
	WebRTC	CSS Flexbox	ES6: Arrow functions			
Media Queries Level 4	4				Console logging	
	Encry	vpted Media Extensior	75			







no, this talk is not about internet explorer 6

the web is weird by definition

the web is not a single platform









game consoles



portable game consoles



smart tvs



e-readers



smartwatches



photo cameras



fridges



cars



vr headsets



smart tvs and game consoles





"big screen browsers"





television browsers are pretty good

the last generation of television sets use operating systems that originate on mobile



smart tv results on <u>html5test.com</u>



console results on <u>html5test.com</u>





controlling the browser

the biggest challenge of of big screen browsers


d-pad



d-pad



alternatives

analog controllers



remotes with trackpad



remotes with airmouse



second screen



many manufacturers also create apps for controlling the smart tv, console or set-top box





d-pads







text input with the d-pad

Backspace 🗴 0 8 5 6 7 9 u У 0 р RB j h k g Cursor right b m n Space 🕐 .com Go

SONY

alternatives

remotes with keyboards



wireless keyboards



and apps

Tabs Recent Favourites Featured ITNL TEST hav well does your brow rise to a Million for the YOUR BROWSER SCORES 428 OUT OF 555 POINTS +HTML5test - How well does... New tab http://html5test.com/ Symbols 🕞 4 2 3 5 1 6 е q W t У LB d f а g Cursor left b С Ζ Х n ٢Ť Space 🕐 Caps

SONY

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gesture control (throw your hands up in the air, and wave 'em like you just don't care)



navigation with gesture control

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e			$_{ m Correct?}$ \checkmark $ imes$
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	É i multimedia		
5	Video		31/35
es 🗸	video element		Yes 🗸
es 🗸	Subtitles		Yes 🗸
es 🗸	Audio track selection		Yes 🗸
	Video track selection		No ×
ıg	Poster images		Yes 🗸
	Codec detection		Yes /
5	ONI		

can we control these input methods directly from javascript?

the d-pad maybe



keyboard events

window.addEventListener("keypress", function(e) {
 e.preventDefault(); // no navigation

});

 $\bullet \quad \bullet \quad \bullet$

the gamepad maybe



the gamepad api

• • •

}

var gamepads = navigator.getGamepads();
for (var i = 0; i < gamepads.length; i++) {</pre>



the getusermedia api



navigator.getUserMedia(function(stream) { ... }, function(error) { ... }

);

{ audio: true, video: { width: 1280, height: 720 } },



the difference between

a television and a monitor

overscan *(let's make it a bit more complicated)*

due to historical reasons televisions will not show the borders of the image



the television enlarges all images from the hdmi input by 5%



1920 pixels

the television enlarges all images from the hdmi input by 5%



the image is then cropped to 1920 by 1080 pixels



the image is then cropped to 1920 by 1080 pixels

overscan causes blurry output



solution 1 overscan correction



the browser does not use the edges of the image

1920 pixels

r support h	tml5?	
	news device l	ab about the test
28	OUT OF 555 POINTS	
Windows 10		Correct? ✓ X
	🕻 Share 🦻 Donate	9
5	Share Ponate	, 33


the television will enlarge the image by 5%

1920 pixels

 \equiv

can actually understand and render it.

	5	Video	33
Yes	~	video element	Yes 🗸
Yes	~	Subtitles	Yes 🗸
Yes	~	Audio track selection	Yes 🗸
r		Video track selection	Yes 🗸
ving		Poster images	Yes 🗸
ſ		Codec detection	Yes 🗸



 \equiv

and the content is now fully visible, the unused border is cropped out of the final image

but not every television set enlarges the image by exactly 5%, this can vary between manufacturers and models

Sound and Screen



configure the correct overscan correction in the system preferences

	After 15 Minutes	
SONY		



the playstation 4 will always show the browser without overscan correction in full screen mode

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5	Video	33/3	5	
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Yes 🗸	Subtitles	Yes	/	
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e a regular	Video track selection	Yes	/	
ser is	Poster images	Yes		
nc, not n	Codec detection	Yes	1	
Yes 🗸	Advanced			
	ions Monu			



the playstation 4 will always show the browser without overscan correction in full screen mode

solution 2 NO OVERSCAN

it is possible to disable overscan on many television sets

'screen fit', 'pixel perfect' or 'just scan'



the playstation 3 always shows the browser with overscan correction

the viewport (i really need some aspirin!)

