

A pixel is not a pixel

Peter-Paul Koch

<http://quirksmode.org>

<http://twitter.com/ppk>

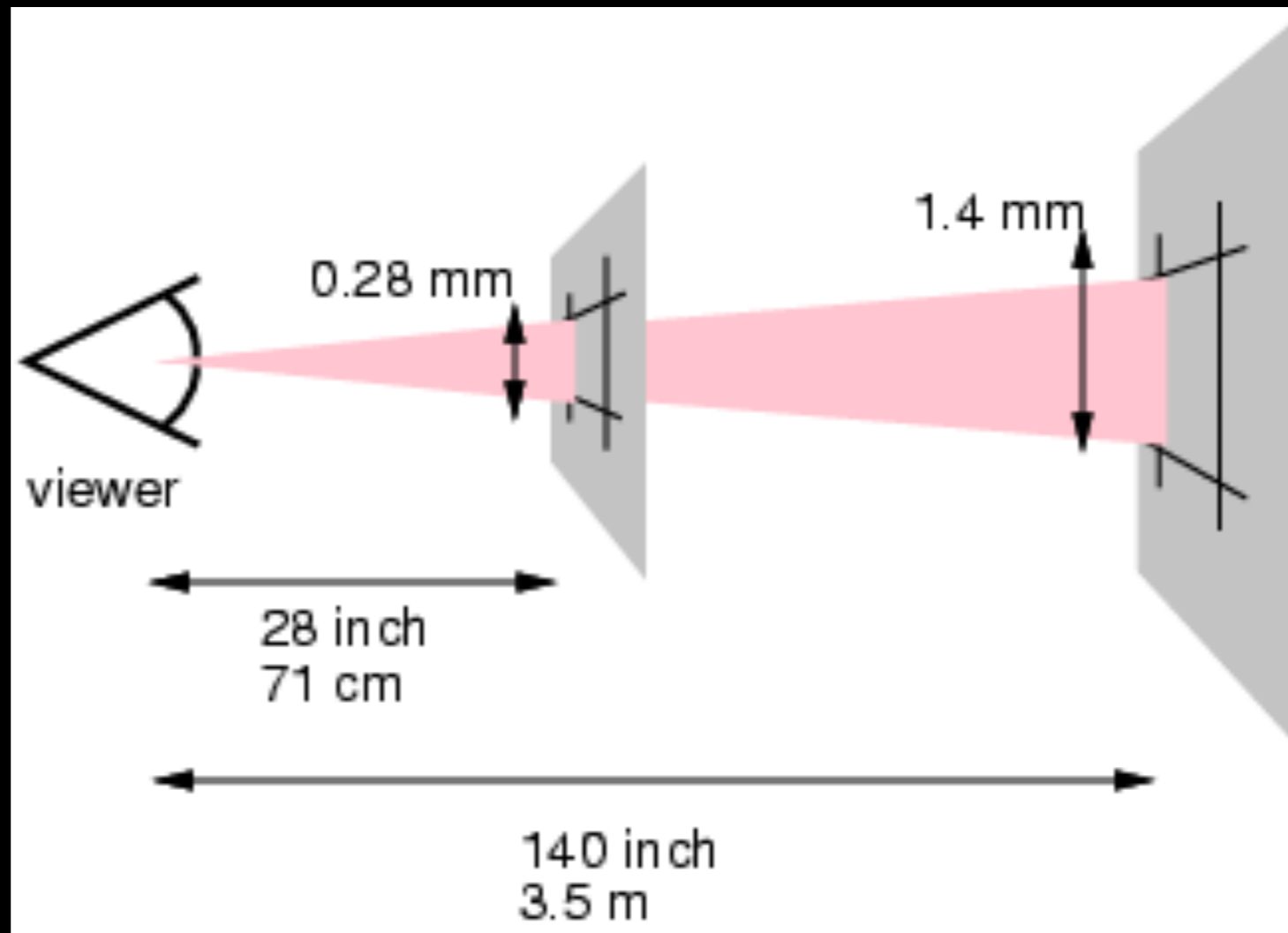
From the Front, 21 September 2012

Pixels

Pixels according to W3C

“The reference pixel is the visual angle of one pixel on a device with a pixel density of 96dpi and a distance from the reader of an arm's length. For a nominal arm's length of 28 inches, the visual angle is therefore about 0.0213 degrees. For reading at arm's length, 1px thus corresponds to about 0.26 mm (1/96 inch).”

Pixels according to W3C



Pixels according to W3C

- So the pixel is a certain angle in your view
- which means you cannot zoom it
- Some say you shouldn't take it literally, and zooming is allowed
- but if that's so, why bother with this definition in the first place?

A pixel is not a pixel

- CSS pixels
- Density-independent pixels
- Device pixels

None of these have anything to do with W3C's definition.

