

# WEB CONSISTENCY TESTING

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GTAC 2011



# DIFFERENT LEVELS OF AUTOMATED WEB TESTING

## Back-end

Unit testing data models

Functional testing URL endpoints

JUnit, TestNG, rspec, NUnit, etc.

## End-to-end Integration

Browser control

Selenium

Watir

Acceptance test

Capybara

Cucumber

## Front-end

HTML & CSS validation

Unit & functional testing JavaScript

JSLint, QUnit, TestSwarm, etc.



What about the user?



# HOW TO BREAK A PAGE

- ✱ Apathy
- ✱ Lack of skill
- ✱ Impossible design
- ✱ Unreasonable deadline
- ✱ Ambiguous Web specs
- ✱ Browser differences
- ✱ New i18n translations
- ✱ Long CMS content
- ✱ Bandwidth constraints
- ✱ Regression: Fix one page, break another



# SPECTRUM OF RENDER TESTING STRATEGIES



Almost always an afterthought, when issues are nearly the most expensive to fix.



# WHY NOT AUTOMATE?

- ✱ If it were doable, it'd be done by now
- ✱ You can't test style
- ✱ Browser clusters are expensive



# TOWARDS AUTOMATION

- ✱ *Fighting Layout Bugs*

- ✱ Michael Tamm - GTAC 2009

- ✱ Automates detection of common layout bugs

- ✱ Requires Java/JVM right now



# WEB CONSISTENCY TESTING

- ☼ Formally:

- ☼ Ensuring a consistent experience for all your customers

- ☼ Colloquially:

- ☼ Does the page look “right?”



# A CASE OF INDIFFERENCE

Chrome

IE 9

**News**

**Trees 'boost African crop yields'**

Planting trees that improve soil quality can help boost crop yields for African farmers and improve ...  
[Read More →](#)

via  
BBC News - Science & Environment

**Observer Food Monthly Awards 2011 Best ethical eats: The Ethicurean**

Somerset's Walled Garden Cafe is no longer a hidden gem — OFM readers love it ...  
[Read More →](#)

via  
Environment news, comment and analysis from the Guardian | [guardian.co.uk](#)

**Recent Posts**

**Philanthropy 2011**  
about 2 weeks ago

A review of the history, current state and future direction of philanthropy. Download the report ...  
Simon Leadbetter

**Welcome to Blue & Green Tomorrow**  
about 3 weeks ago

**News**

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Simon Leadbetter

**Welcome to Blue & Green Tomorrow**



# A BIG DIFFERENCE

## Chrome

**Want to be the first to know about the launch of our upcoming apps?**

*Add your email address here...*

Submit

## Firefox 6

**Want to be the first to know about the launch of our upcoming apps?**

*Add your email address here...*

Submit



$f(\text{reference page, comparison page})$   
 $\Rightarrow \{ \text{rendering issues} \}$



# REPRESENTING A PAGE

- ✱ Image

- ✱ How a customer sees it

- ✱ DOM

- ✱ How a browser displays it



# IMAGE REPRESENTATION

- ✱ Great for pixel-perfect
- ✱ Great for single page
- ✱ Lots of image comparison algorithms
- ✱ 100% browser-independent
- ✱ Lacks semantic meaning
- ✱ Easily confused by rotating content



# IMAGE COMPARISON LANDMINE

All Categories >

Fashion >

Motors >

Electronics >

Collectibles & Art >

Home, Outdoors & Decor >


Entertainment >


Deals & Gifts >

Brands on eBay

Classifieds

Bid for your chance to win  
a pick-up game with Magic and James  
Veterans Day 11.11.11 Bid now ▶