the visual viewport

the visual viewport determines which part of the website will be visible

measured in device pixels



Elements

- Embedding custom non-visible data
- New or modified elemen
- Section elements
 Grouping content elements
- Text-level semantic elements
- Interactive elements
- Global attributes or methods

hidden attribute
Dynamic markup insertion

Forms

- Field types
- ▶ input type=text▶ input type=search
- ▶ input type=tel
- ▶ input type=url
- ▶ input type=email
- ▶ input type=date
- ▶ input type=month
- ▶ input type=week▶ input type=time
- ▶ input type=datetime
- ▶ input type=datetime=local
- ▶ input type=number
- ▶ input type=range
- input type=color
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thML, not if the	Codec detection		Yes 🗸	
ies 🗸	DRM support	_	No X	_
	Media Source extensions		No 🗙	
21/30	Codecs			
Yes 🗸	MPEG-4 ASP support		No 🗙	
	H.264 support		Yes 🗸	
Yes 🗸	Ogg Theora support		Yes 🗸	
Yes 🗸	WebM with VP8 support		Yes 🗸	
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No 🗙	Audio		25/20	
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Yes 🗸	audio element		Yəs 🗸	
Yes 🗸	Loop audio		Yes 🗸	
	Preload in the background		Yes 🗸	
49/75	Advanced			
	Web Audio API		Yes 🗸	
Yes 🗸	Speech Recognition		NO X	
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Yes 🗸	Codecs		Ver 1	
Yes 🗸	AAC support		Yes V	
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Clipboard Clipboard API and events Spellcheck spellcheck attribute

Performance

Native binary data Workers Web Workers

Shared Workers

Security – Web & vptograf // A Content, vec/ // Pol y Contents, vity Pol y Cross-Origin Resource 5

mes-document messaging

Iframes Sandboxed iframe Seamless iframe iframe with inline contents

History and navigation

Session history

THEVE IN THE VEST

The HTML5 test score is an HTML Indication of how well your browser supports the HTML5 standard and related specifications. Find out which parts of HTML5 are supported by your browser today and compare the results with other browsers.

Despite these shortcomings we hope that by and specifications.

P Donate using Paypal

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the visual viewport determines which part of the website will be visible

measured in device pixels



quantifying the level of support users and web Please be aware that although the HTML5 or more points. Apart from the main HTML5 The HTML5 test does not try to test all of the new specification and other specifications created the features offered by HTML5, nor does it try to test W3C HTML Working Group or WHATWG, this test

Contact

developers will get an idea of how hard the specification is now an official recommendation, browser manufacturers work on improving their other specifications that are being tested are still in browsers and the web as a development platform. development and could change before receiving The score is calculated by testing for the many an official status. In the future new tests will be new features of HTML5. Each feature is worth one added for new specifications and existing tests will be updated when the specifications change.

Help us improve HTML5 test by donating the functionality of each feature it does detect. also awards points for supporting related drafts This will allow us to spend more time on HTML5test.com and acquire more devices for our

🐱 Developed at Github

testing lab.

January 2015 - version 6.0. Created by Niels Leenheer. Please note that the HTML5 test is not affiliated with the W3C or the HTML5 working group. HTML5 Logo by <u>W3C</u>. Browser detection by <u>WhichBrowser</u>.



the visual viewport

the visual viewport determines which part of the website will be visible

measured in device pixels



<IDOCTYPE html> triggers standards mode
HTML5 tokenizer

HTML5 tree building

HTML5 defines rules for embedding SVG and MathML in: HTML document. The following tests only check if the brc following the HTML5 parsing rules for inline SVG and Mat browser can actually understand and render it.

