

Website Performance Optimization

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Agenda

- What is website optimization?
- Why is website optimization important?
- What should we optimize on our website?
- Three laws of optimization
- How do we optimize our website?
- Optimization methods and tools
- Future trends
- Conclusion
- References

What Is Website Optimization?

- According to Merriam Webster dictionary Optimization is an act, process, or methodology of making something (as a design, system, or decision) as fully perfect, functional, or effective as possible.
- Optimizing a website can refer to performance optimization, which ensures that your website runs quickly and smoothly.



Why Is Website Optimization Is Important?

- Serving websites faster and uptime of the site.
- Usability
- Lesser amount of data transfer
- Less load on server
- User satisfaction



What Should We Optimize On Our Website?

- What is the user looking for?
 - Where did they come from?
 - What do they want to know?
- What is our goal for the user?

Three Laws Of Optimization

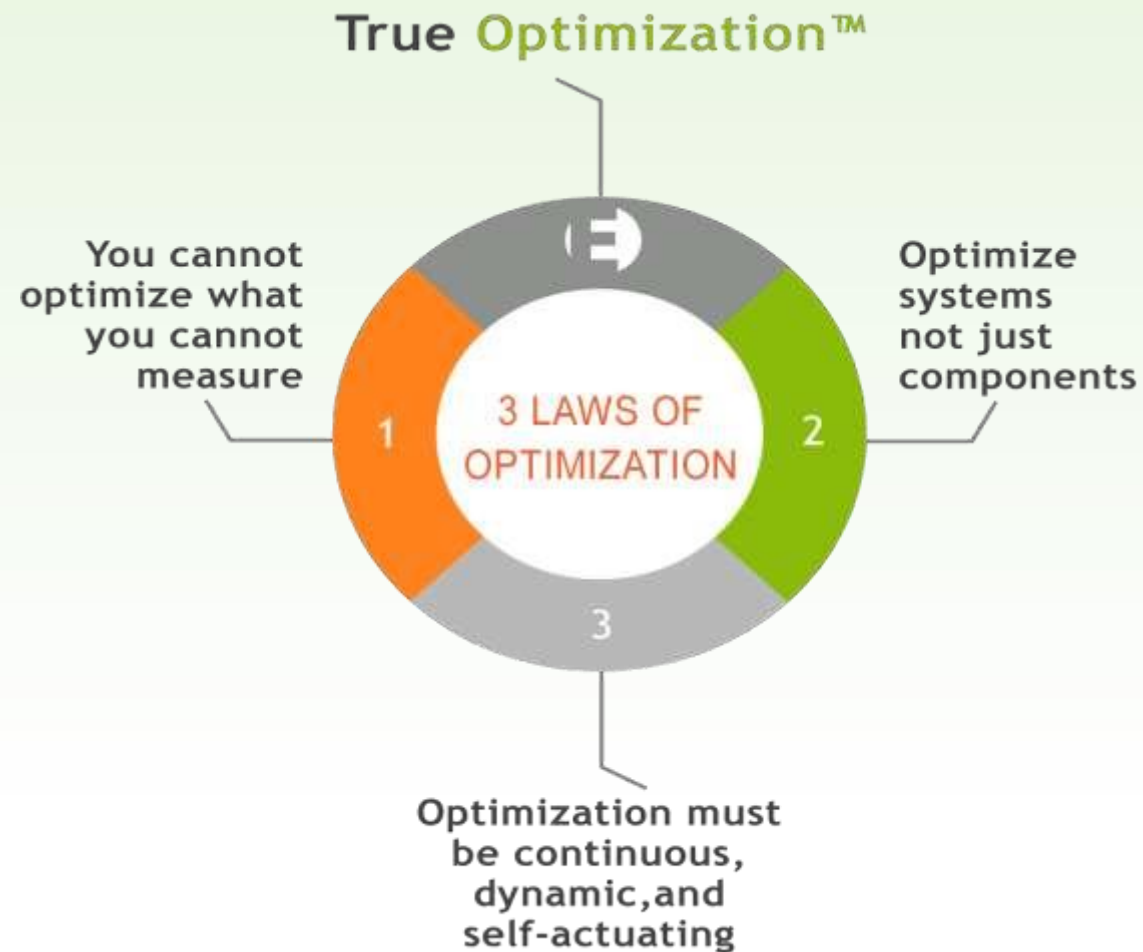


Fig. Three laws optimization

How Do We Optimize Our Website?

