

# RESPONSIVE WEB DESIGN





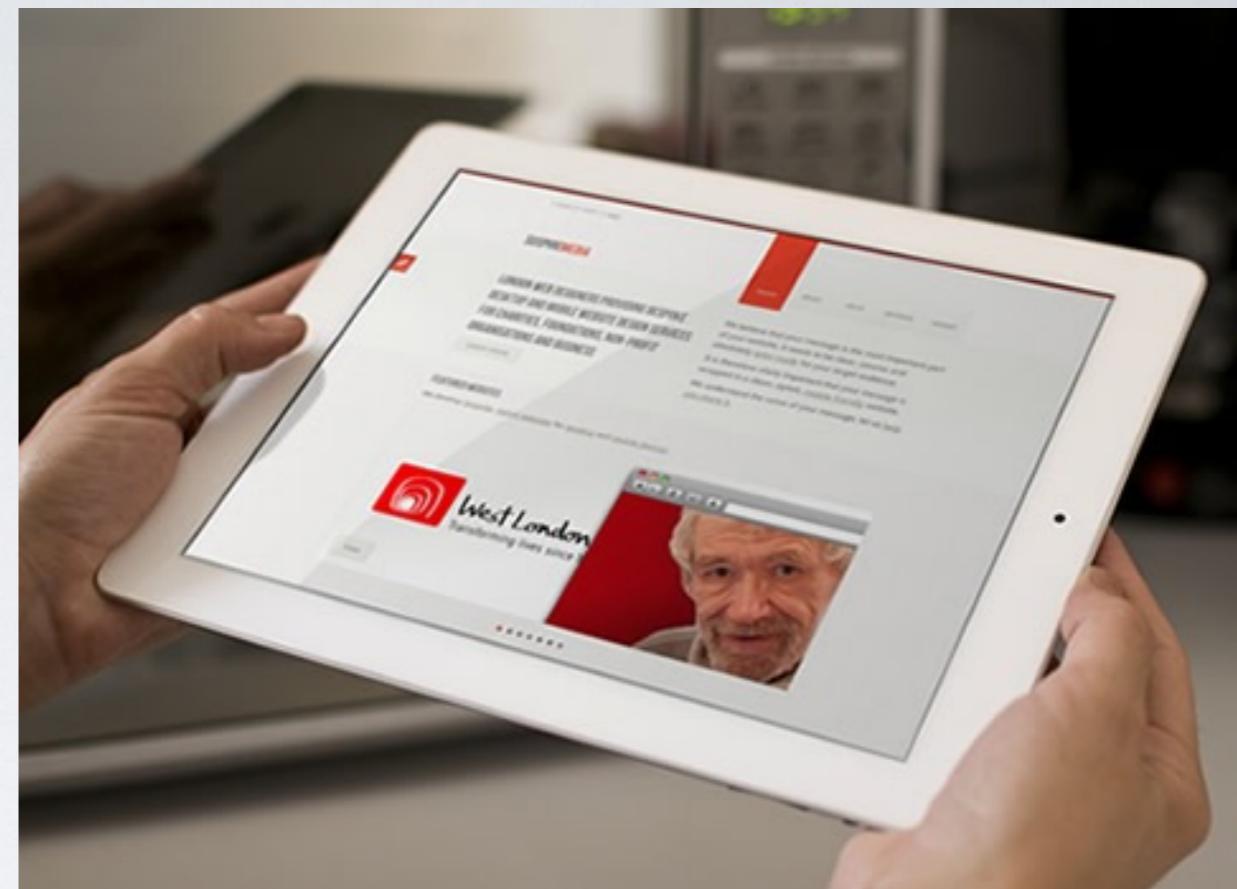
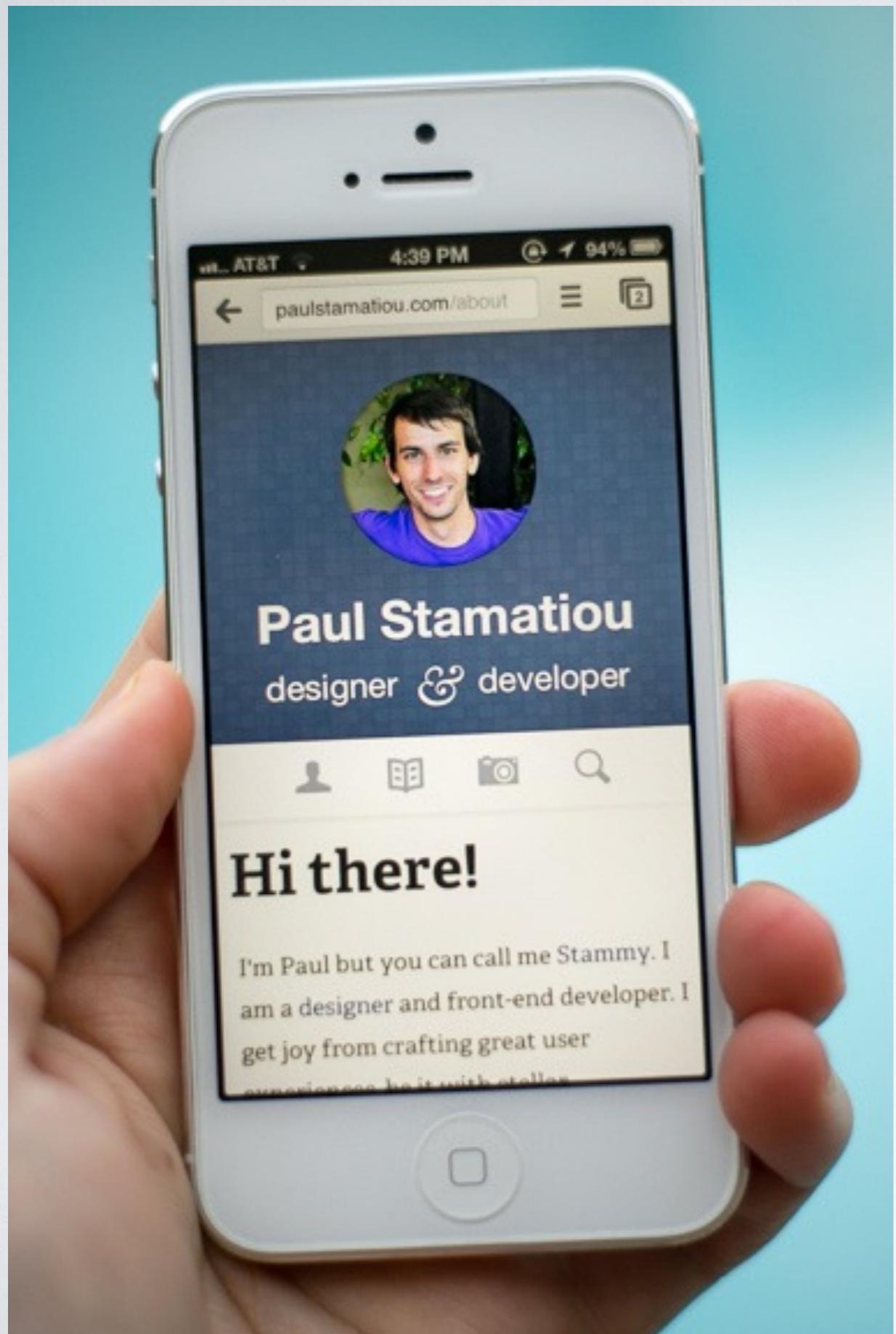
... c'est pourtant ce qu'on a fait jusque là

# THIS IS THE WEB.

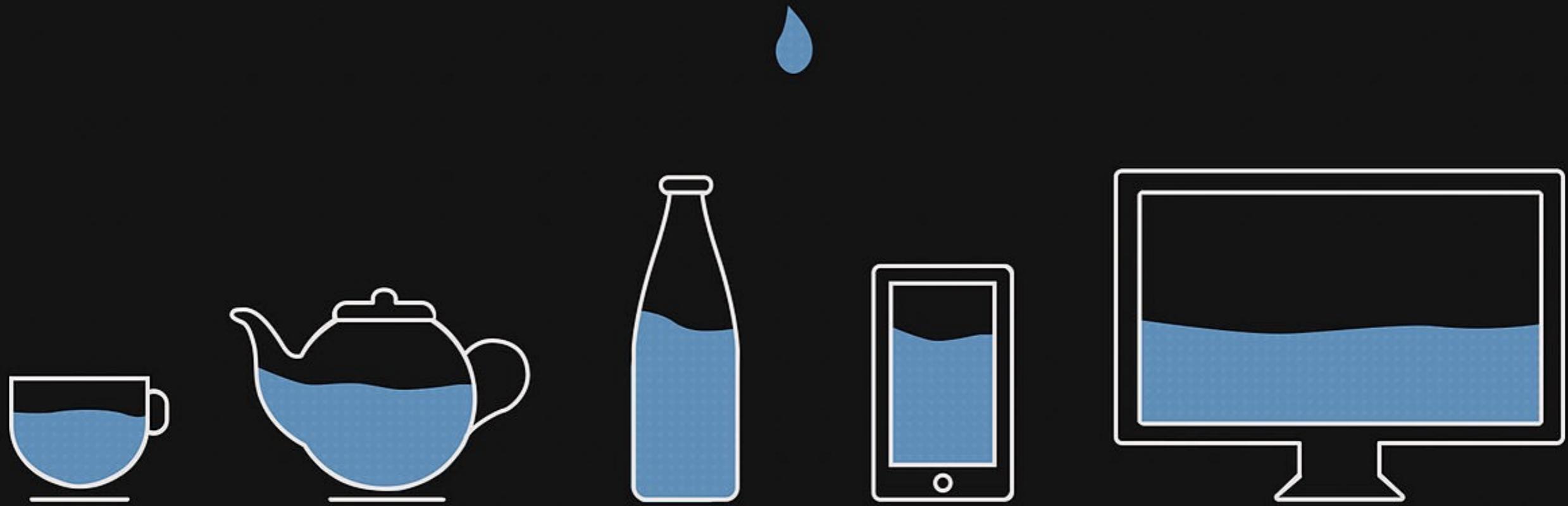


THIS WILL BE THE WEB.