  
Benefiting Navy Marine Corps Relief Society



1 2 3 4

All Categories >

Fashion >

Motors >

Electronics >

Collectibles & Art >


Home, Outdoors & Decor >


Entertainment >


Deals & Gifts >


Brands on eBay


Classifieds

  
\$639.99 ~~\$999.99~~

  
\$299.99 ~~\$499.99~~

  
\$239.00 ~~\$369.00~~

  
\$49.99 ~~\$119.99~~

 **dailydeals**  
Hundreds of deals...Always Free Shipping Shop now ▶

1 2 3 4

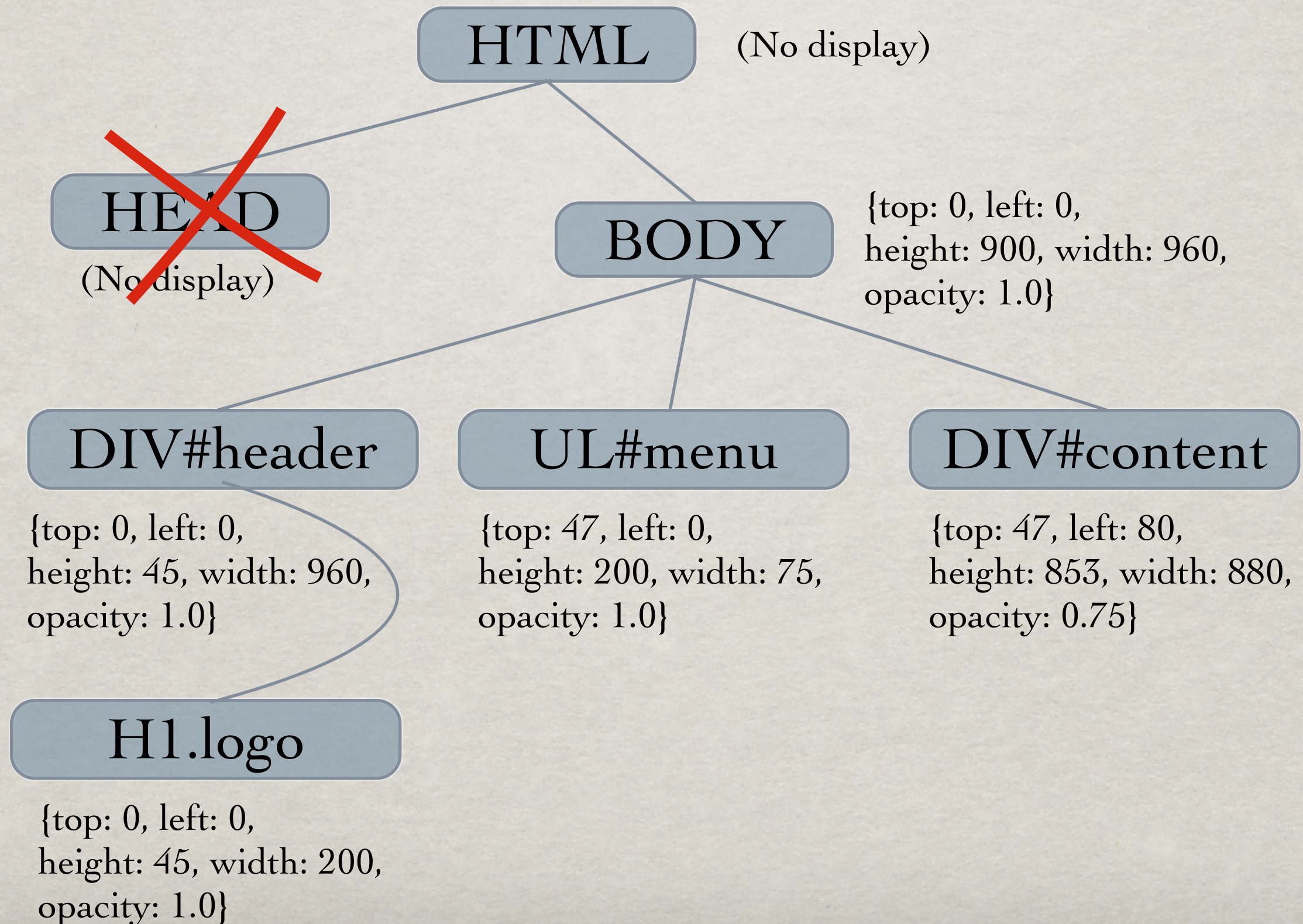


# DOM REPRESENTATION

- ✱ Great for multiple pages
- ✱ Mostly dealing with rectangles in 3D space
- ✱ Simple geometric algorithms
- ✱ Rich semantic meaning
- ✱ Requires conditioning