CSS pixels

- CSS pixels are the ones we use in declarations such as `width: 190px` or `padding-left: 20px`
- They are an abstract construct
- Their size may be increased or decreased



MOBILISM 2012, 10TH AND 11TH OF MAY, AMSTERDAM

Featuring Remy Sharp and Jeremy Keith

[Buy tickets](#)



padding-left: 34%



190px
Recent posts (RSS)

- Fast Track announced; session descriptions available, 13-03-2012
- James Pearce announced, 06-03-2012
- Heiko Behrens announced, 28-02-2012
- Workshops announced, 21-02-2012
- Remy Sharp announced, 14-02-2012

Follow us on [Twitter](#) for the latest Mobilism news.

Mobile is becoming increasingly important to web designers and developers because users expect a site to work on their phones. Simultaneously, the web is becoming increasingly important to the mobile world because it is the only way to deploy an application to any phone.

Nowadays most web conferences feature a mobile session, and most mobile conferences a web session. The obvious next step is Mobilism: a conference wholly dedicated to mobile web design and development.

Just like in 2011 we'll invite some of the best *speakers* from the web development and the mobile world to guide you through the confusing jumble of platforms, screen sizes, and browsers that is the mobile ecosystem.

Join our mailing list

Please leave your email address if you want to receive Mobilism 2012 information as soon as it becomes available.

Email address

mobillism



HOME
CONFERENCES
NEWS
ABOUT US
CONTACT

padding-left: 34%

MOBILISM 2012

190px

VENUE
PROGRAMME
WORKSHOPS
TICKETS
ATTENDEES
SPONSORSHIPS

MOBILISM 2012, 10TH AND 11TH OF MAY, AMSTERDAM

*Featuring Remy Sharp and
Jeremy Keith*

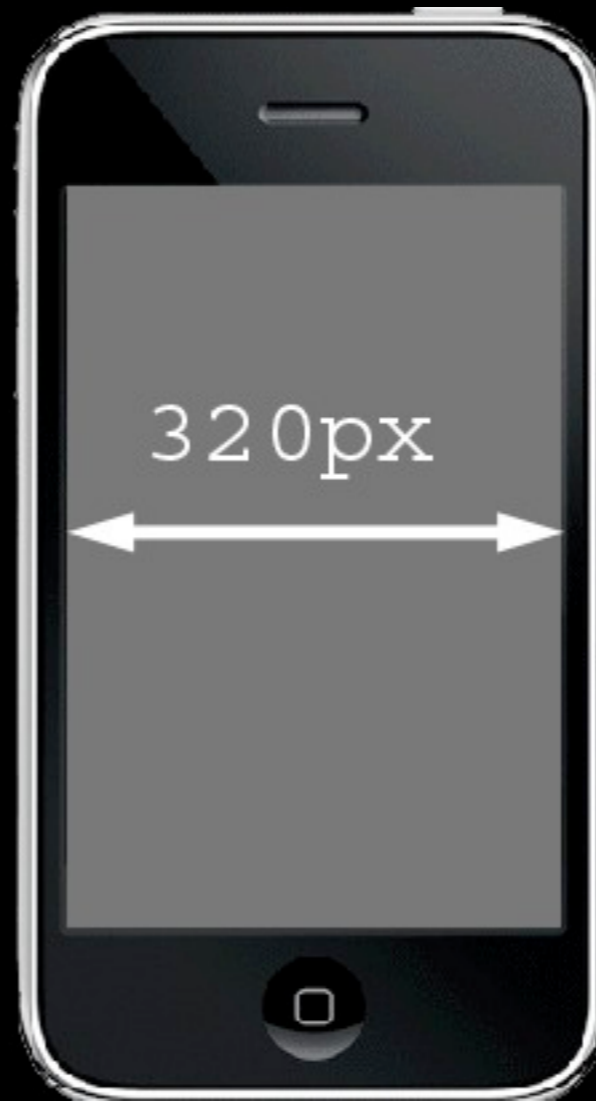
[Buy tickets](#)

Mobile is becoming increasingly important to web designers and developers because users expect a site to work on their phones. Simultaneously, the web is becoming increasingly important to the mobile world because it is the only way to deploy an application to any

Device pixels

- Device pixels are the physical pixels on the device
- There's a fixed amount of them that depends on the device