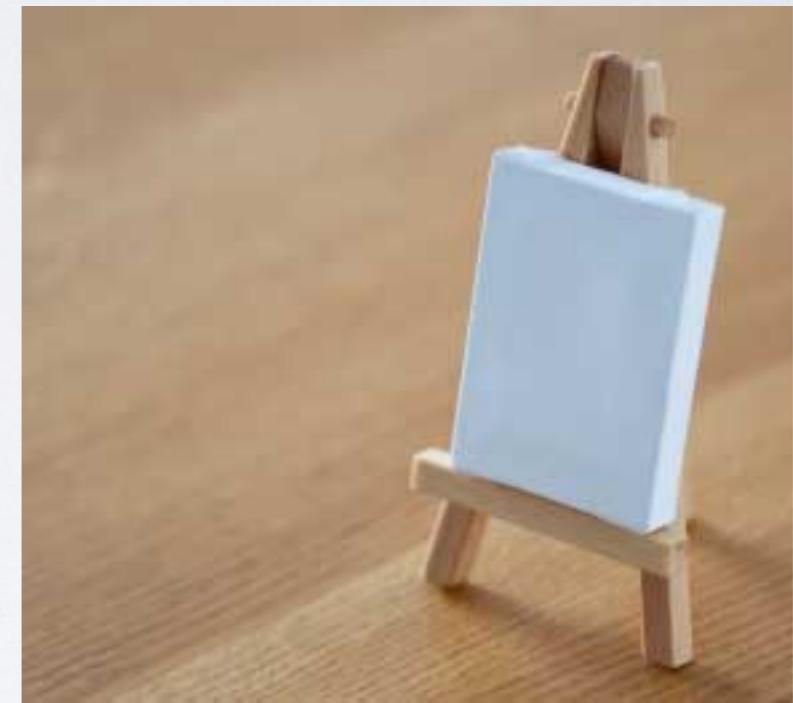


# CONTENT IS LIKE WATER



“ You put water into a cup it becomes the cup.  
You put water into a bottle it becomes the bottle.  
You put it in a teapot, it becomes the teapot. ”

# PRINT VS WEB



**Le Monde.fr - Actualité à la une**

[www.lemonde.fr](http://www.lemonde.fr)

Le Monde | Télérama | Le Monde diplomatique | Le Huffington Post | Courrier international | La Vie | au Japon

Rechercher dans nos articles  Suivez-nous [f](#) [t](#) [g+](#) Recevez nos newsletters

Hello bank! **le Monde.fr** ÉDITION ABONNÉS

**Le Monde**

Dernière mise à jour à 16h09 – Paris

INTERNATIONAL POLITIQUE SOCIÉTÉ ÉCO CULTURE IDÉES PLANÈTE SPORT

## Après le déluge, le sud de la France tente de panser ses plaies 5



Le Var, l'Aude et les Pyrénées-Orientales inondés devraient être placés en état de catastrophe naturelle après les pluies diluviales de samedi et dimanche.

- Les dégâts causés par les intempéries en images PORTFOLIO
- Inondations dévastatrices dans les Pyrénées-Orientales et l'Aude VIDÉO
- Inondations : poursuite de la décrue, les évacués rentrés chez eux
- Alerte rouge aux intempéries dans le Roussillon, près de 3 000 évacuations

**EN CONTINU** 15:51 Le Japon, pays des « cellules puissantes »

**Le Monde.fr - Actualité à la une**

[mobile.lemonde.fr](http://mobile.lemonde.fr)

Connexion | S'inscrire S'abonner dès 1 €

## Le Monde.fr

Mise à jour à 16h09 – Paris

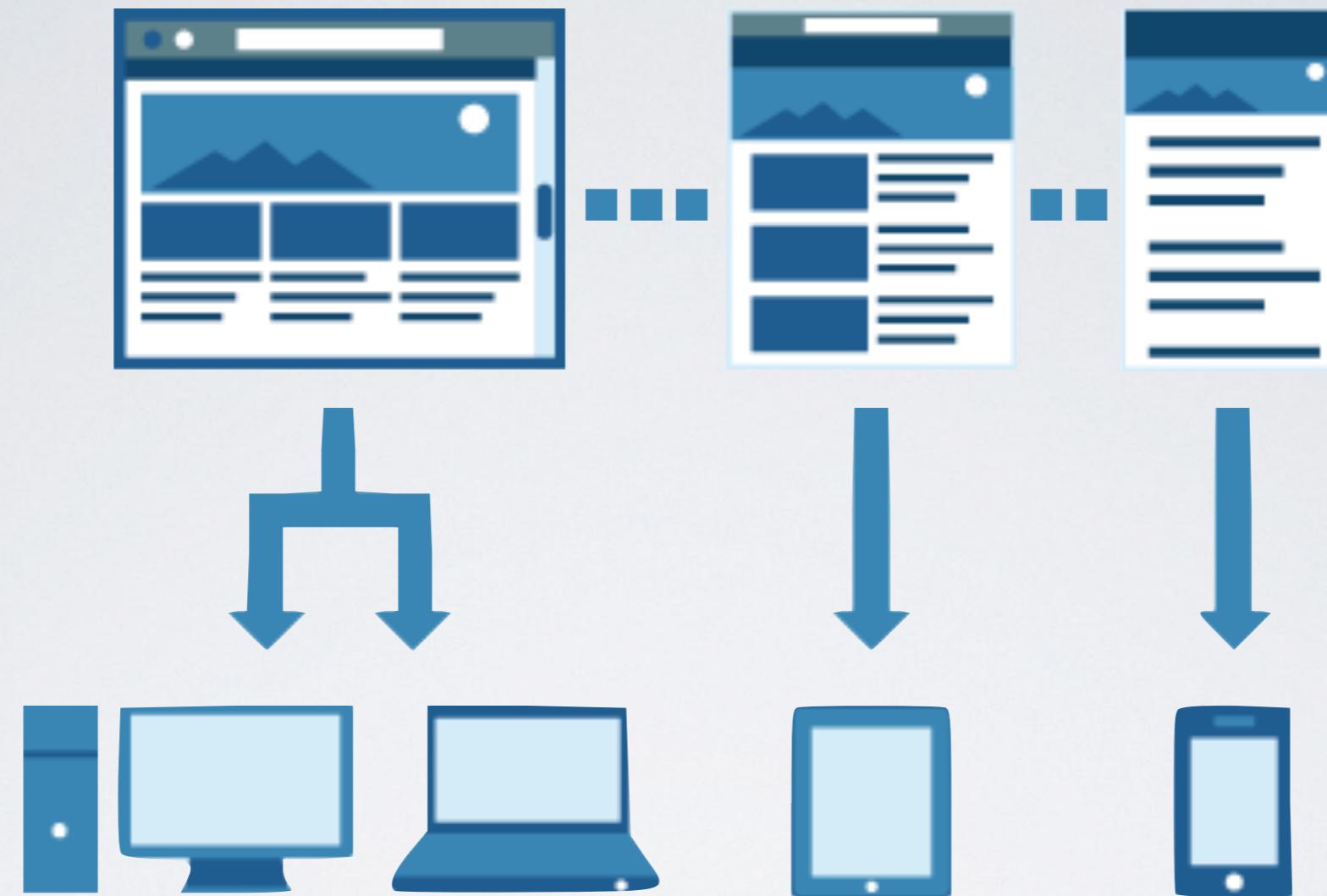
## Après le déluge, le sud de la France tente de panser ses plaies



Le Var, l'Aude et les Pyrénées-Orientales inondés devraient être placés en état de catastrophe naturelle après les pluies diluviales de samedi et dimanche.

- Les dégâts causés par les intempéries en images PORTFOLIO
- Inondations : poursuite de la décrue, les évacués rentrés chez eux
- Inondations dévastatrices dans les Pyrénées-Orientales et l'Aude VIDÉO
- Alerte rouge aux intempéries dans le Roussillon, près de 3 000 évacuations