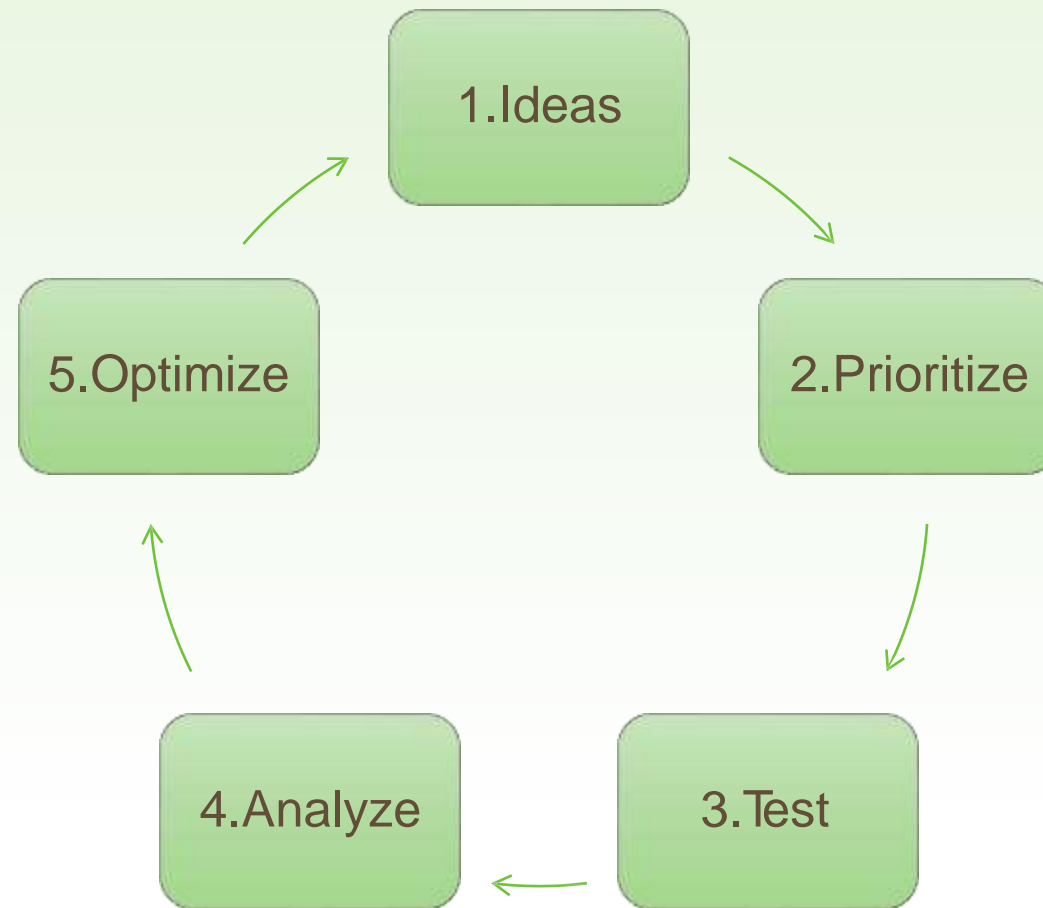


Fig. Website optimization process model

Website Optimization Methods

- Optimization: Content
 1. Make fewer HTTP requests
 2. Reduce DNS lookups
 3. Post-load components
 4. Preload components
 5. Minimize number of iframes
 6. Avoid 404's