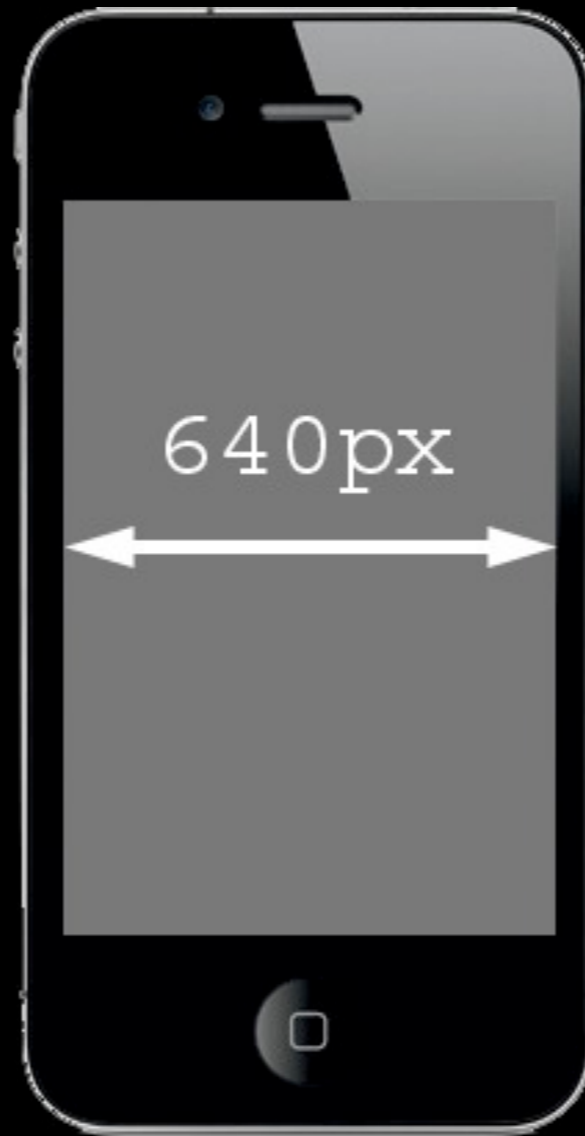
Device pixels



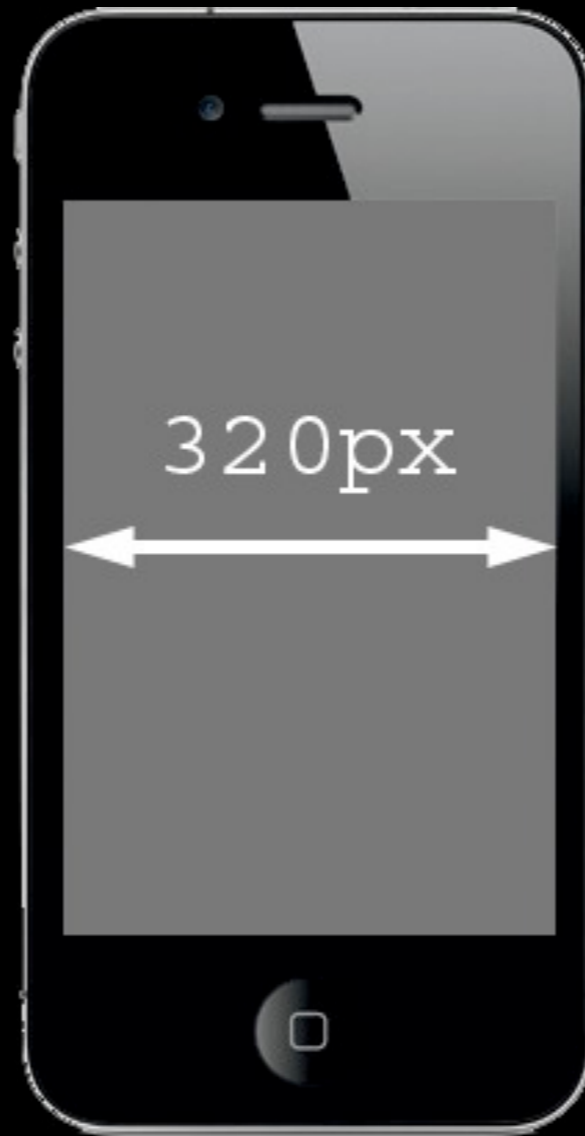
Device pixels

- But ...
- Devices get higher and higher pixel densities
- The number of device pixels also increases
- But that would break sites

Device pixels



Density-independent pixels



Density-independent pixels

- Thus device vendors created density-independent pixels (dips)
- They are another abstraction layer
- The number of dips is equal to the number of CSS pixels that is optimal for viewing a website on the device.
- What does that mean? I'll explain later

What kind of pixels?

If a certain JavaScript property is expressed in pixels

always ask yourself what kind of pixels.

Usually it's CSS pixels, especially for anything related to CSS

Sometimes it's device pixels or dips, for anything related to screen size

Viewports

Viewports

- The viewport is the total amount of space available for CSS layouts
- On the desktop it's equal to the browser window
- The `<html>` element has an implicit width: 100% and spans the entire viewport



MOBILISM 2012, 10TH AND 11TH OF MAY, AMSTERDAM

Featuring Remy Sharp and Jeremy Keith

viewport

[Buy tickets](#)

Recent posts (RSS)

- Fast Track announced; session descriptions available, 13-03-2012
- [James Pearce announced](#), 06-03-2012
- [Heiko Behrens announced](#), 28-02-2012
- [Workshops announced](#), 21-02-2012
- [Remy Sharp announced](#), 14-02-2012

Follow us on [Twitter](#) for the latest Mobilism news.