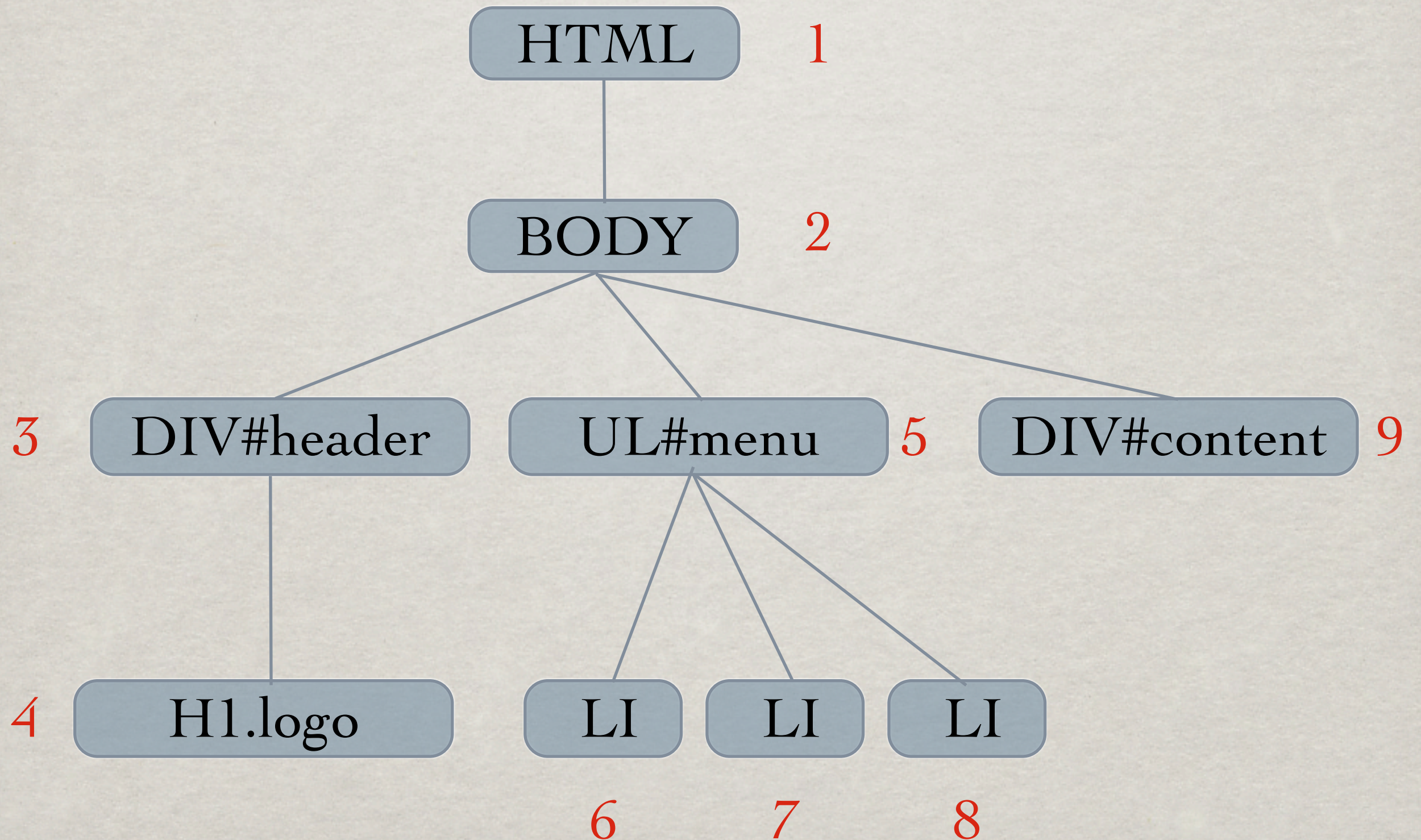


# DOM STRUCTURE





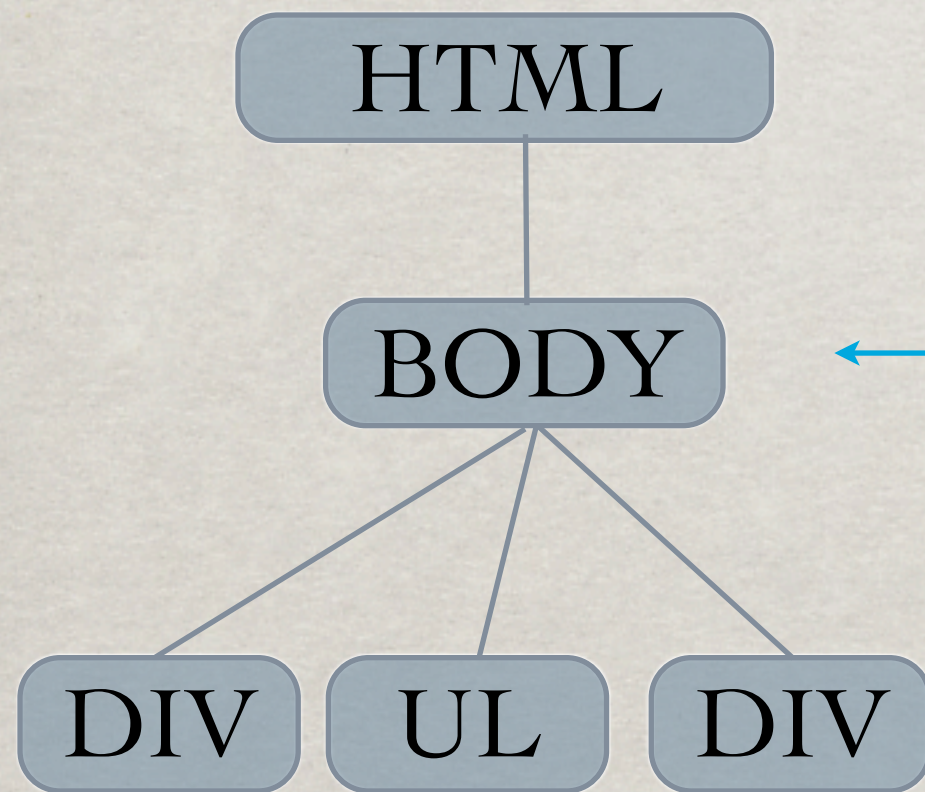