Website Optimization Methods

- Optimization : Server-side
 1. Use Content Delivery Network(CDN)
 2. Add expires or Cache-Control header
 3. G-zip components: To achieve fast load times on your website, decreasing the size of pages-(Compression)
 4. Flush buffer early
 5. Avoid empty image src

```
... <!-- css, js -->
</head>
<?php flush(); ?>
<body>
... <!-- content -->
```

```
<img src="">
```

Website Optimization Methods

- Optimization: CSS 1.Put style sheet at top

- 2.Avoid CSS expressions

```
background-color: expression( (new Date()).getHours()%2 ? "#B8D4FF" : "#F08A00" );
```

- 3.Choose “<link>” over “import”

- 4.Avoid filters

Website Optimization Methods

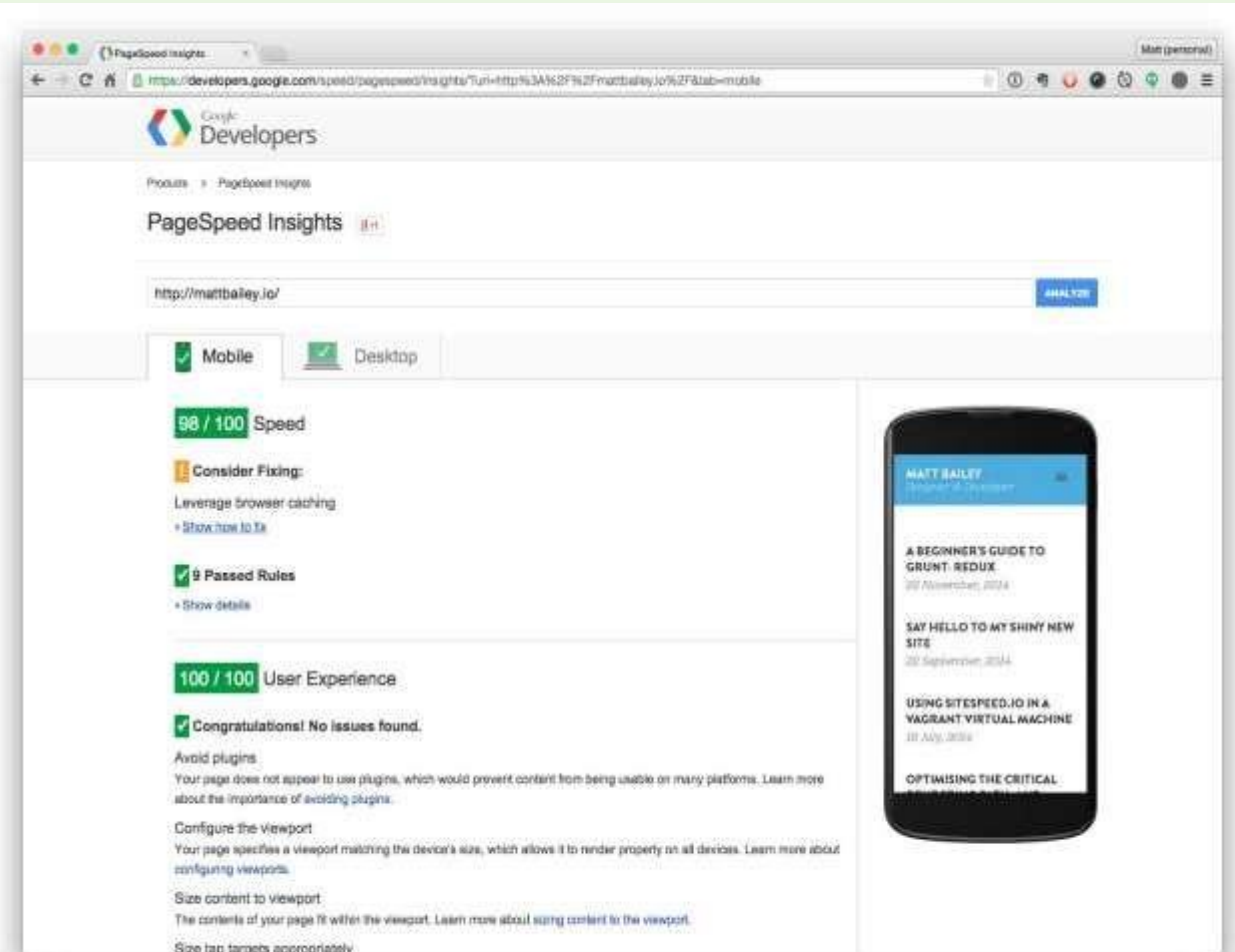
- Optimization : JavaScript

- 1.Put scripts at bottom
- 2.Make the JavaScript and CSS external
- 3.Minify JavaScript and CSS
- 4.Remove duplicate scripts
- 5.Develop smart event handlers

Website Optimization Tools

Google PageSpeed Insights measures how the page can improve its performance on

- Time to above-the-fold load: Elapsed time from the moment a user requests a new page and to the moment the above-the-fold content is rendered by the browser
- Time to full page load: Elapsed time from the moment a user requests a new page to the moment the page is fully rendered by the browser.