Mobile is becoming increasingly important to web designers and developers because users expect a site to work on their phones. Simultaneously, the web is becoming increasingly important to the mobile world because it is the only way to deploy an application to any phone.

Nowadays most web conferences feature a mobile session, and most mobile conferences a web session. The obvious next step is Mobilism: a conference wholly dedicated to mobile web design and development.

Just like in 2011 we'll invite some of the best [speakers](#) from the web development and the mobile world to guide you through the confusing jumble of platforms, screen sizes, and browsers that is the mobile ecosystem.

Join our mailing list

Please leave your email address if you want to receive Mobilism 2012 information as soon as it becomes available.

Email address

Viewports

- On mobile it's quite a bit more complicated
- If the (narrow) browser window were to be the viewport, many sites would be squeezed to death
- And mobile browsers must render all sites correctly, even if they haven't been mobile-optimized

padding-
left: 34%



MOBILISM 2012, 10TH AND 11TH OF MAY, AMSTERDAM

Featuring Remy Sharp and Jeremy Keith

[Buy tickets](#)

Mobile is becoming increasingly important to web designers and developers because users expect a site to work on their phones. Simultaneously, the web is becoming increasingly important to the mobile world because it is the only way to deploy an application to any phone.

Nowadays most web conferences feature a mobile session, and most mobile conferences a web session. The obvious next step is Mobilism: a conference wholly dedicated to mobile web design and development.

Just like in 2011 we'll invite some of the best **speakers** from the web development and the mobile world to guide you through the confusing jumble of platforms, screen sizes, and browsers that is the mobile ecosystem.

Join our mailing list

Please leave your email address if you want to receive Mobilism 2012 information as soon as it becomes available.

Email address

Recent posts (RSS)

- [Fast Track announced; session descriptions available](#), 13-03-2012
- [James Pearce announced](#), 06-03-2012
- [Heiko Behrens announced](#), 28-02-2012
- [Workshops announced](#), 21-02-2012
- [Remy Sharp announced](#), 14-02-2012

Follow us on [Twitter](#) for the latest Mobilism news.

mobilism



padding-

left: 34%



HOME
CONFERENCES
EVENTS
ABOUT MOBILISM 2012, 10TH
CONVENTION OF MAY,
AMSTERDAM

MOBILISM 2012

- VENUE
- PROGRAMME
- WORKSHOPS
- TICKETS
- ATTENDEES
- SPONSORSHIPS

aturing
ny Sharp
Jeremy
th

[Buy tickets](#)

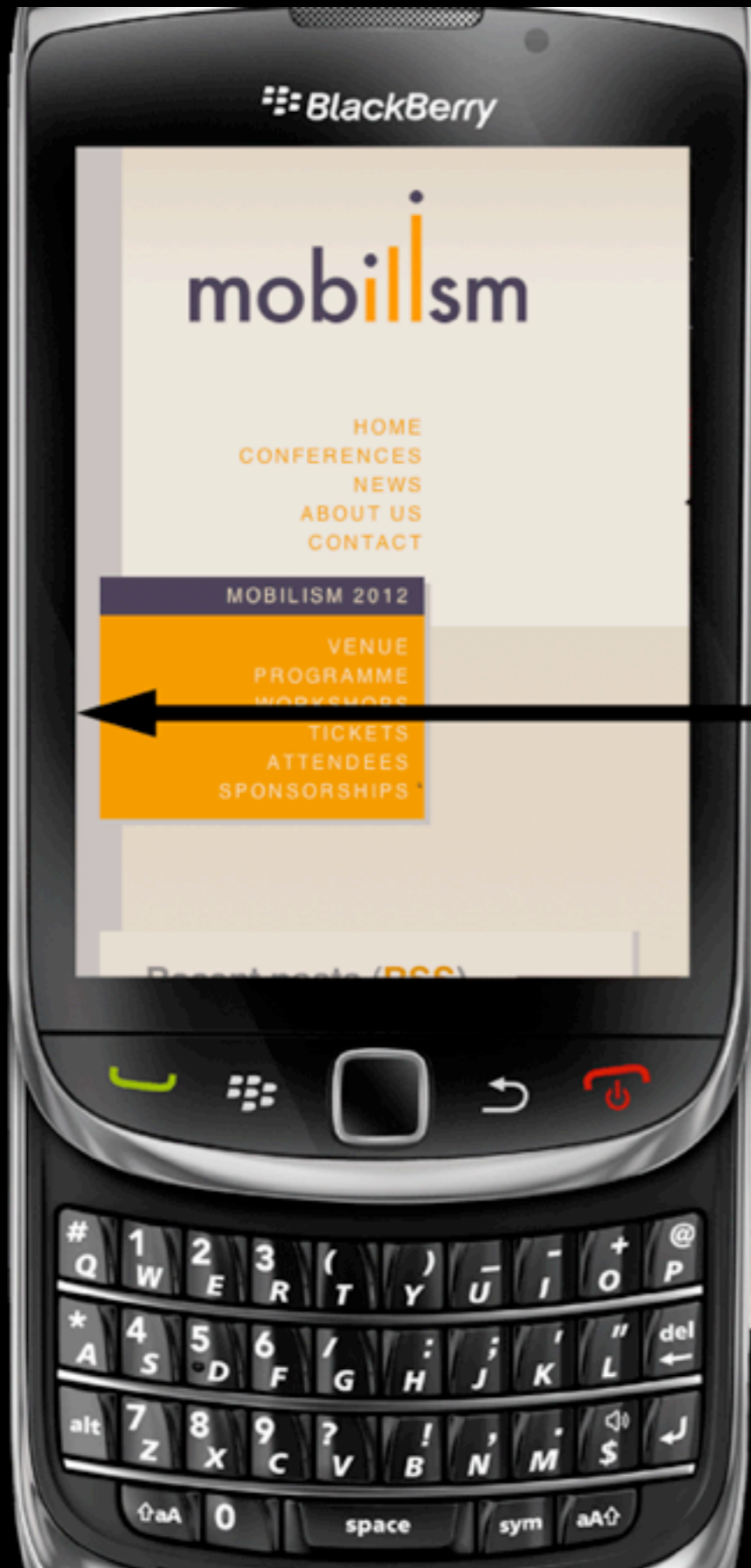
Recent posts (RSS)