### Les quatre défis de Nicolas Sarkozy



# RESPONSIVE WEB DESIGN

# DÉFINITION

Mobile design

Adaptive design

Responsive design



Web design

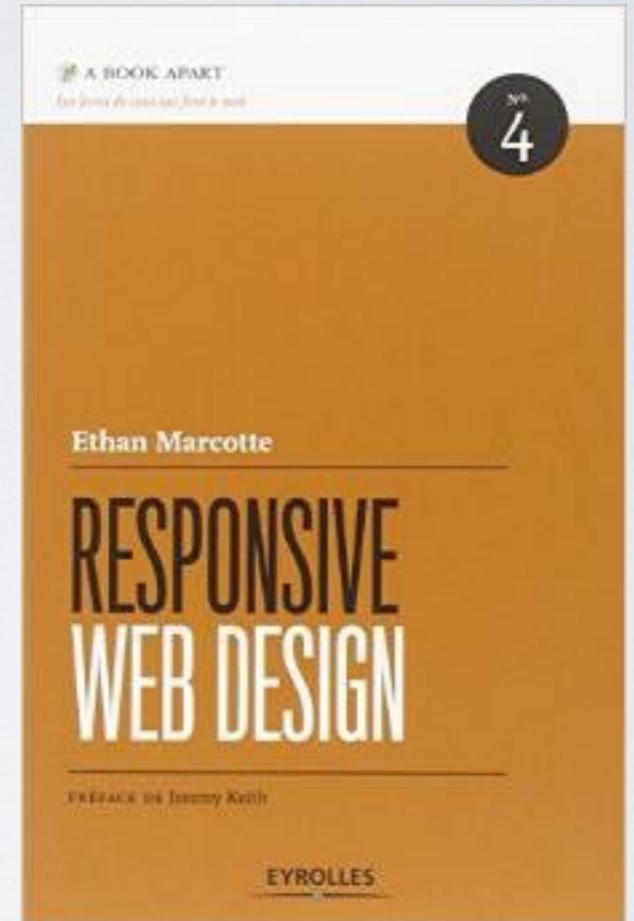
# DÉFINITION

Grilles fluides

- + Images flexibles
- + Media Queries

---

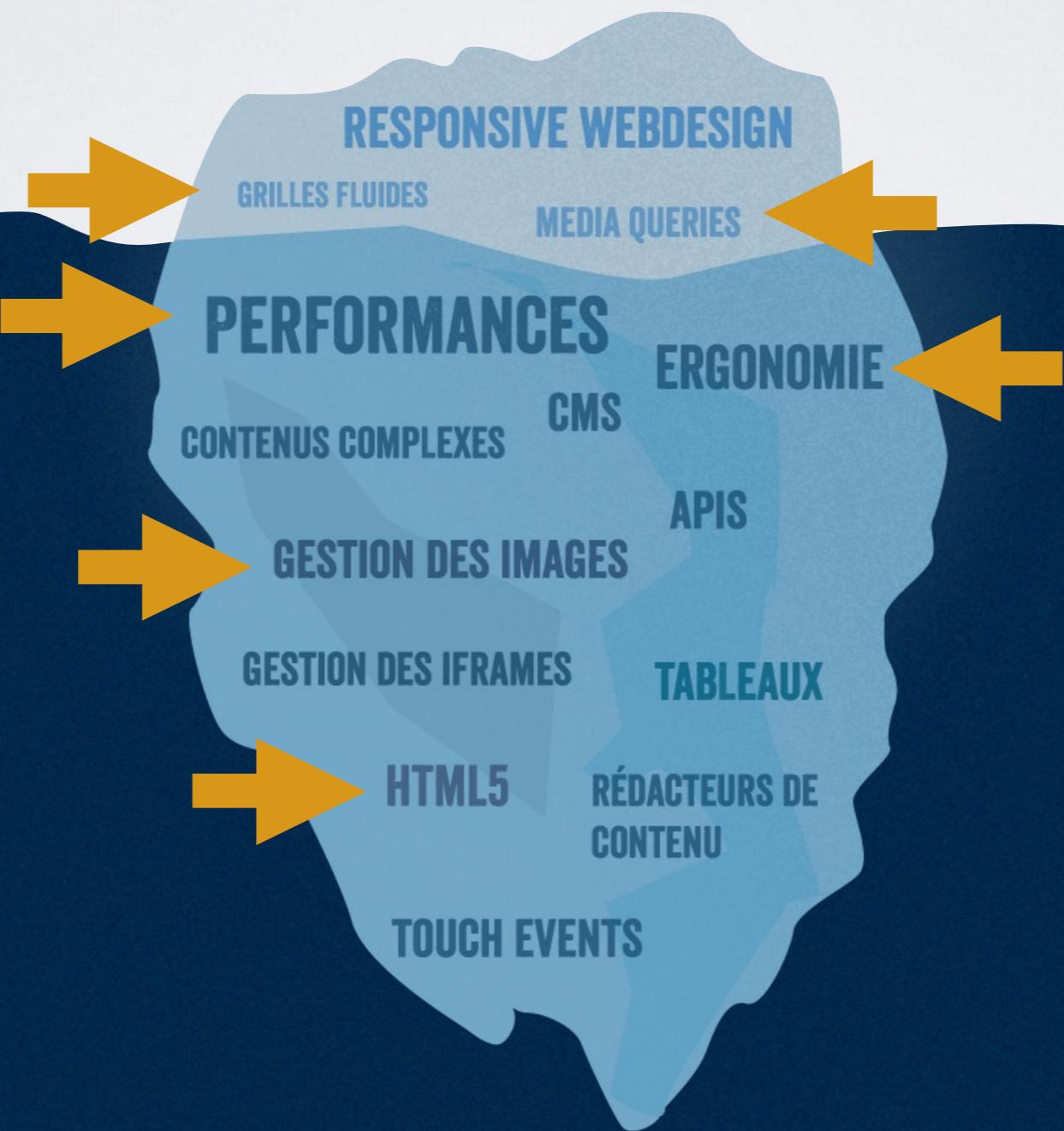
= RESPONSIVE WEB DESIGN



# CHALLENGES



# CHALLENGES



# FLUID LAYOUT

# DÉFINITION

*Fluid layouts* : dispositions qui s'adaptent en taille

*Fixed layout* : dispositions qui ont une taille fixe



# DÉFINITION



*Fluid layouts* : disposition qui s'adaptent en taille

*Fixed layout* : disposition qui ont une taille fixe



**FLUID VS RESPONSIVE**



# FLUID LAYOUT



# FLUID LAYOUT & RESPONSIVE DESIGN

# FLUID LAYOUT

- Pilier central du responsive web design
- Dimensionnement de la page en pourcentage et « em » plutôt qu'en pixels

# FLUID LAYOUT

```
h1 {  
    font-size: 30px;  
    font-weight: bold;  
}
```

# FLUID LAYOUT

## Initial setup

```
html {  
  font-size: 16px;  
}  
body {  
  color: #352a25;  
  font-family: Georgia, serif;  
  font-size: 62.5% /* 1em = 10px */  
}
```

# FLUID LAYOUT

cible / contexte = résultat

30px / 10px = 3em

```
h1 {  
  font-size: 3em; /* 30px/10px */  
  font-weight: bold;  
}
```

# FLUID LAYOUT

cible / contexte = résultat

14px / 30px = 0.4666667em

```
h1 a {  
    font-size: 0.4666667em; /* 14px/30px */  
    text-transform: uppercase;  
    text-decoration: none;  
    color: #6C564B;  
}
```

# FLUID LAYOUT

cible / contexte = résultat

```
.sidebar {  
width: 20%; /* 240px/1200px */  
}
```

```
.main {  
width: 80%; /* 960px/1200px */  
}
```

# FLUID LAYOUT

cible / contexte = résultat

```
.sidebar {  
    width: 10%; /* 120px/1200px */  
}  
  
.main {  
    width: 90%; /* 1080px/1200px */  
}
```

# FLUID LAYOUT

Rdio - Luke Chesser

file:///Users/francois/Dropbox/Dropbox%20-%20Formation/ECE%20-%20HTML5%20:%20CSS3/TP%20-%20Responsive/CSS3/index.html

rdio Luke Chesser

BROWSE

- Heavy Rotation
- Recent Activity
- Top Charts
- New Releases

YOUR MUSIC

- Collection
- History

Luke Chesser

Montreal, Quebec, Canada [f](#) [t](#)

2 Playlists 4 Reviews 6 Followers 13 Following

Collection History

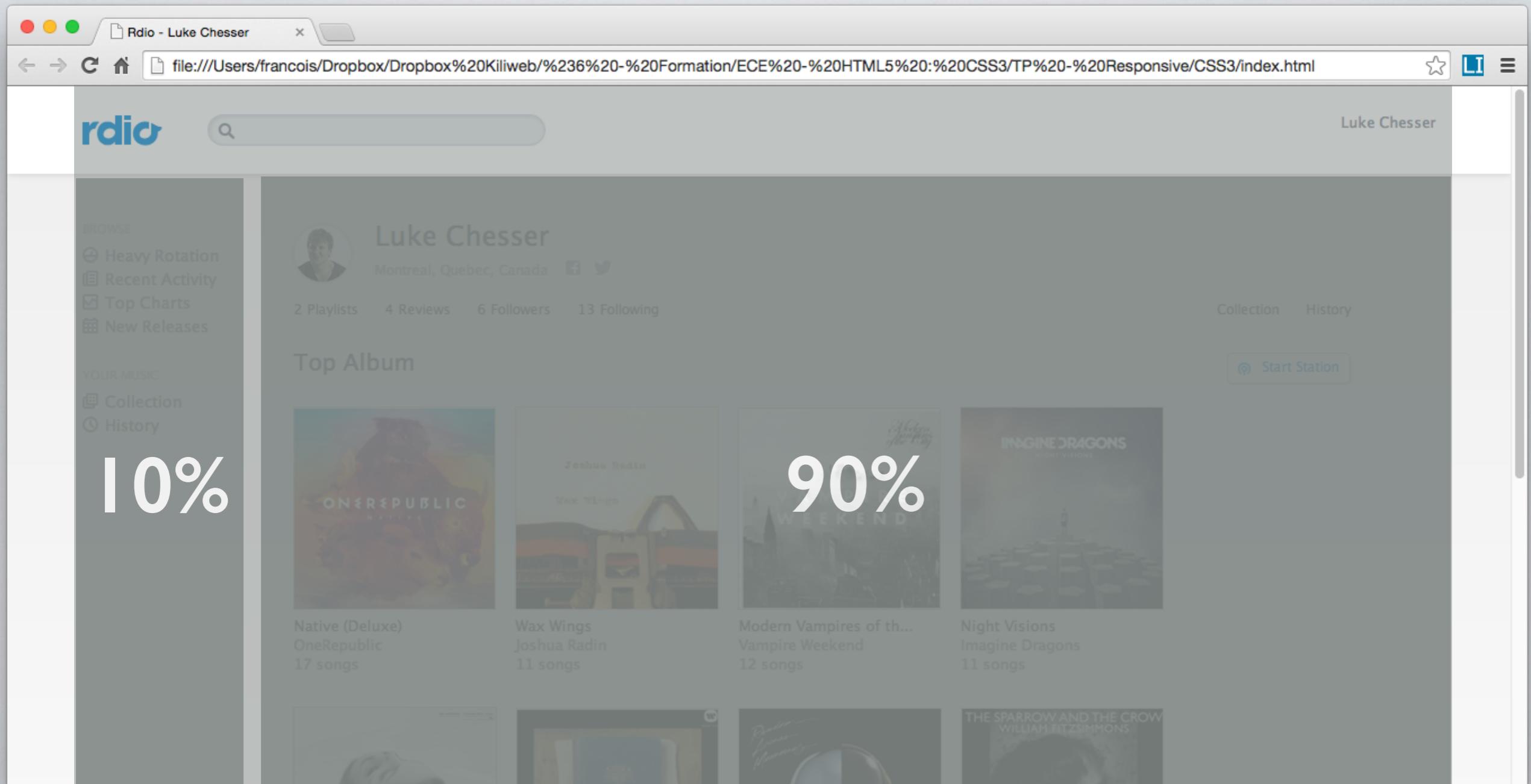
Start Station

Top Album

90%

| Album Cover | Artist              | Title                       | Song Count |
|-------------|---------------------|-----------------------------|------------|
|             | OneRepublic         | Native (Deluxe)             | 17 songs   |
|             | Joshua Radin        | Wax Wings                   | 11 songs   |
|             | Vampire Weekend     | Modern Vampires of the City | 12 songs   |
|             | Imagine Dragons     | Night Visions               | 11 songs   |
|             | William Fitzsimmons | The Sparrow and the Crow    | 11 songs   |

# FLUID LAYOUT



# CONTEXTE POUR LES MARGIN / PADDING

- Pour les *margin*, le contexte est la largeur de l'élément parent
- Pour les *padding*, le contexte est la largeur de l'élément lui même

# GRILLES FLUIDES

# GRILLES FLUIDES

- Les grilles fluides nous aident à mettre en place **rapidement** un design web
- X colonnes de taille **égale** (éventuellement espacées également)

# GRILLES FLUIDES

The New York Times - Briefing

www.nytimes.com

SECTIONS SEARCH U.S. INTERNATIONAL 中文 SUBSCRIBE NOW LOG IN

MOVADO MOVADO.COM

The New York Times

Monday, December 1, 2014 | Today's Paper | Video | 39°F | Dow -0.15% ↓

SAPPHIRE SYNERGY CHRONOGRAPH MINIMALIST DESIGN

World U.S. Politics New York Business Opinion Technology Science Health Sports Arts Style Food Home Travel Magazine Real Estate ALL

International New York Times GLOBAL COVERAGE THAT GOES EVERYWHERE YOU DO. JUST 99¢ FOR 4 WEEKS THEN 50% OFF GET IT NOW >

**Boehner Uses New Mandate to Muffle Talk of a Shutdown**

By CARL HULSE and JEREMY W. PETERS

Speaker John A. Boehner is working to persuade the Republican rank and file that engaging in a politically explosive spending confrontation is the wrong way to counter the White House.

271 Comments

**Hackers Target Biotech, Apparently to Gain Market Edge**

By NICOLE PERLROTH 8:00 AM ET

Using flawless English and an insider's knowledge of Wall Street, the cybercriminals have gained access to the inboxes of top health care executives.

**Alien Life Form Tames Asphalt Jungle: Trees**

By ANDY NEWMAN

Over the last 50 or 75 or 100 years, sometimes without residents consciously noticing, the more developed parts of the city have grown greener.

**Nazi Hunter Says Eichmann's Top Aide Died in Syria**

By JODI RUDOREN 7:49 AM ET

Alois Brunner, Adolf Eichmann's "right-hand man" and responsible for the deportation of 128,500 Jews to death camps, died at least four years ago, Efraim Zuroff said.

THE STONE Evolution and the Myth of the Individual

By JOHN EDWARD TERRELL

The sanctification of the idea of the individual embraced by libertarians and the Tea Party ignores our evolved human nature as social animals.

Editorial: Women Who Work

The Opinion Pages

Finding a Pentagon Chief

Given the onslaught of global crises, what skills should Obama look for in a defense secretary?