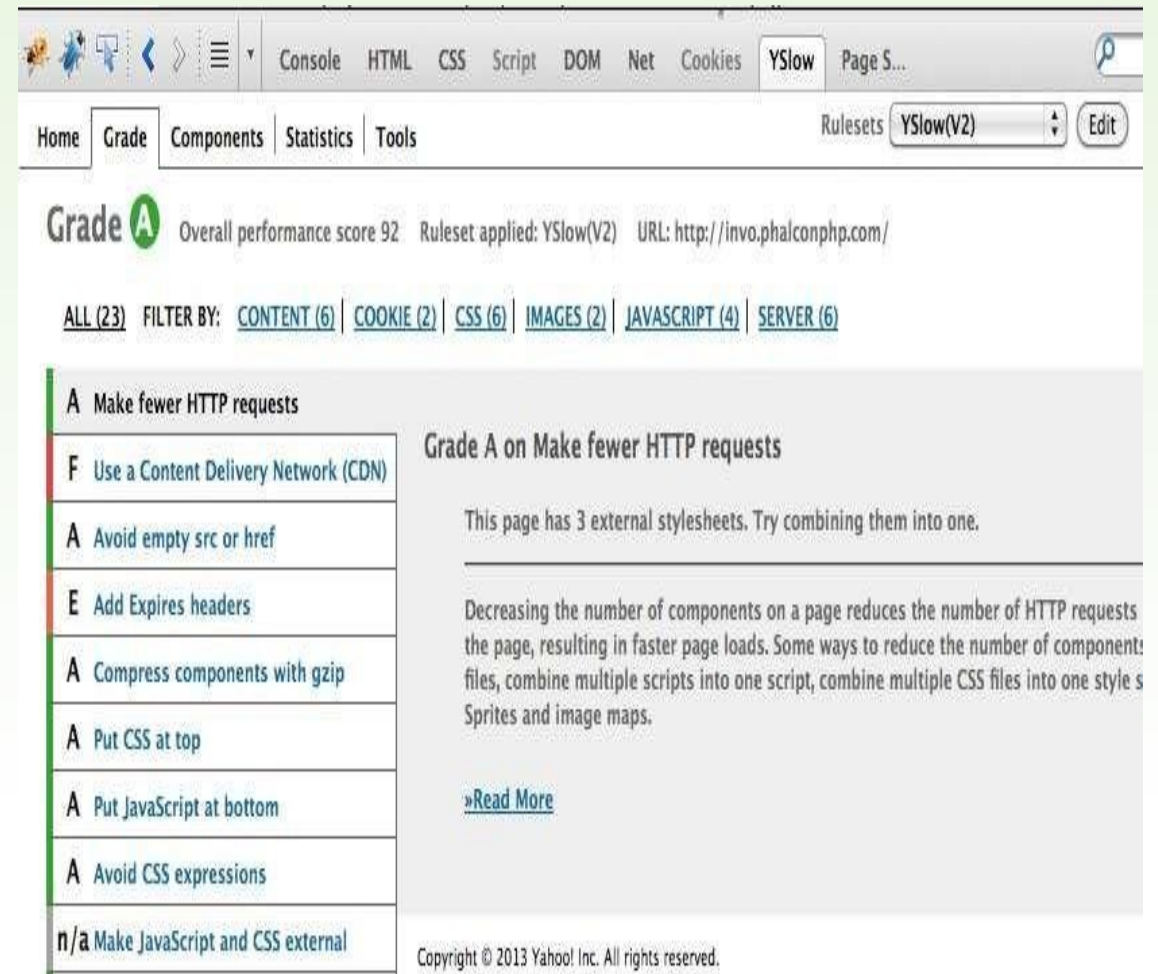


Website Optimization Tools

Yslow by Yahoo!

Features:

- It offers suggestions for improving the page's performance.
- Summarizes the page's components.
- Displays statistics about the page
- Provides tools for performance analysis, including Smush.it and JSLint



The screenshot displays the YSlow tool interface for a website. The top navigation bar includes tabs for Home, Grade, Components, Statistics, and Tools. The 'Grade' tab is active, showing an overall performance score of 92 (Grade A) for the URL <http://info.phalconphp.com/>. The ruleset applied is YSlow(V2). Below the score, there are filters for various components: ALL (23), FILTER BY: CONTENT (6), COOKIE (2), CSS (6), IMAGES (2), JAVASCRIPT (4), and SERVER (6). A list of optimization suggestions is shown on the left, with a 'Grade A' badge next to the first item, 'Make fewer HTTP requests'. The right side of the interface provides detailed information for the selected suggestion, including a description of the issue (3 external stylesheets) and a link to read more.

Grade **A** Overall performance score 92 Ruleset applied: YSlow(V2) URL: <http://info.phalconphp.com/>

ALL (23) FILTER BY: [CONTENT \(6\)](#) [COOKIE \(2\)](#) [CSS \(6\)](#) [IMAGES \(2\)](#) [JAVASCRIPT \(4\)](#) [SERVER \(6\)](#)