- Fast Track announced; session

Mobile is becoming increasingly important to web designers and developers because users expect a site to work on their phones. Simultaneously, the web is becoming increasingly

Viewports

- That's why the mobile browser vendors have split the viewport into two:
- The layout viewport, the viewport that CSS declarations such as `padding-left: 34%` use,



MOBILISM 2012, 10TH AND 11TH OF MAY, AMSTERDAM

Featuring Remy Sharp and Jeremy Keith

layout viewport [Buy tickets](#)

Mobile is becoming increasingly important to web designers and developers because users expect a site to work on their phones. Simultaneously, the web is becoming increasingly important to the mobile world because it is the only way to deploy an application to any phone.

Nowadays most web conferences feature a mobile session, and most mobile conferences a web session. The obvious next step is Mobilism: a conference wholly dedicated to mobile web design and development.

Just like in 2011 we'll invite some of the best **speakers** from the web development and the mobile world to guide you through the confusing jumble of platforms, screen sizes, and browsers that is the mobile ecosystem.

Join our mailing list

Please leave your email address if you want to receive Mobilism 2012 information as soon as it becomes available.

Email address

Viewports

- That's why the mobile browser vendors have split the viewport into two:
- The layout viewport, the viewport that CSS declarations such as `padding-left: 34%` use,
- and the visual viewport, which is the part of the page the user is currently seeing
- Both are measured in CSS pixels



MOBILISM 2012, 10TH AND 11TH OF MAY, AMSTERDAM

Featuring Remy Sharp and Jeremy Keith

[Buy tickets](#)

Mobile is becoming increasingly important to web designers and developers because users expect a site to work on their phones. Simultaneously, the web is becoming increasingly important to the mobile world because it is the only way to deploy an application to any phone.

Nowadays most web conferences feature a mobile session, and most mobile conferences a web session. The obvious next step is Mobilism: a conference wholly dedicated to mobile web design and development.

Just like in 2011 we'll invite some of the best **speakers** from the web development and the mobile world to guide you through the confusing jumble of platforms, screen sizes, and browsers that is the mobile ecosystem.

Join our mailing list

Please leave your email address if you want to receive Mobilism 2012 information as soon as it becomes available.

Email address



Viewports

- Initially most browsers make the visual viewport equal to the layout viewport
- by zooming the page out as much as possible



MOBILISM 2012, 10TH AND 11TH OF MAY, AMSTERDAM
Featuring Remy Sharp and Jeremy Keith

[Buy tickets](#)

- HOME
- CONFERENCES
- NEWS
- ABOUT US
- CONTACT

MOBILISM 2012

- VENUE
- PROGRAMME
- WORKSHOPS
- TICKETS
- ATTENDEES
- SPONSORS

Recent posts (RSS)

- [Fast Track announced, session descriptions available, 13-03-2012](#)
- [James Pearce announced, 06-03-2012](#)
- [Helo Software announced, 28-02-2012](#)
- [Workshops announced, 21-02-2012](#)
- [Remy Sharp announced, 14-02-2012](#)

Follow us on [Twitter](#) for the latest Mobilism news.