Blow: Crime and Punishment

Cohen: From Oops to Whoops

Krugman: Being Bad Europeans

Baird: The Great White Shark's Image Problem

ROOM for DEBATE

International New York Times GLOBAL COVERAGE THAT GOES EVERYWHERE YOU DO JUST 99¢ FOR 4 WEEKS THEN 50% OFF GET IT NOW >

# GRILLES FLUIDES

The New York Times - Briefing

www.nytimes.com

SECTIONS SEARCH

MOVADO MOVADO.COM

U.S. INTERNATIONAL 中文

SUBSCRIBE NOW LOG IN

Monday, December 1, 2014 Today's Paper Video 39°F Dow -0.15% ↓

World U.S. Politics New York Business Opinion Technology Science Health Sports Arts Style Food Home Travel Magazine Real Estate ALL

International New York Times GLOBAL COVERAGE THAT GOES EVERYWHERE YOU DO. JUST 99¢ FOR 4 WEEKS THEN 50% OFF GET IT NOW >

**Boehner Uses New Mandate to Muffle Talk of a Shutdown**

By CARL HULSE and JEREMY W. PETERS

Speaker John A. Boehner is working to persuade the Republican rank and file that engaging in a politically explosive spending confrontation is the wrong way to counter the White House.

271 Comments

**Hackers Target Biotech, Apparently to Gain Market Edge**

By NICOLE PERLROTH 8:00 AM ET

Using flawless English and an insider's knowledge of Wall Street, the cybercriminals have gained access to the inboxes of top health care executives.

**Alien Life Form Tames Asphalt Jungle: Trees**

By ANDY NEWMAN

Over the last 50 or 75 or 100 years, sometimes without residents consciously noticing, the more developed parts of the city have grown greener.

**Nazi Hunter Says Eichmann's Top Aide Died in Syria**

By JODI RUDOREN 7:49 AM ET

Alois Brunner, Adolf Eichmann's "right-hand man" and responsible for the deportation of 128,500 Jews to death camps, died at least four years ago, Efraim Zuroff said.

THE STONE Evolution and the Myth of the Individual

By JOHN EDWARD TERRELL

The sanctification of the idea of the individual embraced by libertarians and the Tea Party ignores our evolved human nature as social animals.

Editorial: Women Who Work

The Opinion Pages

Finding a Pentagon Chief Given the onslaught of global crises, what skills should Obama look for in a defense secretary?

Blow: Crime and Punishment · Cohen: From Oops to Whoops · Krugman: Being Bad Europeans · Baird: The Great White Shark's Image Problem

ROOM for DEBATE

International New York Times GLOBAL COVERAGE THAT GOES EVERYWHERE YOU DO JUST 99¢ FOR 4 WEEKS THEN 50% OFF GET IT NOW >

Drupal - Open Source CMS

https://www.drupal.org

Get Started Community Documentation Support Download & Extend Marketplace About

# Drupal™

Come for the software, stay for the community

Drupal is an open source content management platform powering millions of websites and applications. It's built, used, and supported by an active and diverse community of people around the world.

Drupal Homepage Log In / Register

Why Choose Drupal?

Use Drupal to build everything from personal blogs to enterprise applications. Thousands of add-on modules and designs let you build any site you can imagine. Join us!

Get Started with Drupal

Drupal Distributions

Distributions are a collection of pre-configured themes and modules for feature-rich web sites giving you a head start on building your site. Build your own online communities, media portal, online store, and more!

Learn about Distributions

Search Drupal.org

Refine your search

- All
- Themes
- Forums & Issues
- Modules
- Documentation
- Groups

Sites Made with Drupal



Doctors of BC

Drupal is used by some of the biggest sites on the Web, like [The Economist](#), [Examiner.com](#) and [The White House](#). Read more [Drupal case studies](#).

Develop with Drupal

**Drupal 8 is in beta.** Get regular updates about the process or [volunteer](#) as a developer, designer or tester.

28,794 Modules      This week  
2,086 Themes      2,687 Code commits  
877 Distributions      4,360 Issue comments  
36,231 Developers

Drupal Core  
Security Info  
Developer Docs  
API Docs

Find Talent  
Find Careers  
[jobs.drupal.org](#)



1,132,803 people in 229 countries\* speaking 180 languages power Drupal.



News Docs Updates Forum Posts Commits

Drupal 7.34 and 6.34 released

Drupal - Open Source CMS

https://www.drupal.org

# Drupal™

Come for the software, stay for the community

Drupal is an open source content management platform powering millions of websites and applications. It's built, used, and supported by an active and diverse community of people around the world.

Drupal Homepage Log In / Register

## Why Choose Drupal?

Use Drupal to build everything from personal blogs to enterprise applications. Thousands of add-on modules and designs let you build any site you can imagine. Join us!

Get Started with Drupal

## Drupal Distributions

Distributions are a collection of pre-configured themes and modules for feature-rich web sites giving you a head start on building your site. Build your own online communities, media portal, online store, and more!

Learn about Distributions

 1,132,803 people in 229 countries\* speaking 180 languages power Drupal.

## Sites Made with Drupal



Doctors of BC

Drupal is used by some of the biggest sites on the Web, like [The Economist](#), [Examiner.com](#) and [The White House](#). Read more [Drupal case studies](#).

## Develop with Drupal

 Drupal™

Drupal 8 is in beta. Get regular updates about the process or [volunteer](#) as a developer, designer or tester.

28,794 Modules  
2,086 Themes  
877 Distributions  
36,231 Developers

This week  
2,687 Code commits  
4,360 Issue comments

Drupal Core  
Security Info  
Developer Docs  
API Docs

Find Talent  
Find Careers  
[jobs.drupal.org](#)

Search Drupal.org

Refine your search

- All
- Themes
- Forums & Issues
- Modules
- Documentation
- Groups

Search

News Docs Updates Forum Posts Commits

Drupal 7.34 and 6.34 released

# GRILLES FLUIDES

- Des classes spéciales définissent la largeurs des éléments

.col-md-4

.col-md-4

.col-md-4

.col-md-3

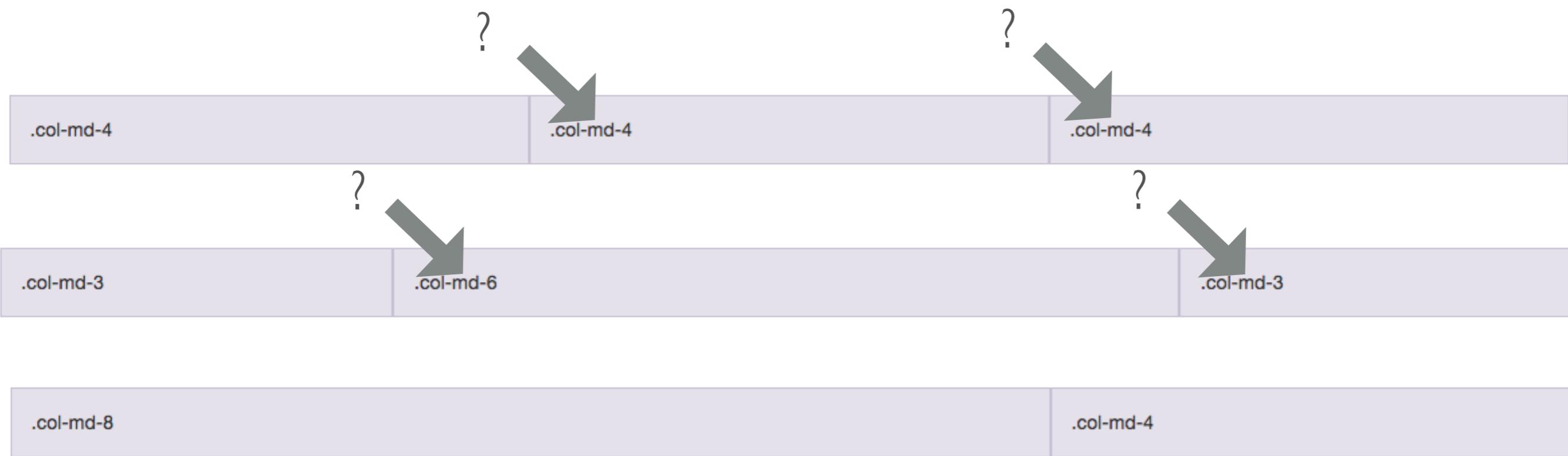
.col-md-6

.col-md-3

.col-md-8

.col-md-4

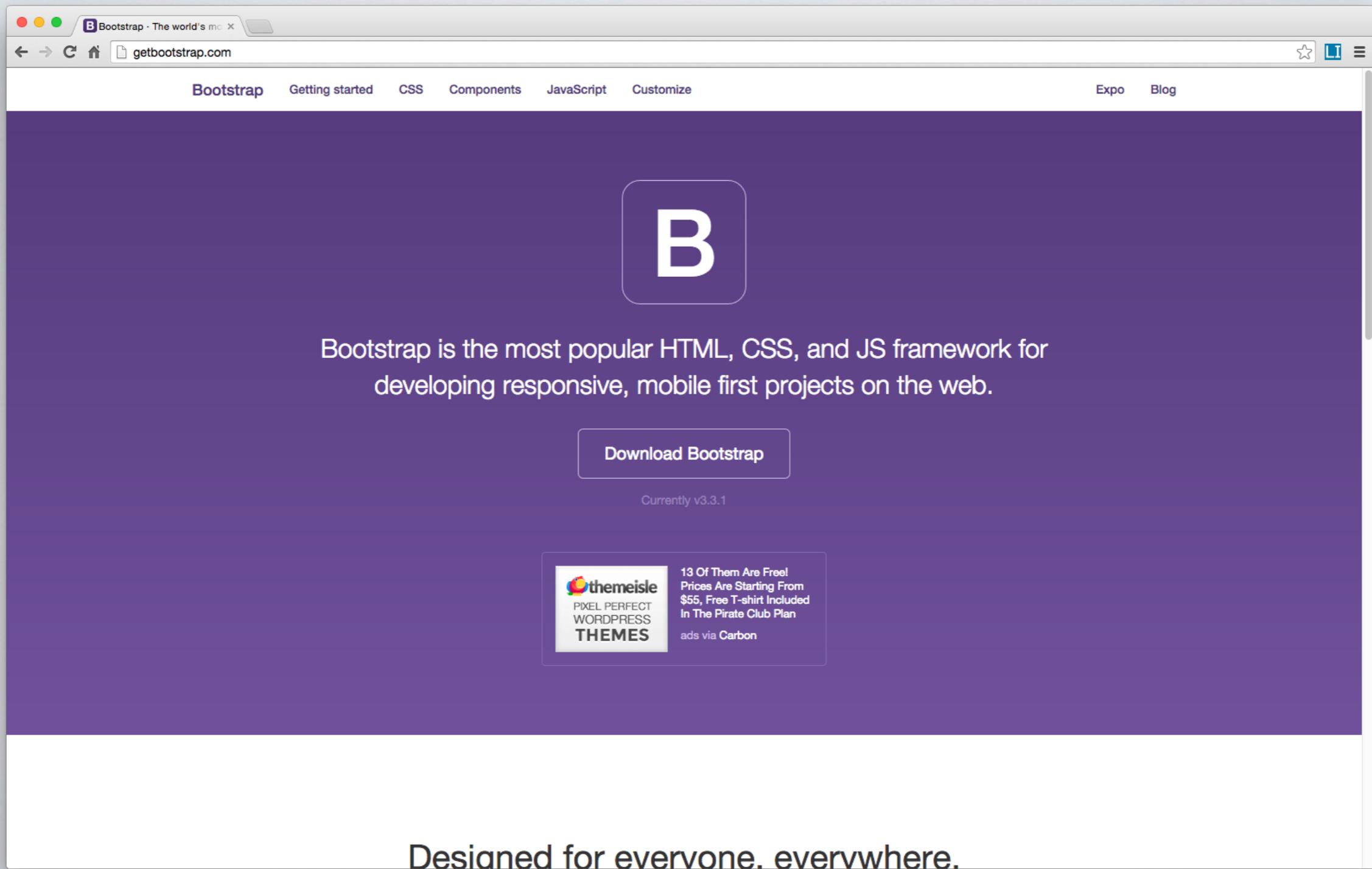
# GRILLES FLUIDES



# GRILLES FLUIDES

|                      | Téléphone | Tablette  | Bureau    | TV        |
|----------------------|-----------|-----------|-----------|-----------|
| Largeur d'écran      | < 768px   | < 992     | < 1200    | > 1200    |
| Classe CSS Bootstrap | .col-xs-X | .col-sm-X | .col-md-X | .col-lg-X |