Elements

Embedding custom non-visible data

- New or modified elements
- Section elements
 Grouping content elements
- Text-level semantic elements

Interactive elements
Global attributes or methods

hidden attribute
Dynamic markup insertion

Forms

- Field types
- ▶ input type=text
- ▶ input type=search
- ▶ input type=tel
- ▶ input type=url
- > input type=email
 > input type=date
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- ▶ input type=datetime-local
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- input type=range
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- input type=checkbox

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5	Video	29/35
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Yes 🗸	Audio track selection	No ×
	Video track selection	No X
side a regular owser is	Poster images	Yes 🗸
thML, not if the	Codec detection	Yes 🗸
Yes 🗸	DRM support	No X
	Media Source extensions	No ×
21/30	Codece	
	MPEG-4 ASP support	No. X
Yes 🗸	H 264 support	Yes 🗸
	Ogg Theora support	Yes 🗸
Yes 🗸	WebM with VP8 support	Yes 🗸
Yes 🗸	WebM with VP9 support	Yes 🗸
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Yas 🗸	audio element	Yes 🗸
Yes 🗸	Loop audio	Yes 🗸
	Preload in the background	Yes 🗸
49/75	Advanced	
	Web Audio API	Yes 🗸
Yes 🗸	Speech Recognition	No 🗙
Yes 🗸	Speech Synthesis	No X
Yas 🗸	Codecs	
Yes 🗸	PCM audio support	Yas 🗸
Yos 🗸	AAC support	Yes 🗸
No 🗙	MP3 support	Yes 🗸
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No 🗙	Ogg Opus support	Yes 🗸
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Yes V	Responsive images	0/15
100 -	Hooponorio mugoo	

the layout viewport

HTML TEST how well does your browser support html5? your browser other browsers compare YOUR BROWSER SCORES

You are using Firefox 37.0 on OS X Yosemite 10.10

Seve results

Compare to.

semantics

Parsing rules

<i DOCTYPE html> triggers standards mode HTML5 tokenizer HTML5 tree building

HTML5 defines rules for embedding SVG and MathML inside a re

HTML document. The following tests only check if the browser is following the HTML5 parsing rules for inline SVG and MathML, no browser can actually understand and render it. Parsing Inline SVG

Parsing inline MathML

Elements

Embedding custom non-visible data

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hidden attribute
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🗂 multimedia

J	Video	29/35
Yes 🗸	video element	Yes 🗸
Yes 🗸	Subtities	Yes 🗸
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lar	Video track selection	No 🗙
	Poster images	Yes 🗸
f the	Codec detection	Yes 🗸
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Yes 🗸	DRM support	No 🗙
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21/30		
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Yes 🗸	MPEG-4 ASP support	No X
	H.264 support	Yes 🗸
Yes 🗸	Ogg Theora support	Yes 🗸
Yes 🗸	WebM with VP8 support	Yes 🗸
Partial O	WebM with VP9 support	Yes 🗸
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	Preload in the background	Yes 🗸
49/75	Advanced	
49/75	Advanced Web Audio API	Yas 🗸
49/75	Advanced Web Audio API Speech Recognition	Yes 🗸 No 🗙
49/75 _{Yes} ~	Advanced Web Audio API Speech Recognition Speech Synthesis	Yes 🗸 No 🗙 No 🗙
49/75 Yes ✓ Yes ✓	Advanced Web Audio API Speech Recognition Speech Synthesis	Yes ✓ No X No X
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49/75 Yes ~ Yes ~ Yes ~ Yes ~ No × No ×	Advanced Web Audio API Speech Recognition Speech Synthesis Codecs PCM audio support AAC support MP3 support Ogg Vorbis support	Yes ✓ No X No X Yes ✓ Yes ✓ Yes ✓
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49/75 Yes ~ Yes ~ Yes ~ Yos ~ No X No X No X	Advanced Web Audio API Speech Recognition Speech Synthesis Codecs PCM audio support AAC support MP3 support Ogg Vorbis support Ogg Opus support WebM with Vorbis support	Yes V No X Yes V Yes V Yes V Yes V Yes V
49/75 Yes ~ Yes ~ Yes ~ Yes ~ No X No X No X No X No X	Advanced Web Audio API Speech Recognition Speech Synthesis Codecs PCM audio support AAC support MP3 support Ogg Vorbis support Ogg Opus support WebM with Vorbis support	Yes V No X Yes V Yes V Yes V Yes V Yes V Yes V Yes V Yes V
49/75 Yes ~ Yes ~ Yes ~ Yes ~ No X No X No X No X No X No X	Advanced Web Audio API Speech Recognition Speech Synthesis Codecs PCM audio support AAC support MP3 support Ogg Vorbis support Ogg Opus support WebM with Vorbis support WebM with Opus support	Yes V No X Yes V Yes V Yes V Yes V Yes V Yes V Yes V