Mobile is becoming increasingly important to web designers and developers because users expect a site to work on their phones. Simultaneously, the web is becoming increasingly important to the mobile world because it is the only way to deploy an application to any phone.

Nowadays most web conferences feature a mobile session, and most mobile conferences a web session. The obvious next step is Mobilism: a conference wholly dedicated to mobile web design and development.

Just like in 2011 we'll invite some of the best speakers from the web development and the mobile world to guide you through the confusing jungle of platforms, screen sizes, and browsers that is the mobile ecosystem.

Join our mailing list

Please leave your email address if you want to receive Mobilism 2012 information as soon as it becomes available.

Email address

[Subscribe](#)

Sponsors

Media partners



JavaScript properties

`window.innerWidth` and `window.innerHeight`

- The width and height of the visual viewport in CSS pixels
- Works everywhere, except on Android 2, Firefox, and IE9.

Zooming

Zooming

- On the desktop the viewport becomes less wide and the CSS pixels become larger.
- The same amount of device pixels now contains less CSS pixels, after all.
- So padding-left: 34% is recalculated,
- and width: 190px now covers more device pixels



- HOME
- CONFERENCES
- NEWS
- ABOUT US
- CONTACT

MOBILISM 2012

- VENUE
- PROGRAMME
- WORKSHOPS
- TICKETS
- ATTENDEES
- SPONSORSHIPS



MOBILISM 2012, 10TH AND 11TH OF MAY, AMSTERDAM

Featuring Remy Sharp and Jeremy Keith

[Buy tickets](#)

Recent posts (RSS)

- [Fast Track announced; session descriptions available](#), 13-03-2012
- [James Pearce announced](#), 06-03-2012
- [Heiko Behrens announced](#), 28-02-2012
- [Workshops announced](#), 21-02-2012
- [Remy Sharp announced](#), 14-02-2012

Follow us on [Twitter](#) for the latest Mobilism news.

Mobile is becoming increasingly important to web designers and developers because users expect a site to work on their phones. Simultaneously, the web is becoming increasingly important to the mobile world because it is the only way to deploy an application to any phone.

Nowadays most web conferences feature a mobile session, and most mobile conferences a web session. The obvious next step is Mobilism: a conference wholly dedicated to mobile web design and development.

Just like in 2011 we'll invite some of the best [speakers](#) from the web development and the mobile world to guide you through the confusing jumble of platforms, screen sizes, and browsers that is the mobile ecosystem.

Join our mailing list

Please leave your email address if you want to receive Mobilism 2012 information as soon as it becomes available.

Email address

mobillism

HOME
CONFERENCES
NEWS
ABOUT US
CONTACT

MOBILISM 2012

VENUE
PROGRAMME
WORKSHOPS
TICKETS
ATTENDEES
SPONSORSHIPS



MOBILISM 2012, 10TH AND 11TH OF MAY, AMSTERDAM

*Featuring Remy Sharp and
Jeremy Keith*

[Buy tickets](#)

Mobile is becoming increasingly important to web designers and developers because users expect a site to work on their phones. Simultaneously, the web is becoming increasingly important to the mobile world because it is the only way to deploy an application to any

Zooming

- On mobile the visual viewport becomes smaller, but the layout viewport remains static. Thus CSS declarations are not re-computed.
- The visual viewport now contains less CSS pixels.
- The user sees less of the complete site.



MOBILISM 2012, 10TH AND 11TH OF MAY, AMSTERDAM

Featuring Remy Sharp and Jeremy Keith

[Buy tickets](#)

Mobile is becoming increasingly important to web designers and developers because users expect a site to work on their phones. Simultaneously, the web is becoming increasingly important to the mobile world because it is the only way to deploy an application to any phone.

Nowadays most web conferences feature a mobile session, and most mobile conferences a web session. The obvious next step is Mobilism: a conference wholly dedicated to mobile web design and development.

Just like in 2011 we'll invite some of the best **speakers** from the web development and the mobile world to guide you through the confusing jumble of platforms, screen sizes, and browsers that is the mobile ecosystem.

Join our mailing list

Please leave your email address if you want to receive Mobilism 2012 information as soon as it becomes available.

Email address



MOBILISM 2012, 10TH AND 11TH OF MAY, AMSTERDAM

Featuring Remy Sharp and Jeremy

[Buy tickets](#)

Mobile is becoming increasingly important to web designers and developers both on their phones. Simultaneously, the web is becoming increasingly important to only way to deploy an application to any phone.