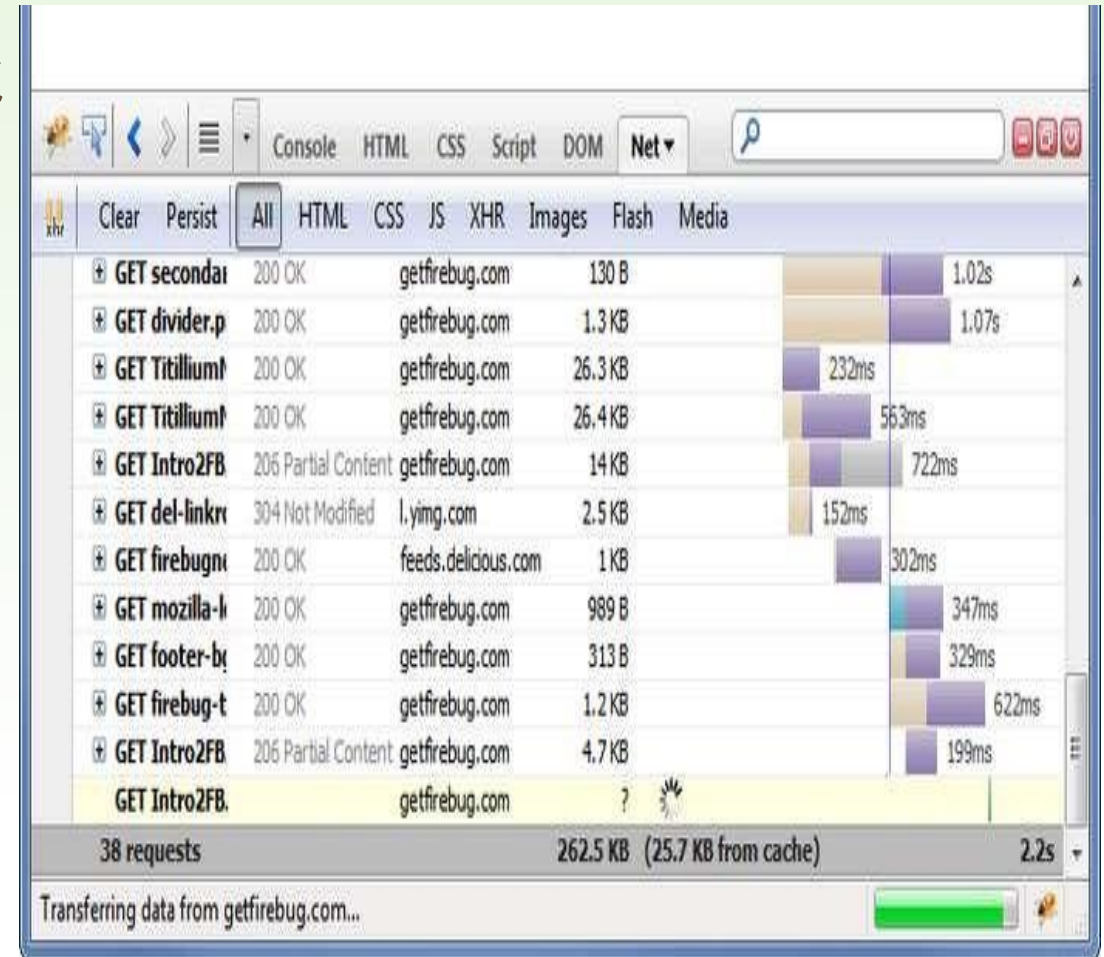
A Make fewer HTTP requests	<h3>Grade A on Make fewer HTTP requests</h3> <p>This page has 3 external stylesheets. Try combining them into one.</p> <p>Decreasing the number of components on a page reduces the number of HTTP requests the page, resulting in faster page loads. Some ways to reduce the number of components: files, combine multiple scripts into one script, combine multiple CSS files into one style sheet, combine multiple images into one image map.</p> <p>»Read More</p>
F Use a Content Delivery Network (CDN)	
A Avoid empty src or href	
E Add Expires headers	
A Compress components with gzip	
A Put CSS at top	
A Put JavaScript at bottom	
A Avoid CSS expressions	
n/a Make JavaScript and CSS external	

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Website Optimization Tools

Firebug integrates with **Firefox** to put a wealth of web development tools at your fingertips while you browse. You can edit, debug, and monitor CSS, HTML, and JavaScript live in any web page.