# FRAMEWORKS CSS



The screenshot shows the homepage of the Bootstrap website ([getbootstrap.com](http://getbootstrap.com)) displayed in a web browser. The page has a purple header with the Bootstrap logo (a large white 'B' inside a rounded square) and navigation links for Bootstrap, Getting started, CSS, Components, JavaScript, Customize, Expo, and Blog. Below the header is a large purple section containing the Bootstrap logo and the text: "Bootstrap is the most popular HTML, CSS, and JS framework for developing responsive, mobile first projects on the web." A "Download Bootstrap" button is present, along with a note that it's currently version v3.3.1. At the bottom of the purple section is an advertisement for ThemeIsle, featuring their logo and text about free themes and prices starting from \$55. The footer contains the slogan "Designed for everyone. everywhere."

Bootstrap - The world's most popular front-end framework.

getbootstrap.com

Bootstrap Getting started CSS Components JavaScript Customize

Expo Blog

B

Bootstrap is the most popular HTML, CSS, and JS framework for developing responsive, mobile first projects on the web.

Download Bootstrap

Currently v3.3.1

themeisle

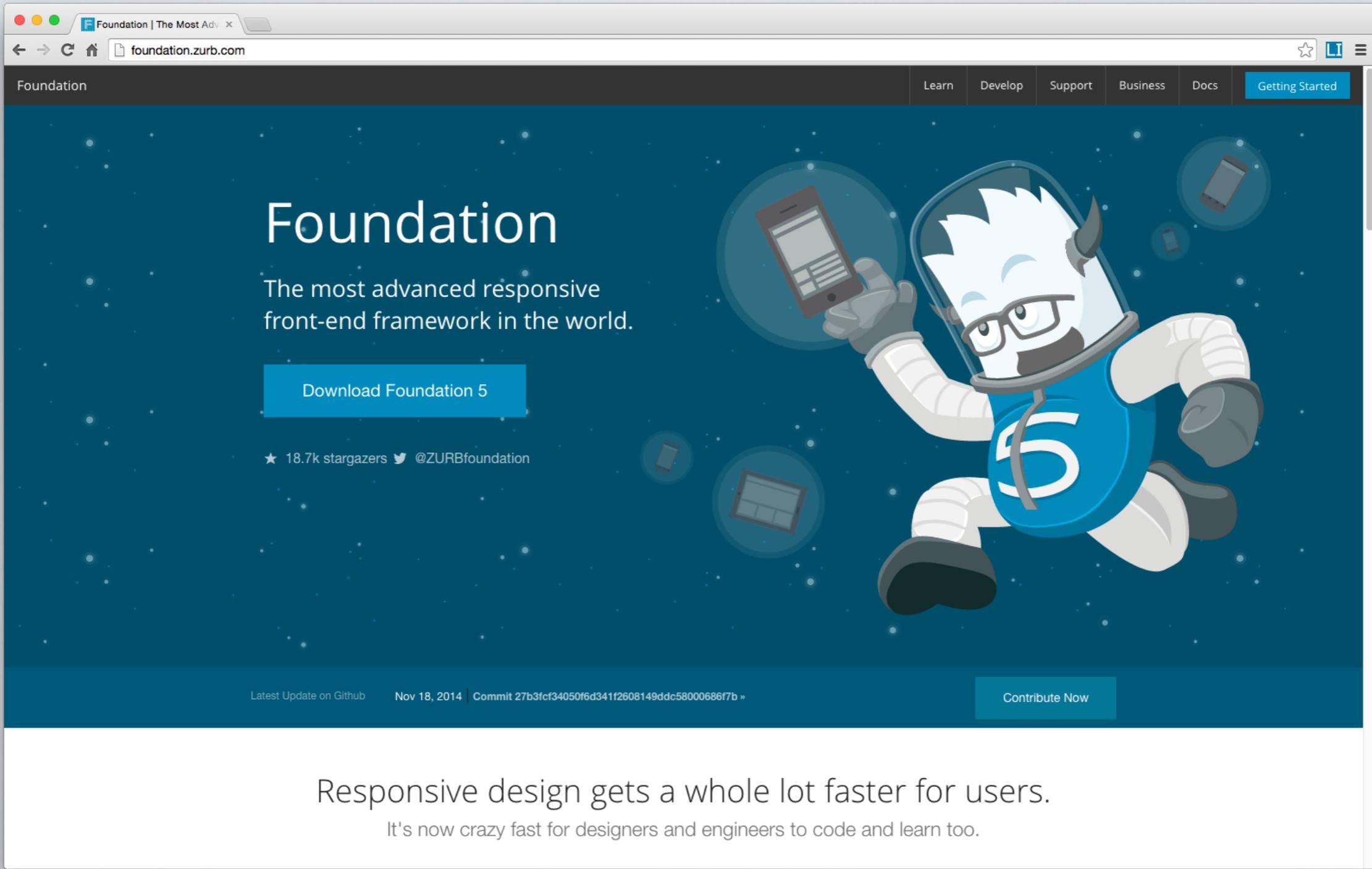
13 Of Them Are Free!  
Prices Are Starting From  
\$55, Free T-shirt Included  
In The Pirate Club Plan

PIXEL PERFECT WORDPRESS THEMES

ads via Carbon

Designed for everyone. everywhere.

# FRAMEWORKS CSS



The screenshot shows the homepage of the Foundation framework website at foundation.zurb.com. The page has a dark blue background with a space-themed illustration of a white, horned character wearing a blue spacesuit with a large '5' on the chest, floating among floating devices like phones and tablets. The main heading 'Foundation' is in large white font. Below it is the tagline 'The most advanced responsive front-end framework in the world.' A blue button labeled 'Download Foundation 5' is visible. At the bottom, there's a footer bar with links to GitHub and a commit hash, and a 'Contribute Now' button.

Foundation | The Most Advanced Front-end Framework in the World

foundation.zurb.com

Foundation

Learn Develop Support Business Docs Getting Started

# Foundation

The most advanced responsive front-end framework in the world.

Download Foundation 5

★ 18.7k stargazers [@ZURBfoundation](#)

Latest Update on Github Nov 18, 2014 | Commit 27b3fcf34050f6d341f2608149ddc58000686f7b »

Contribute Now

Responsive design gets a whole lot faster for users.  
It's now crazy fast for designers and engineers to code and learn too.

# FRAMEWORKS CSS

The screenshot shows the Susy website ([susy.oddbird.net](http://susy.oddbird.net)) displayed in a web browser. The page features a large, bold 'S' logo with the word 'Susy' next to it. Below the logo, the tagline 'your layout | our math' is visible. The main heading 'Power tools for the web' is centered above a blue navigation bar. The bar includes links for 'Version 2.1.3:', 'Changes', 'Upgrade Path', and 'Code'. Below the bar, a section titled 'YOUR MARKUP, YOUR DESIGN, YOUR OPINIONS | OUR MATH.' discusses the philosophy behind Susy. The page also includes sections for 'IN THE WILD' showing examples from various websites like Virgin America, Esquire, and Square Market.

**Susy**  
your layout | our math

Documentation Tutorials Support Twitter

Power tools for the web

Version 2.1.3: Changes Upgrade Path Code

YOUR MARKUP, YOUR DESIGN, YOUR OPINIONS | OUR MATH.

In a world of agile development and super-tablet-multi-magic-laptop-phones, the best layouts can't be contained in a single framework or technique. CSS Libraries are a bloated mess of opinions about how to do your job. Why let the table-saw tell you where to put the kitchen?

IN THE WILD

The 'IN THE WILD' section displays screenshots of several websites using Susy's layout:

- Sass**: A CSS preprocessor. The screenshot shows the Sass homepage with a large image of a pair of glasses and the text 'CSS with superpowers'.
- Virgin America**: A travel website. The screenshot shows a flight search interface with a dropdown menu for 'Shop from San Francisco' and a list of destination cities.
- Esquire**: A magazine website. The screenshot shows the homepage with a large banner and navigation links.
- Square Market**: A local commerce platform. The screenshot shows a landing page for shopping at neighborhood businesses.

# FRAMEWORKS CSS

The screenshot shows a web browser displaying the 960 Grid System homepage. The title bar reads "960 960 Grid System". The main content area features a large "960 GRID SYSTEM" logo. To the left, there's a "Twitter" icon and a link to "Download" files for various tools. A central button says "Big ol' DOWNLOAD button :)". Below the main logo, there are links for "the changelog", "VIEW SLIDES ABOUT THE 960 GRID SYSTEM", "ADAPT.JS - ADAPTIVE CSS", "CUSTOM CSS GENERATOR", and "GRID OVERLAY BOOKMARK". The page is divided into three columns: "Essence", "Dimensions", and "Purpose", each containing descriptive text. At the bottom, there are sections for "More Columns" and "Source Order". A small note at the top right suggests checking out Unsemantic.com for a responsive grid framework.

If you want a responsive grid framework, check out [Unsemantic.com](#)

**Twitter**  
nathan.smith

[Download](#) - CSS, sketch paper, and templates for: Acorn, Fireworks, Flash, InDesign, GIMP, Inkscape, Illustrator, OmniGraffle, Photoshop, QuarkXPress, Visio, Exp Design. Repository at [GitHub](#).

**960**  
GRID SYSTEM

ADS BY FUSION

Today only - 50% off all Flywheel hosting plans.

**50% OFF**  
WordPress Hosting

Big ol' DOWNLOAD button :)

the changelog

VIEW SLIDES ABOUT THE 960 GRID SYSTEM

ADAPT.JS - ADAPTIVE CSS

CUSTOM CSS GENERATOR

GRID OVERLAY BOOKMARK

**Essence**

The 960 Grid System is an effort to streamline web development workflow by providing commonly used dimensions, based on a width of 960 pixels. There are two variants: 12 and 16 columns, which can be used separately or in tandem. [Read more](#).