Nowadays most web conferences feature a mobile session, and most mobile obvious next step is Mobilism: a conference wholly dedicated to mobile web de

Just like in 2011 we'll invite some of the best **speakers** from the web development you through the confusing jumble of platforms, screen sizes, and browsers tha

Join our mailing list

Please leave your email address if you want to receive Mobilism 2012 informat available.

position:
fixed

position: fixed

“The box's position is calculated according to the 'absolute' model, but in addition, the box is fixed with respect to some reference. In the case of handheld, projection, screen, tty, and tv media types, the box is fixed with respect to the viewport and does not move when scrolled.”

position: fixed

“The box's position is calculated according to the 'absolute' model, but in addition, the box is fixed with respect to some reference. In the case of handheld, projection, screen, tty, and tv media types, the box is fixed with respect to the **viewport** and does not move when scrolled.”

position: fixed

But which viewport? Visual? Layout?

media types, the box is fixed with respect to the **viewport** and does not move when scrolled.”

position: fixed

- Browser-dependent
- Most browsers use the visual viewport (Android 3, Chrome, BlackBerry, IE10)
- others the layout viewport (Tizen, MeeGo, UC, IE9)
- Opera “hops”
- and Safari does something weird

Demo time

- <http://quirksmode.org/m/>

Media queries

Meta viewport

```
@media all and (max-width: 600px) {  
  .sidebar {  
    float: none;  
  }  
}
```

Media queries

- There are two important media queries:
- width (min-width and max-width)
- device-width (min-device-width and max-device-width)
- width is the one you want

Media queries - device-width

- device-width gives the width of the device screen
- in device pixels
- Equal to screen.width

file:///Users/ppk/Desktop/presentations/mobilismsite/Mobilism%202012.html

mobillism

HOME
NEWS
ABOUT US
CONTACT

MOBILISM 2012

VENUE
PROGRAMME
WORKSHOPS
TICKETS
ATTENDEES
SPONSORSHIPS

MOBILISM 2012, 10TH AND 11TH OF MAY, AMSTERDAM
Featuring Remy Sharp and Jeremy Keith
device-width
[Buy tickets](#)

Mobile is becoming increasingly important to web designers and developers because users expect a site to work on their phones. Simultaneously, the web is becoming increasingly important to the mobile world because it is the only way to deploy an application to any phone.

Nowadays most web conferences feature a mobile session, and most mobile conferences a web session. The obvious next step is Mobilism: a conference wholly dedicated to mobile web design and development.

Just like in 2011 we'll invite some of the best speakers from the web development and the mobile world to guide you through the confusing jumble of platforms, screen sizes, and browsers that is the mobile ecosystem.

[Join our mailing list](#)

Recent posts (RSS)

- Fast Track announced; session descriptions available, 13-03-2012
- James Pearce announced, 06-03-2012
- Heiko Behrens announced, 28-02-2012

- intel.txt
- administr...renthe.xls
- fiches_voor_devices.xls
- port_retest.txt
- n-We...-0.2.pptx
- remobileweb
- leleadvent
- oman
- ies
- webroot
- entations
- users
- intosh HD
- Me Be.docx
- ilefirst.pd
- formeerd.svg
- illa.txt
- vw-m...2-bar.csv
- och@...ucklicense
- ile_br...2-bar.csv
- Ljpeg
- omacy.txt
- oting...egapeu.xls
- ekosten.xls
- erables.txt
- AEASEA_12.pdf
- ebe.m4a
- ses_q32011.ods
- thenieuwsbrief.txt
- ile_br...3-bar.csv



Media queries - width

- width gives the width of the viewport
- in CSS pixels
- (There are a few zooming problems on desktop, though)
- Equal to
`document.documentElement.clientWidth`

file:///Users/ppk/Desktop/presentations/mobilismsite/Mobilism%202012.html

mobilism

- HOME
- CONFERENCES
- NEWS
- ABOUT US
- CONTACT

MOBILISM 2012

- VENUE
- PROGRAMME
- WORKSHOPS
- TICKETS
- ATTENDEES
- SPONSORSHIPS

MOBILISM 2012, 10TH AND 11TH OF MAY, AMSTERDAM
Featuring Remy Sharp and Jeremy Keith

width [Buy tickets](#)

Mobile is becoming increasingly important to web designers and developers because users expect a site to work on their phones. Simultaneously, the web is becoming increasingly important to the mobile world because it is the only way to deploy an application to any phone.

Nowadays most web conferences feature a mobile session, and most mobile conferences a web session. The obvious next step is Mobilism: a conference wholly dedicated to mobile web design and development.

Just like in 2011 we'll invite some of the best speakers from the web development and the mobile world to guide you through the confusing jumble of platforms, screen sizes, and browsers that is the mobile ecosystem.