# DFS



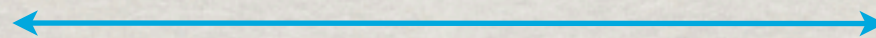
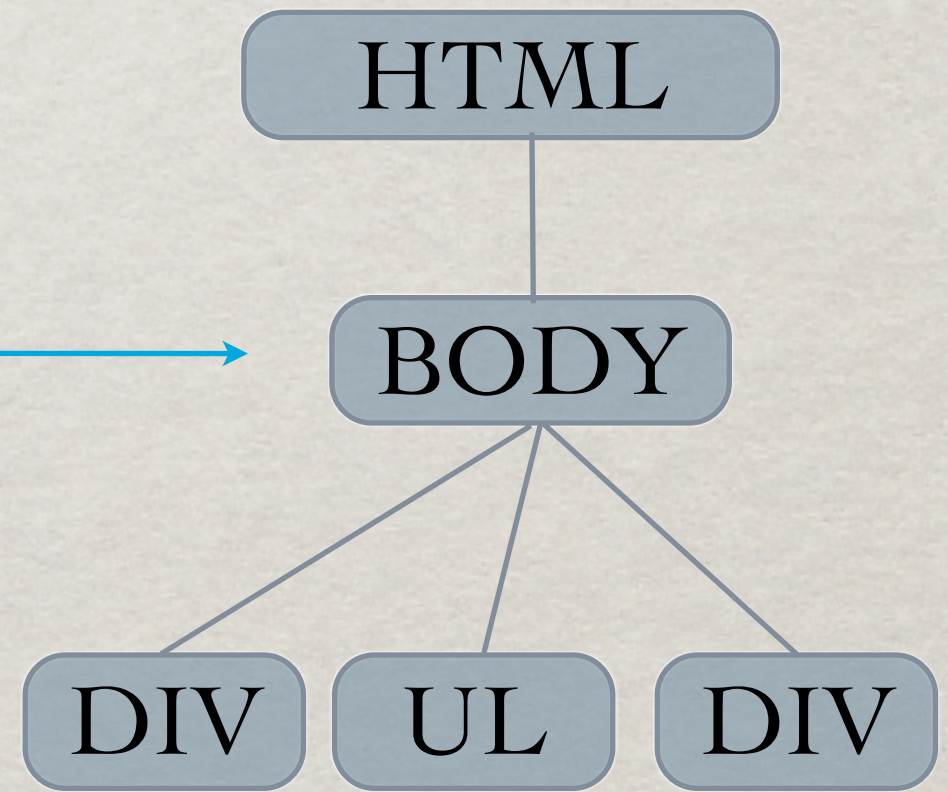