**Dimensions**

The 12-column grid is divided into portions that are 60 pixels wide. The 16-column grid consists of 40 pixel increments. Each column has 10 pixels of margin on the left and right, which create 20 pixel wide gutters between columns. [View demo](#).

**Purpose**

The premise of the system is ideally suited to rapid prototyping, but it would work equally well when integrated into a production environment. There are printable sketch sheets, design layouts, and a CSS file that have identical measurements.

**More Columns**

For those more comfortable designing on a 24-column grid, an alternative version is also included. It consists of columns 30 pixels wide, with 10 pixel gutters, and a 5 pixel buffer on each side of the container. This keeps text from touching browser chrome — helpful for devices like the iPhone, where a lower-case "i" or "l" might be easily missed. [View demo](#).

**Source Order**

By utilizing the `push_XX` and `pull_XX` classes, elements can be rearranged, independent of the order in which they appear in the markup. This allows you to keep more pertinent info higher in the HTML, without sacrificing precision in your page layout. For instance, view the source code of this page to see how the `H1` tag has been re-positioned.

# FRAMEWORKS CSS

- Rapide (au début)
- Nécessite peu de compétences CSS
- Accessibilité
- Maintenance & tests
- Les sites web se ressemblent tous
- Lourd à charger
- En ~1/2 journée, un designer peut faire sa propre grille
- Code HTML plus lourd
- Outil supplémentaire à maîtriser

DEMO

# MEDIA QUERIES

# MEDIA QUERIES

- Permet d'apporter quelques modifications esthétiques / fonctionnelles pour compléter les grilles
- Règles appliquées en fonction de la largeur du terminal (en général)
- On définit plusieurs points de ruptures (break points)

# HISTORIQUE

```
<style type="text/css" title="mes_styles" media="all">
<style type="text/css" title="mes_styles" media="screen">
<style type="text/css" title="mes_styles" media="print">

<style type="text/css" title="mes_styles" media="handled">
```

# MEDIA QUERIES

```
.features {  
    width: 33%;  
}  
  
@media screen and (max-width: 768px)  
{  
    .features {  
        width: 100%;  
    }  
}  
  
@media screen and (max-width: 992px)  
{  
    .features {  
        width: 50%;  
    }  
}
```

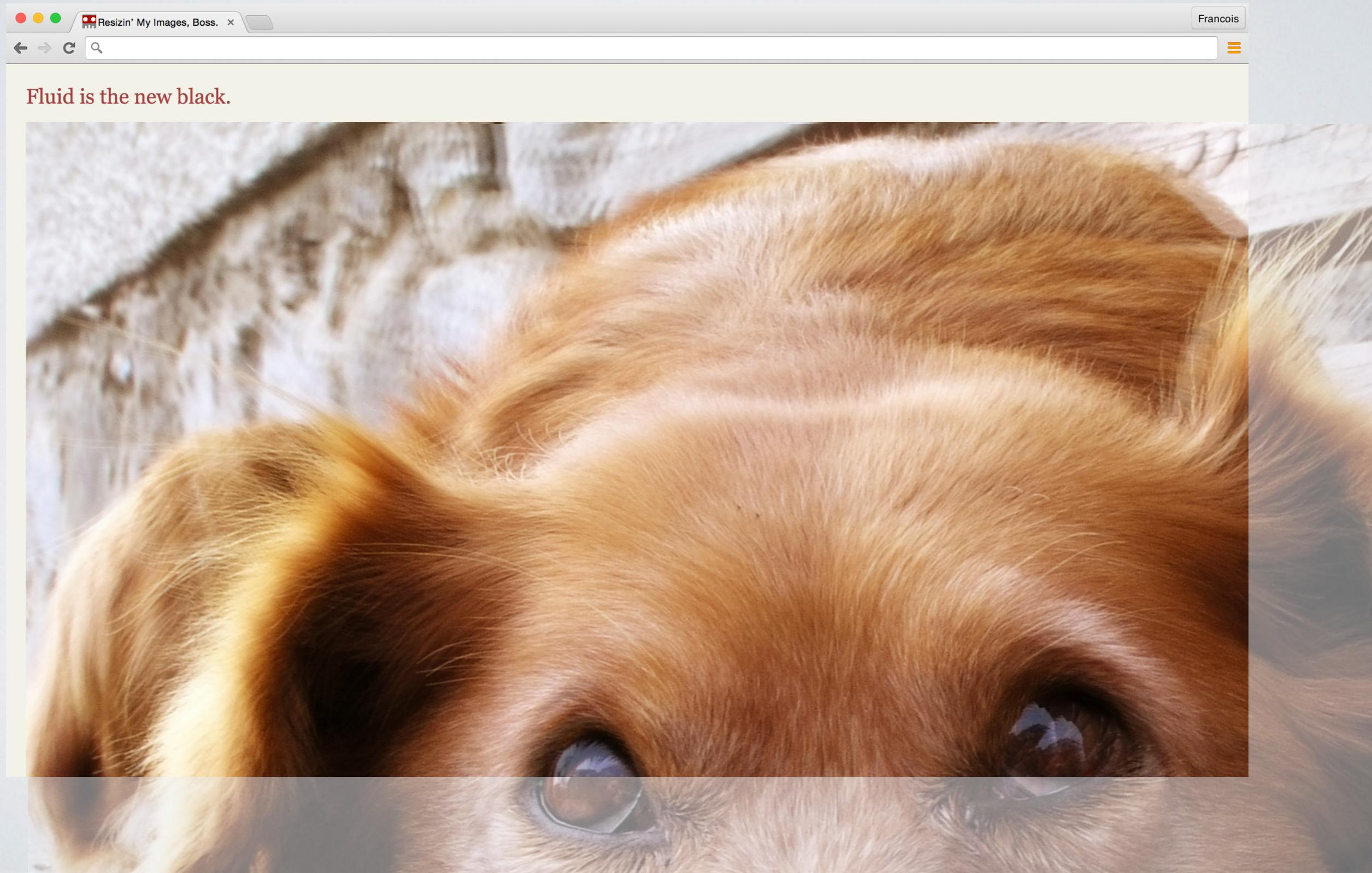
# MEDIA QUERIES

```
/* iPads (portrait) ----- */
@media only screen
and (min-device-width : 768px)
and (max-device-width : 1024px)
and (orientation : portrait) {
    /* Styles */
    .sidebar { width: 100% }
}
```

DEMO

IMAGES FLUIDES

# PROBLÈME



# SOLUTION

```
<figure>
  
  <figcaption>Jimmy, my awesome dog !</figcaption>
</figure>
```

```
img {
  max-width: 100%;
}

figure {
  width: 33%;
}
```

# RESULTAT

Resizin' My Images, Boss. Francois

Fluid is the new black.



Boo. ([Read the blog entry.](#))