Join our mailing list

Recent posts (RSS)

- Fast Track announced; session descriptions available, 13-03-2012
- James Pearce announced, 06-03-2012
- Helko Behrens announced, 28-02-2012

- intel.txt
- administr...renthe.xls
- fiches_voor_devices.xls
- port_retest.txt
- n-We...-0.2.pptx
- remobileweb
- leleadvent
- oman
- ies
- webroot
- entations
- users
- intosh HD
- Me Be.docx
- ilefirst.pdf
- formeerd.svg
- illa.txt
- vw-m...2-bar.csv
- och@...ucklicense
- ile_br...2-bar.csv
- Ljpeg
- omacy.txt
- oting...egapeu.xls
- ekosten.xls
- erables.txt
- AEASEA_12.pdf
- ebe.m4a
- ses_q32011.ods
- thenieuwsbrief.txt
- ile_br...3-bar.csv

SgLrH.png



MOBILISM 2012, 10TH AND 11TH OF MAY, AMSTERDAM

Featuring Remy Sharp and Jeremy Keith

[Buy tickets](#)

Mobile is becoming increasingly important to web designers and developers because users expect a site to work on their phones. Simultaneously, the web is becoming increasingly important to the mobile world because it is the only way to deploy an application to any phone.

Nowadays most web conferences feature a mobile session, and most mobile conferences a web session. The obvious next step is Mobilism: a conference wholly dedicated to mobile web design and development.

Just like in 2011 we'll invite some of the best **speakers** from the web development and the mobile world to guide you through the confusing jumble of platforms, screen sizes, and browsers that is the mobile ecosystem.

Join our mailing list

Please leave your email address if you want to receive Mobilism 2012 information as soon as it becomes available.

Email address



MOBILISM 2012, 10TH AND 11TH OF MAY, AMSTERDAM

Featuring Remy Sharp and Jeremy Keith

width

[Buy tickets](#)

Mobile is becoming increasingly important to web designers and developers because users expect a site to work on their phones. Simultaneously, the web is becoming increasingly important to the mobile world because it is the only way to deploy an application to any phone.

Nowadays most web conferences feature a mobile session, and most mobile conferences a web session. The obvious next step is Mobilism: a conference wholly dedicated to mobile web design and development.

Just like in 2011 we'll invite some of the best **speakers** from the web development and the mobile world to guide you through the confusing jumble of platforms, screen sizes, and browsers that is the mobile ecosystem.

Join our mailing list

Please leave your email address if you want to receive Mobilism 2012 information as soon as it becomes available.

Email address

Media queries

- width is the media query you want
- but at first sight it seems to be totally useless on mobile
- Usually we don't care about the width of the layout viewport
- We need to treat one more element, though.

Meta
viewport

Meta viewport

```
<meta name="viewport"  
  content="width=device-width">
```

Meta viewport

```
@viewport {  
    width: device-width;  
}
```

Only Opera for now

Meta viewport

```
<meta name="viewport"  
  content="width = device-width">
```

- The meta viewport tag tells the browser to set the size of the layout viewport
- You can give a pixel value
- or device-width, which means the screen size in dips (or device pixels)



MOBILISM 2012, 10TH AND 11TH OF MAY, AMSTERDAM

Featuring Remy Sharp and Jeremy Keith

[Buy tickets](#)

Mobile is becoming increasingly important to web designers and developers because users expect a site to work on their phones. Simultaneously, the web is becoming increasingly important to the mobile world because it is the only way to deploy an application to any phone.

Nowadays most web conferences feature a mobile session, and most mobile conferences a web session. The obvious next step is Mobilism: a conference wholly dedicated to mobile web design and development.

Just like in 2011 we'll invite some of the best **speakers** from the web development and the mobile world to guide you through the confusing jumble of platforms, screen sizes, and browsers that is the mobile ecosystem.

Join our mailing list

Please leave your email address if you want to receive Mobilism 2012 information as soon as it becomes available.

Email address

BlackBerry

Menu ▾

PROGRAMME

TICKETS

mobillism



MOBILISM 2012, 10TH AND 11TH OF MAY,
AMSTERDAM

*Featuring Remy Sharp
and Jeremy Keith*

[Buy tickets](#)



Meta viewport

```
<meta name="viewport"  
  content="width = device-width">
```

- There is little reason to use other values than device-width
- And because you tell the layout viewport to become as wide as the device
- the width media query now contains useful data

BlackBerry

Menu ▾

PROGRAMME

TICKETS

width mobillism



MOBILISM 2012, 10TH AND 11TH OF MAY,
AMSTERDAM

*Featuring Remy Sharp
and Jeremy Keith*

[Buy tickets](#)



Responsive design

- So the trick for creating a responsive design
- is using `<meta name="viewport" content="width=device-width" />`
- in combination with width media queries
- You probably already knew that
- but now you also understand **why**

Thank you

I'll put these slides online

Questions?

Peter-Paul Koch

<http://quirksmode.org>

<http://twitter.com/ppk>

MoBeers, 10 April 2012