# COMPARING DOMs

Reference Page



Comparison Page





# HEURISTICS

- ✱ Ignore hidden elements
- ✱ Ignore location of occluded elements
- ✱ Handle opacity state of slideshows



# DETECT ISSUES, NOT DIFFERENCES

Want to be the first to know about the launch of our upcoming apps?

*Add your email address here...*

Submit

✱ What's positioned incorrectly here?

✱ Form

✱ Text input

✱ Submit button



# DETECT ISSUES, NOT DIFFERENCES

Want to be the first to know about the launch of our upcoming apps?

*Add your email address here...*

Submit

Want to be the first to know about the launch of our upcoming apps?

*Add your email address here...*

Submit

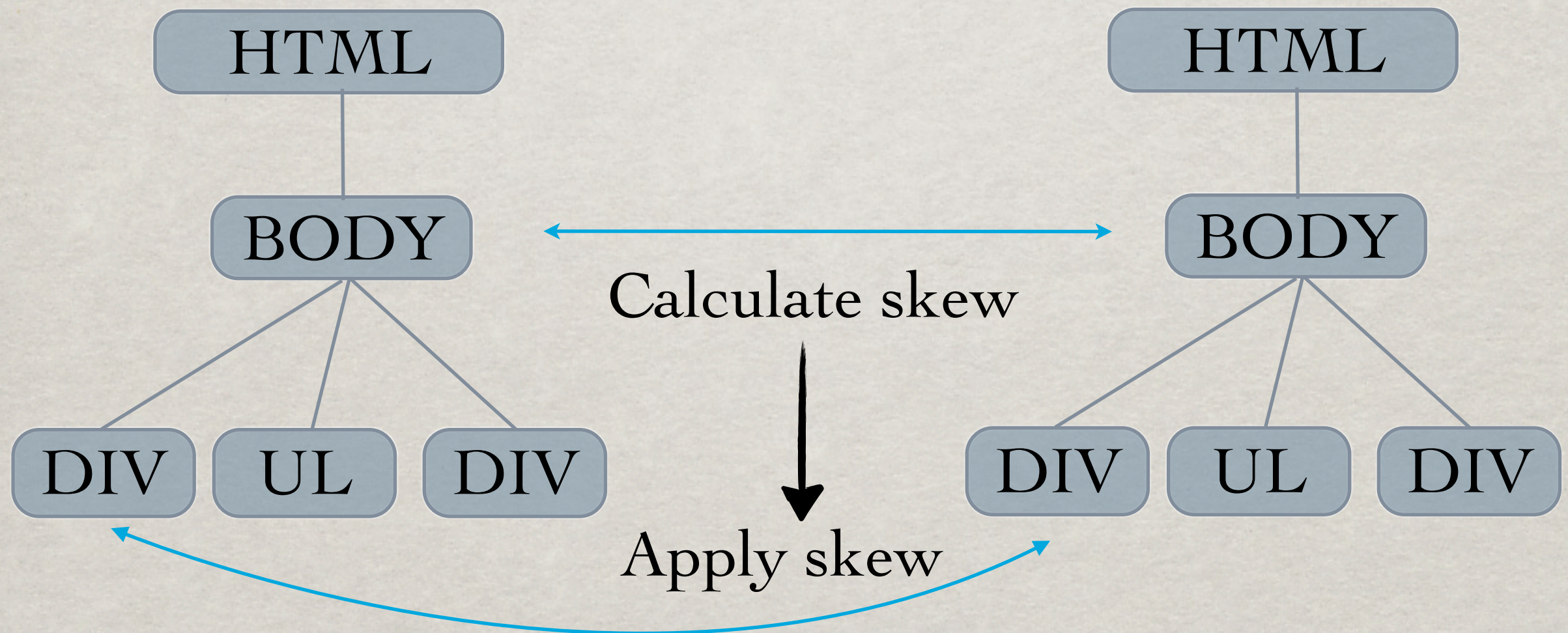
- ✱ What's really the issue?
- ✱ The form elements are fine
- ✱ The form wraps around