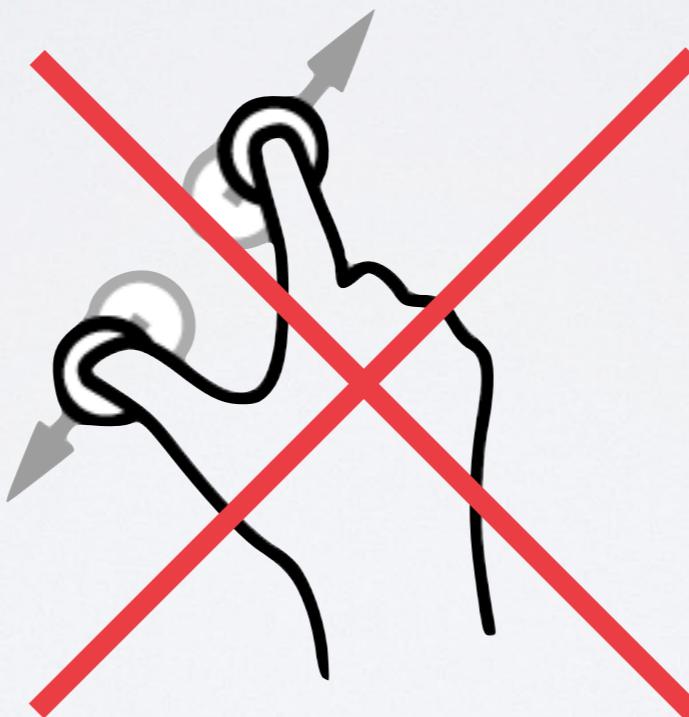
# TAILLE D'ÉCRAN

Retina & HD

# BUT WAIT . . .



ZOOM **INTERDIT**



# DÉSACTIVER LE ZOOM

```
<meta name="viewport" content="width=device-width, initial-scale=1.0">
```

iPhone 1



320x 480  
device size  
=  
pixels

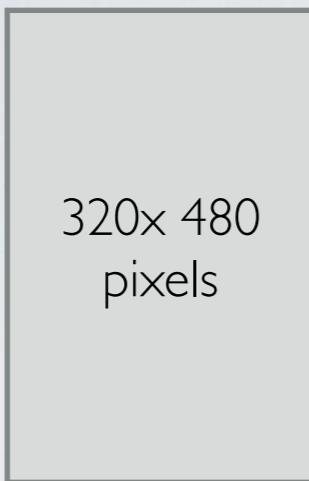
iPhone 6



375 x 667  
device size

750 x 1334  
pixels

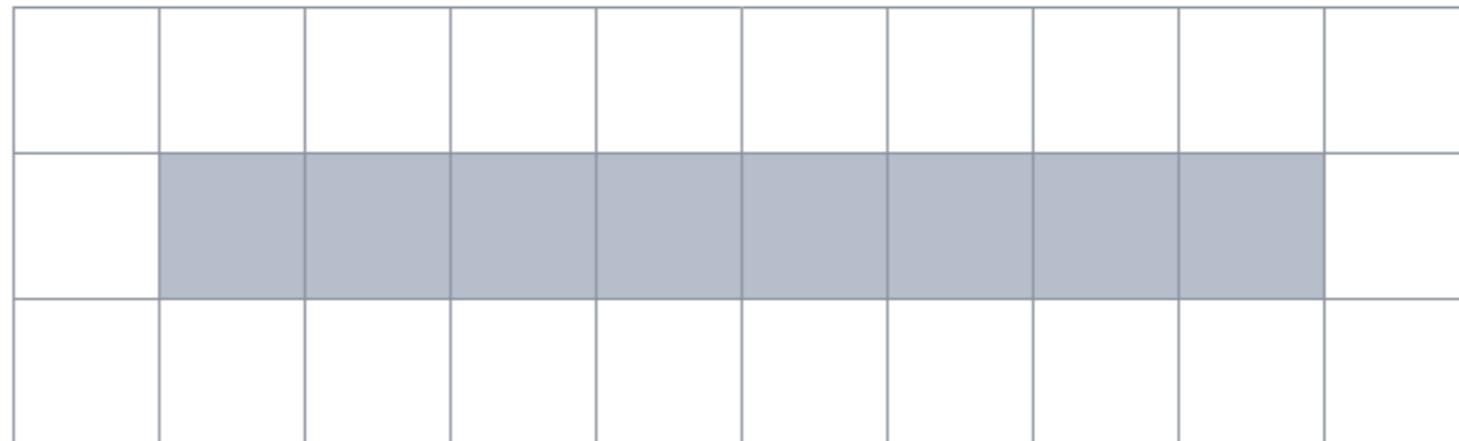
iPhone 1



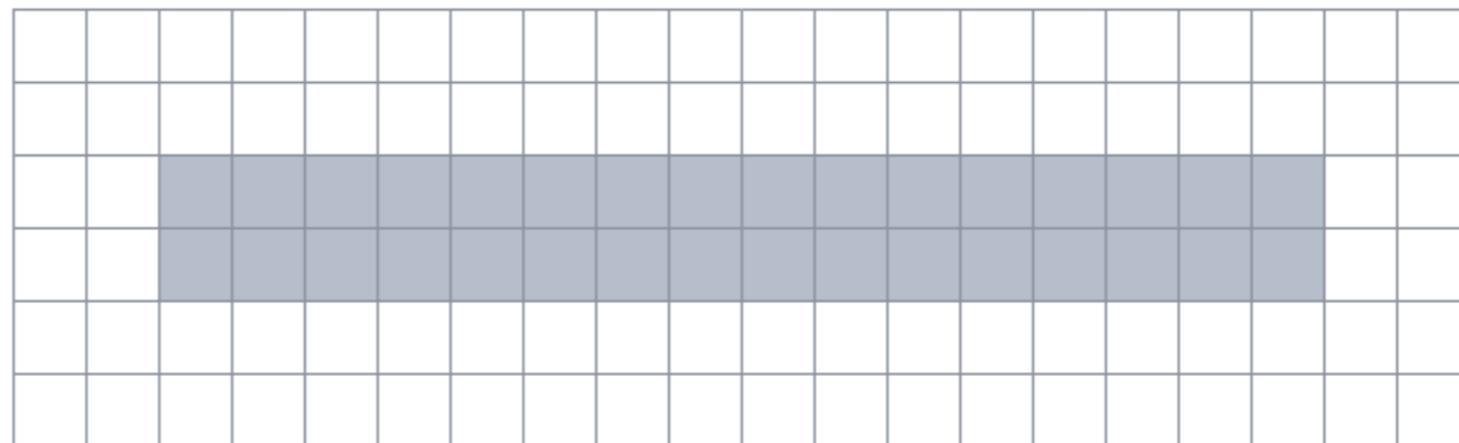
iPhone 6



**Original iPhone**



**iPhone 6**

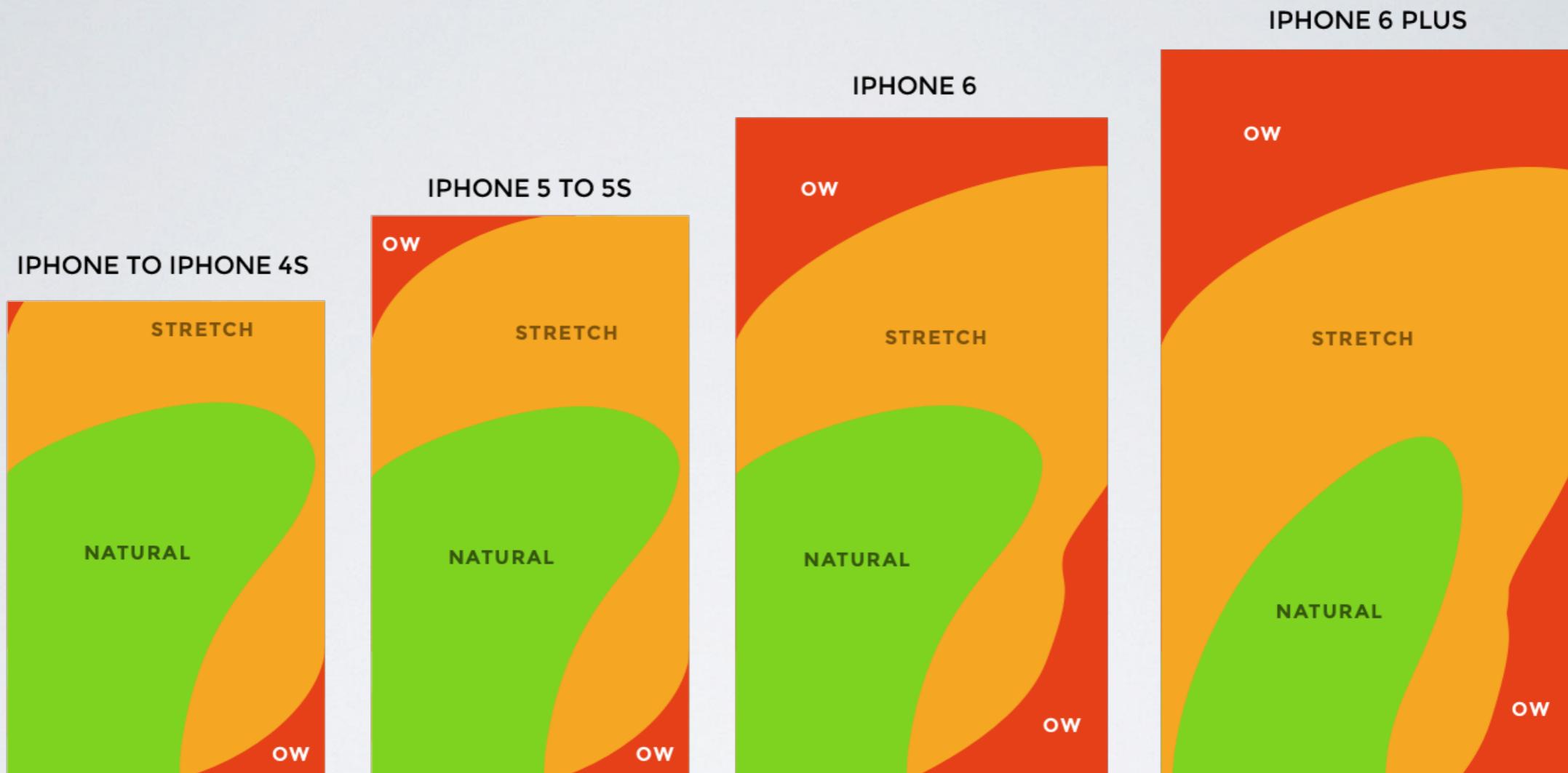


# PERFORMANCES

# PERFORMANCES

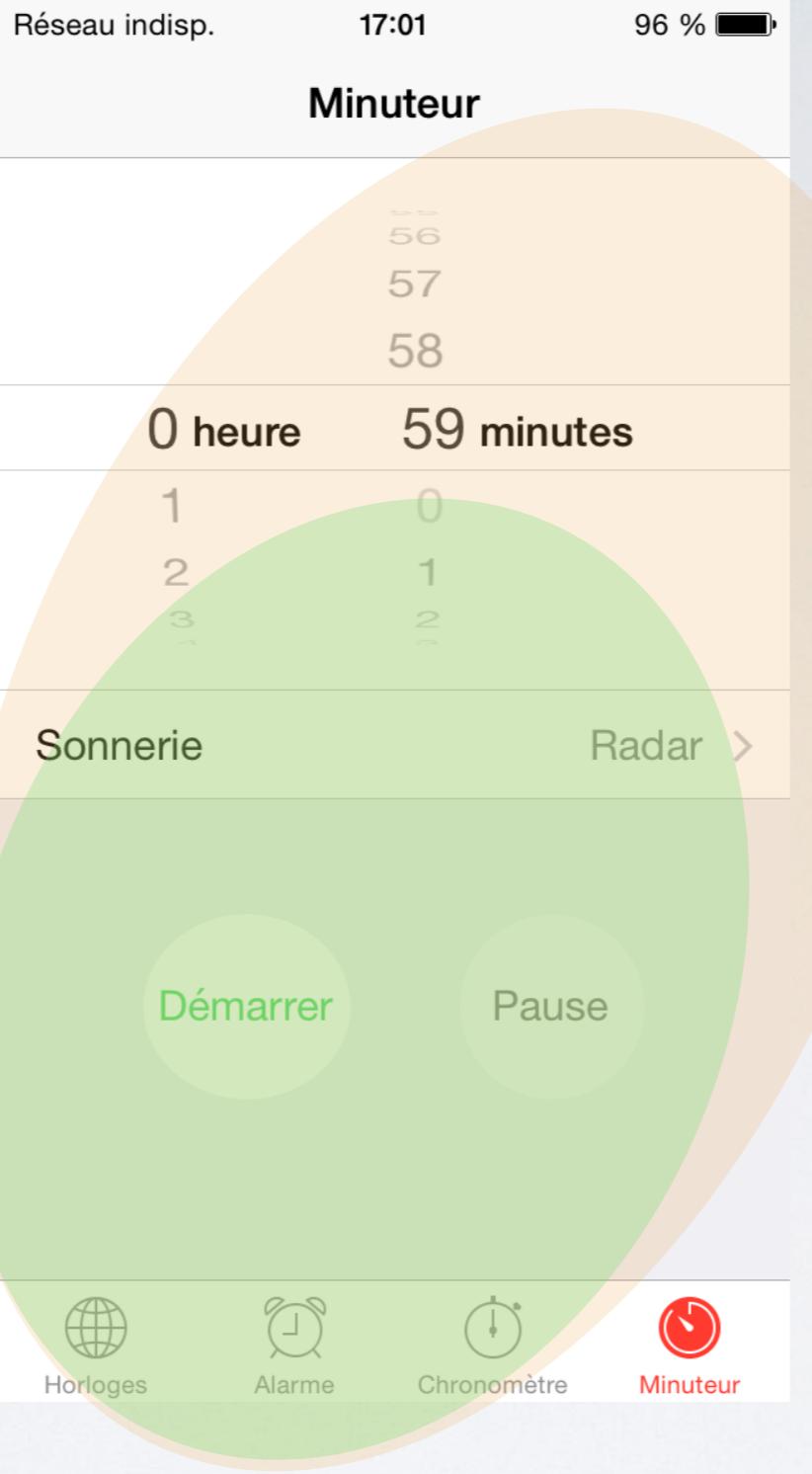
- Objectif : 1~2 secondes
- Réduire le nombre d'assets
- Charger des images moins lourdes
- Performances JS
- Domain sharding
- ...