Yes ✓ Yes ✓

🐜 🗸 🛛 Responsive images

0/15

the layout viewport determines the width in css pixels on which the site will be rendered

the layout viewport



- ▶ input type=date

No X

the layout viewport determines the width in css pixels on which the site will be rendered

the layout viewport







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et.	type-orl			
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41	type-date			
	t strategy to be			

the layout viewport determines the width in css pixels on which the site will be rendered

the default layout viewport is different on every smart tv, console or set-top box

between 800 and 1920 css pixels





nintendo wii





980 pixels

nintendo wii u



lg webos



microsoft xbox 360

1041 of 1050 pixels

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0	OUT OF 555 POINTS	Free Te PSD	e HTML5 mplates	
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	Éí multimedia		4	5
0/5	Video		21/35	
es ✓ Io X	video element Subtitles		Yes ✓ No X	
SON	TY			

HTML 5 TEST how well does your browser support html5? other browsers compare your browser YOUR BROWSER SCORES 226 You are using Internet Explorer 10.0 on a Microsoft Xbox One Save results Compare to.. Semantics **Parsing rules** <!DOCTYPE html> triggers standards mode HTML5 tokenizer HTML5 tree building

 \equiv

HTML5 defines rules for embedding SVG and MathML inside a regular HTML document. The following tests only check if the browser is following the HTML5 parsing rules for inline SVG and MathML, not if the browser





1200 of 1236 pixels



microsoft xbox one

HTML 5 TEST how well does your browser support html5? your browser YOUR BROWSER SCORES **123C1** You are using Edge 14 on a Microsoft Xbox One running Windows 10 Save results E Compare to.. **Semantics Parsing rules** <!DOCTYPE html> triggers standards mode HTML5 tokenizer HTML5 tree building HTML5 defines rules for embedding SVG and MathML inside a regular HTML document. The following tests only check if the browser is following the HTML5 parsing rules for inline SVG and MathML, not if the browser

 \equiv

microsoft xbox one (with edge)

1200 of 1236 pixels





1824 pixels

sony playstation 3

BRAVIA		
=	HTML TEST how well does your browse	er support html5?
	your browser other browsers compare	
	YOUR BROWSER SCORES	28
	You are using a Sony Playstation 4	
	Save results	< Sh
	≈semantics	(<u> </u>
	Parsing rules	5 Vid
	html triggers standards mode	Yes ✓ vide
	HTML5 tokenizer	Yes 🗸 🛛 Subti
~	HTML5 tree building	Yes 🗸 🛛 Audi
Z	HTML5 defines rules for embedding SVG and MathML inside a HTML document. The following tests only check if the browse following the HTML5 parsing rules for inline SVG and MathML the browser can actually understand and render it.	regular Video ris Posto not if Code
	Parsing inline SVG	Yes 🗸 🛛 Adva
	Parsing inline MathML	Yes 🗸 🛛 DRM
		Medi
	Elements	24/30 Code
	Embedding custom non-visible data	Yes 🗸 MPEG
	New or modified elements	H.264
	Section elements	Yes 🗸 🛛 🗤 Web
	Grouping content elements	Yes 🗸 🛛 Web
	Text-level semantic elements	Partial o
	Interactive elements	Partial o
	Global attributes or methods	Au
		SONY

sony playstation 4

UT OF 555 POINTS $_{\rm Correct?}$ \checkmark \times < Share P Donate 🗂 multimedia Video 33/35 Yes 🗸 Yes 🗸 video element Subtitles Yes 🗸 Yes 🗸 Audio track selection Yes 🗸 Yes 🗸 Video track selection Yes 🗸 Poster images Yes 🗸 Codec detection Yes 🗸 Yes 🗸 Advanced Yes 🗸 DRM support No 🗙 Media Source extensions No 🗙 4/30 Codecs MPEG-4 ASP support Yes 🗸 Yes 🗸 H.264 support Yes 🗸 No 🗙 Ogg Theora support Yes 🗸 WebM with VP8 support No 🗙 Yes 🗸 WebM with VP9 support No 🗙 artial o artial o 20/30 Audio