# APPLY SKEW TO SUB-SEARCH

Reference Page

Comparison Page





# OTHER CONSIDERATIONS

- ✱ Tolerance threshold

- ✱ DOM mismatches

- ✱ Authentication



# RESULTS

- ✱ Developer friendly

- ✱ CSS selectors

- ✱ Error dimension

- ✱ Error value



# SAMPLE RESULT

Reference Browser

Firefox 6.0 (Windows)

## The Farming App Solution Company

**Smart Farm Apps** delivering advanced smart phone apps to farming professionals.

Our **iPhone** and **Android** farming apps collate, update and export vital statistics while working on the move.



## Updates

Welcome To SmartFarmApps.com  
[Read](#)

(100, 741) the first to know about the launch

Add your email address here...

Submit

### Farming Apps

Android apps for farmers  
iPhone apps for farmers  
Cattle Farming Apps  
Dairy Farming Apps

### About

Company  
Updates  
Site Map

### Get

Contact

[View Full Canvas](#)

## 1 Cross-Browser Rendering Issue

Click to highlight the error on the screenshots above.

Target Browser

Chrome (Windows)

(660, 717)

Add your email address here...

Submit

(998, 750)

### Connect With Us

Facebook  
Twitter  
RSS  
LinkedIn

Smart Farm Apps ©  
Registered In Ireland No. 500463  
All Rights Reserved  
[Privacy Policy](#)

[View Full Canvas](#)

Ignore

#wpcf7-f518-p4-o1 form.wpcf7-form p

Element is off by 560px from the left.



# SAMPLE RESULTS

## Reference Browser

Firefox 3.6 (Windows)

BrowserMob is constantly adding new website monitoring and load testing features, along with posting tips and tricks. Sign up for our newsletter and announcement mailing lists.

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(960, 1523)

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## Target Browser

Internet Explorer 6 (Windows) ⬆

(710, 1564)

+1 (503) 828-9003

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(940, 1710)

[View Full Canvas](#)

## 1 Cross-Browser Rendering Issue

Click to highlight the error on the screenshots above.

Ignore

#footer div.copyright

Element is off by 198px from the top.



# MULTI-DIMENSIONAL

- ✱ Cross-browser
- ✱ Regression
- ✱ Internationalization
- ✱ Bandwidth constraints



# NO PROGRAMMING REQUIRED

- ✱ Adaptable
  - ✱ The reference page is the set of rules
- ✱ Everyone can test
  - ✱ Just type in a URL
- ✱ No test maintenance required



# RECAP

- ✱ Ensure a consistent user experience
- ✱ Match developer testing habits
- ✱ Match customer viewing expectations
- ✱ Provide intelligent results
- ✱ Reduce conceptual & cost overhead



# THE END

✻ Q & A

✻ Contact info:

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✻ @nirvdram

✻ <http://webconsistencytesting.com/>