# ERGONOMIE



# CONSTRUIRE POUR LE POUCE

Ergonomie

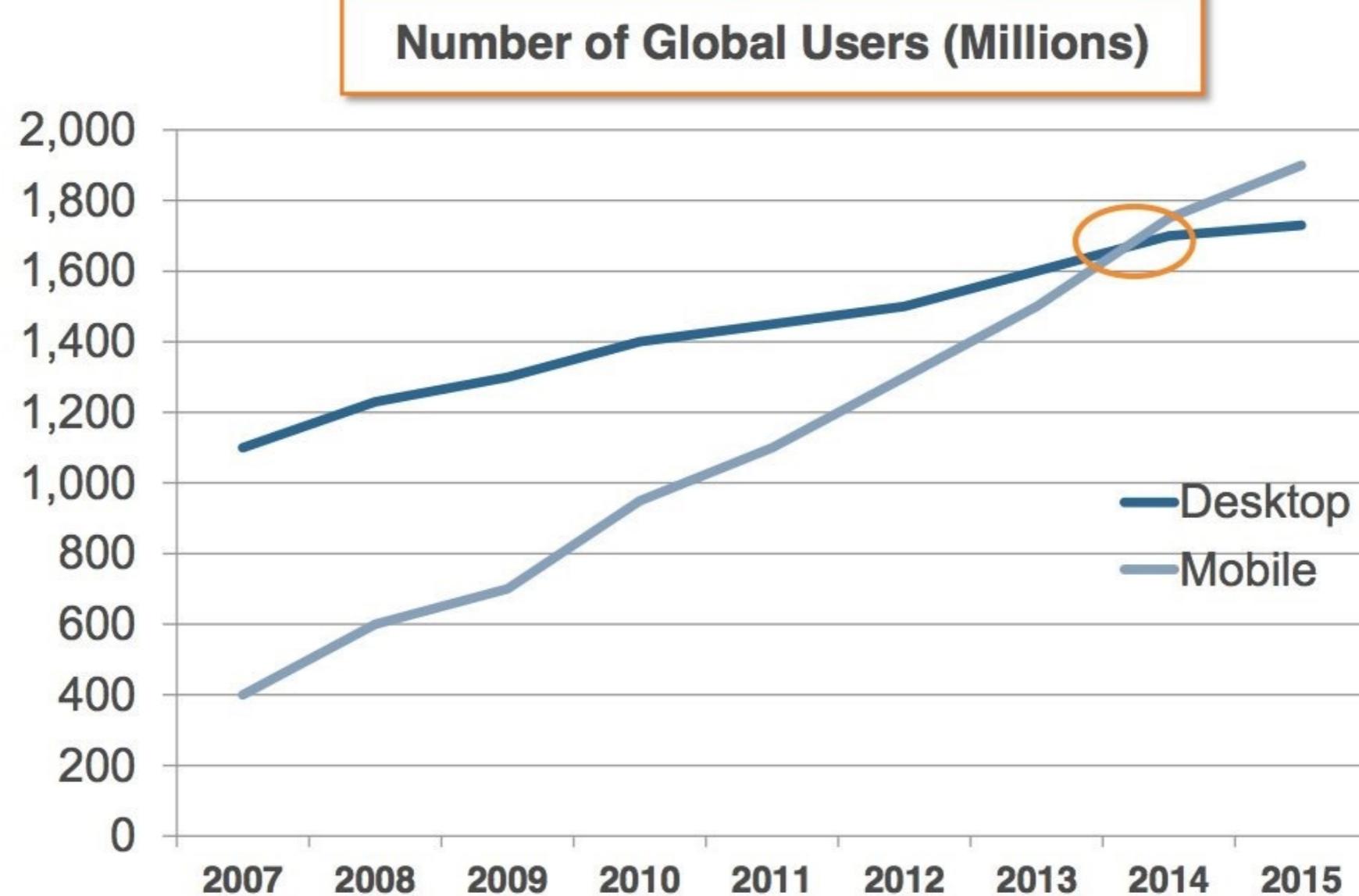


# CONSTRUIRE POUR LE POUCE

Ergonomie

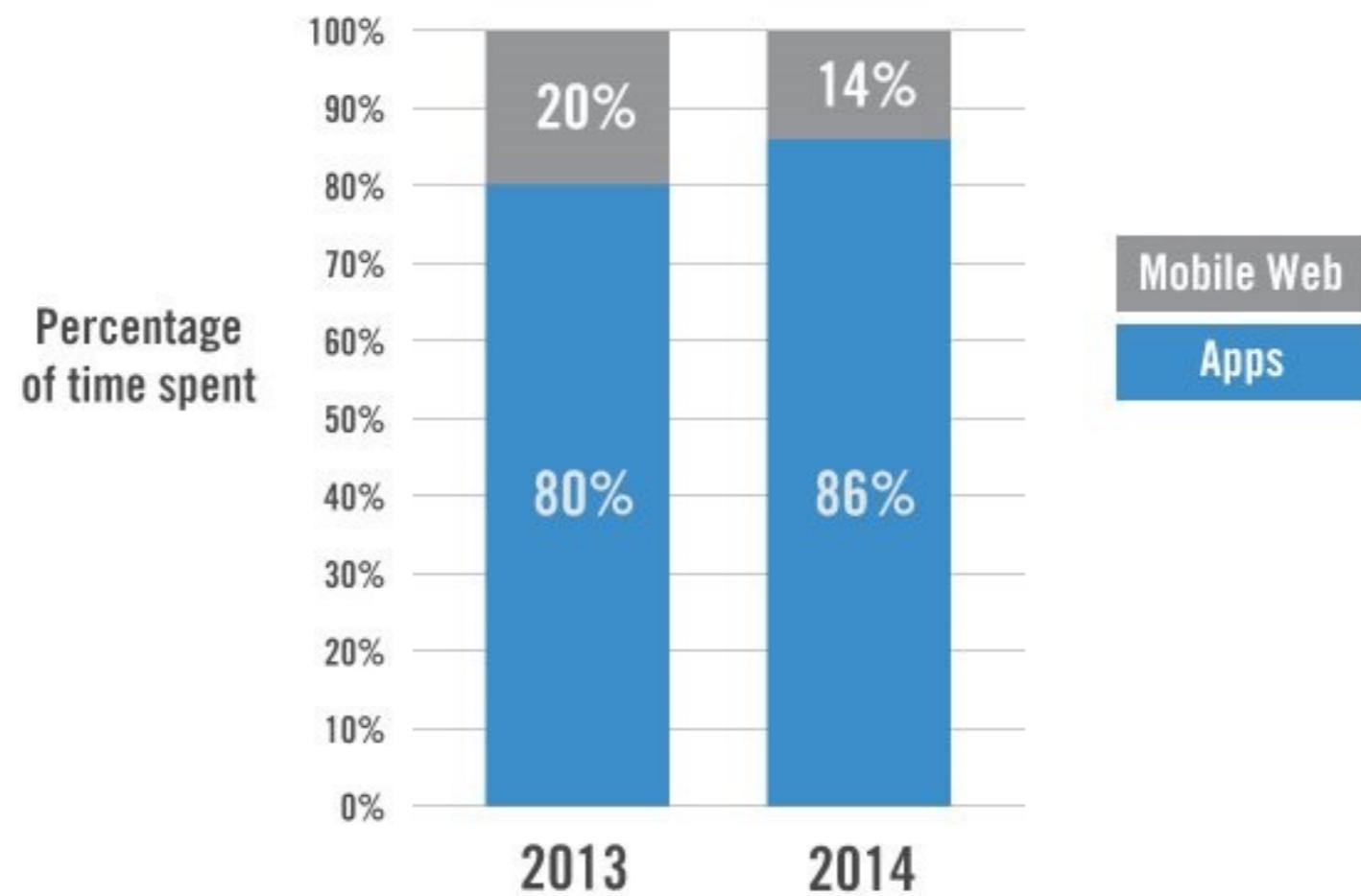
# STATISTIQUES

# MOBILE FIRST

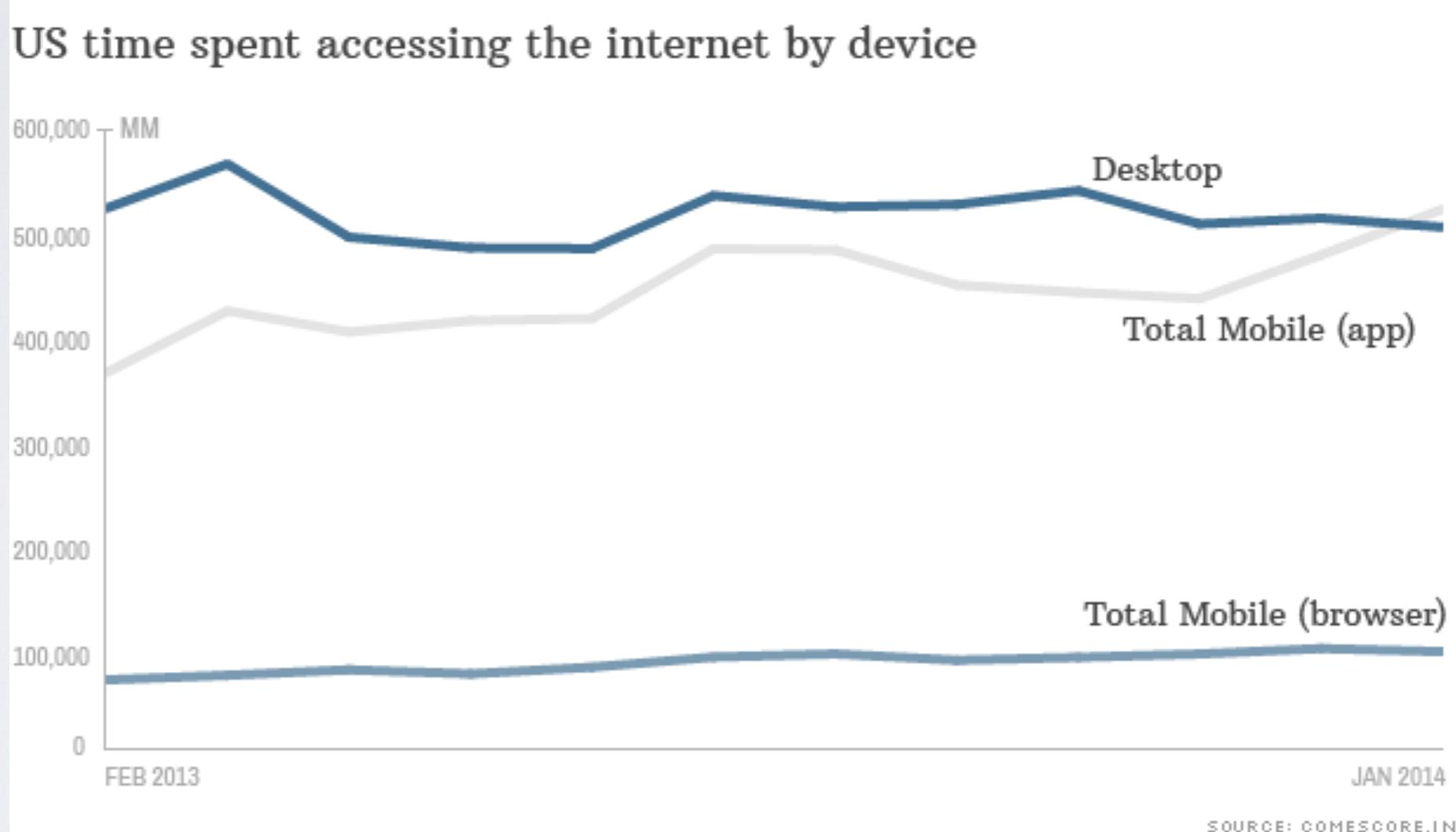


# DESKTOP VS MOBILE

## Apps Continue to Dominate the Mobile Web



# DESKTOP VS MOBILE



# TP

- Modifier le site pour le rendre **responsive**
- Instructions détaillées :

<https://github.com/kiliweb/frontend>