news device lab about the tes

1920 pixels

Nintendo Wii	800]
LG WebOS	960	}
Nintendo Wii U	980	
Philips 2014 series	980	
Google TV	1024	
Playstation TV	1024	
Samsung Tizen	1024	
Xbox 360	1051	1
Xbox One	1200	
LG Netcast	1226	ł
Panasonic Viera	1256	}
Opera Devices	1280	
Samsung 2014 series	1280	ļ
Panasonic Firefox OS	1536	}
Playstation 3	1824	
Playstation 4	1920	



device pixels != device pixels (of course not)

sometimes devices pixels are not physical devices pixels, but virtual device pixels

the browser renders in a lower resolution which is upscaled to the resolution of the display



distance to the screen





20 inch









"Make fonts and graphics on the site larger to account for viewing distance. People sit proportionally farther from a TV than from a computer monitor of the same size."

– Internet Explorer for Xbox One Developer Guide

Make your text and images two to three times bigger

Make your text and images two to three times bigger

Make your text and images two to three times bigger
≡ You Tube

Search

Trending



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 (\mathbf{M}) #Mind Warehouse Recommended channel



youtube on the big screen

Home Trending



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B-Brave - One Night Stand ft. Sevn Alias BBraveVEVO 🜌 10,474,994 views • 3 months ago



youtube on the big screen

You Tube





*

Interview with HU MUNGUS!

by h3h3Productions 2,243,914 views 1 day ago

identifying smart tv's (css for televisions)



css media typ

@media tv {
 body {
 font-size: 30⁴

}

}





css media types

all television browsers use the css media type 'screen'



screen size

}

if (screen.width == 1. document.body.class'

screen.height == 1080) { += " television";



screen size

monitors and phones often use often use other resolutions

hd resolutions, television browsers



}

useragent sn. ing

if (navigator.userAge document.body.class'

ch(/TV/i) >= 0) { += " television";

S

useragent sniffing



not all smart tv's are recognisable

Mozilla/5.0 (X11; Linux; ko-KR) AppleWebKit/534.26+ (KHTML, like Gecko) Version/5.0 Safari/534.26+



couch mode

the only reliable way to optimise a website for television is to make two different websites...

or give the user the ability to switch on couch mode



be careful with feature detection

"Basically every feature that talks to the operating system or hardware, is suspect."

http://blog.html5test.com/2015/08/the-problems-with-feature-detection/

– Me, just now

if (!!navigator.geolocation) { success, failure); } else { // alternative }

navigator.geolocation.getCurrentPosition(

if (!!navigator.geolocation) { success, failure

);



no callback at all to success or failure

navigator.geolocation.getCurrentPosition(

failure is called with a "permission denied" error code

if (!!navigator.geolocation) { success, failure

);





success is called with the coordinates of Mountain View, USA

navigator.geolocation.getCurrentPosition(

success is called with longitude = 0 and latitude = 0







e-reader results on <u>html5test.com</u>



infrared touch screen





amazon kindle touch pocketbook basic touch kobo glow sony reader

mouse events		
own/up	move	touch events
yes		
yes		
yes	yes	
yes	yes	1 finger















maybe css animations and transitions weren't such a great idea after all

two completely different colors can look exactly the same in black and white



two completely different colors can look exactly the same in black and white

identifying e-readers (css for e-ink screens)



css monochr ve mediaquer

@media (monochrome)

• • •

}

css monochrome mediaquery



all tested e-readers act like they have a color screen



2

there is no universal marker in the useragent string, but we can recognise individual manufacturers and models




oculus rift



htc vive



microsoft hololens







google cardboard



google daydream



samsung gear vr







webvr (webgl on steroids)

head tracking and camera geometry project the 3d scene to two different eyes



Chrome experimental build

Firefox nightly builds

or



Samsung Internet behind a flag





Chrome

experimental build

Firefox nightly builds



or

Samsung Internet

behind a flag



Edge soon

https://iswebvrready.org



erplate

How w...



http://borismus.github.io/webvr-boilerplate/







"We cannot predict future behavior from a current experience that sucks"

http://blog.cloudfour.com/on-the-device-context-continuum/

– Jason Grigsby











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niels leenheer @html5test