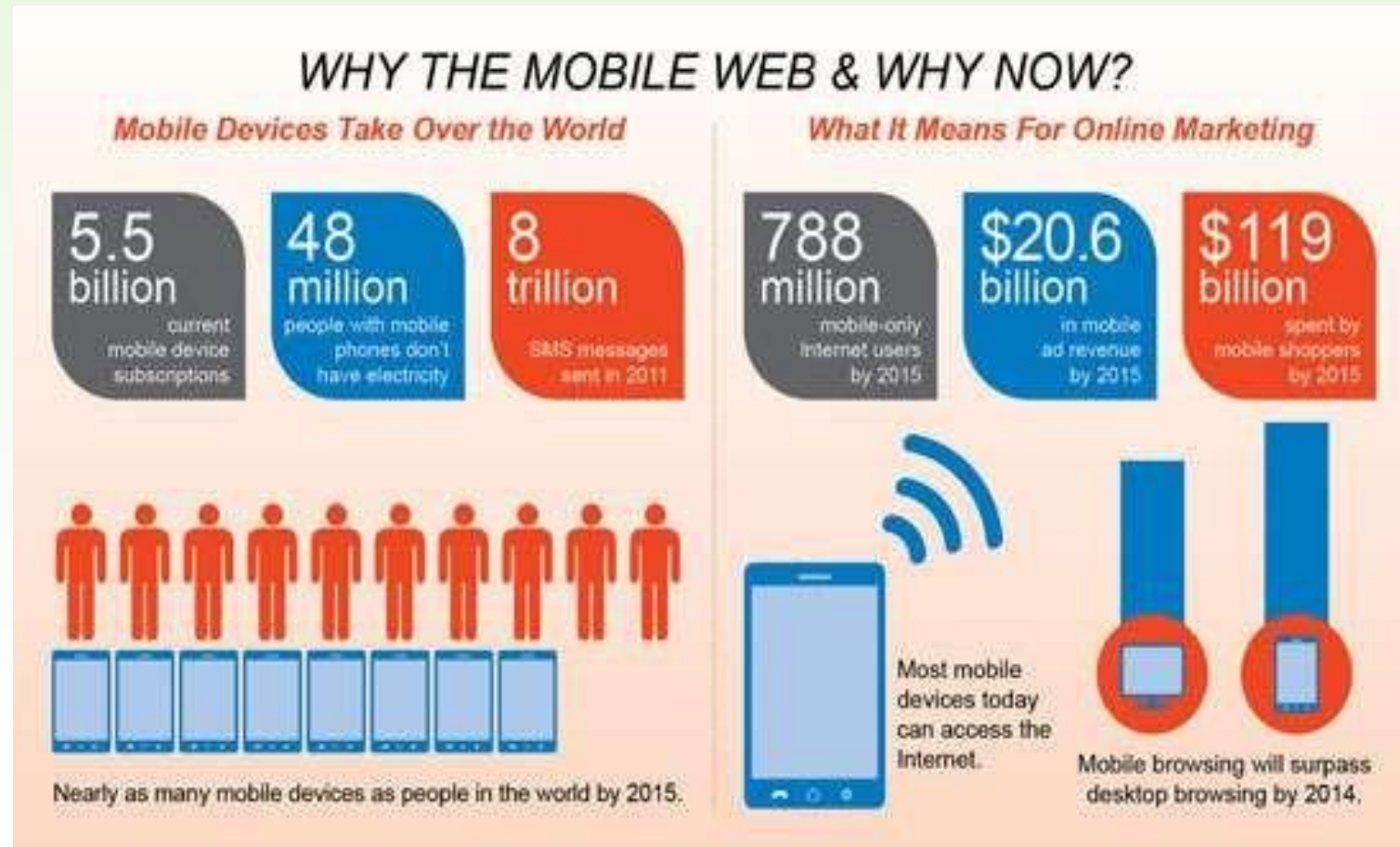
- Inspect and edit HTML
- Visualize CSS metrics
- Monitor network activities
- Debug and profile JS
- Quickly find errors



State Of Art Application

- Facebook.com
- Google.com
- Gmail.com
- Flipkart.com

Future Trend : Mobile Optimized Websites



Future Trend : Mobile Optimized Websites

- Reasons to optimize website for mobile phones
 1. Everyone is on mobile.
 2. Over half of the web traffic is mobile.
 3. Mobile users behave differently.
 4. Mobile users buy more.
 5. Google favours mobile responsiveness.
 6. Great mobile sites differentiate your brand.

Conclusion

- So while it may take extra time to perform all this optimization, it's certainly a worthwhile endeavor since it not only offers better performance in the browser and on mobile, but also has the chance to promote better development practices and even get your content a higher rank on search engines like Google.

References

1Peipei Ling “Based on Web Application Front-end performance optimization” published on 14th August 2011.

2Steve Souders “High performance websites” published on 10th October 2008

3Xianfeng Li and Zhiqiang Bao “Performance Characterization of Web Applications with HTML5 Enhancements” published on 24th August 2014.

4Patrick Meenan “How Fast is Your Website?” published on April 2013

Thank You!!!