

Automatic Detection of Potential Layout Faults in Responsive Web Pages

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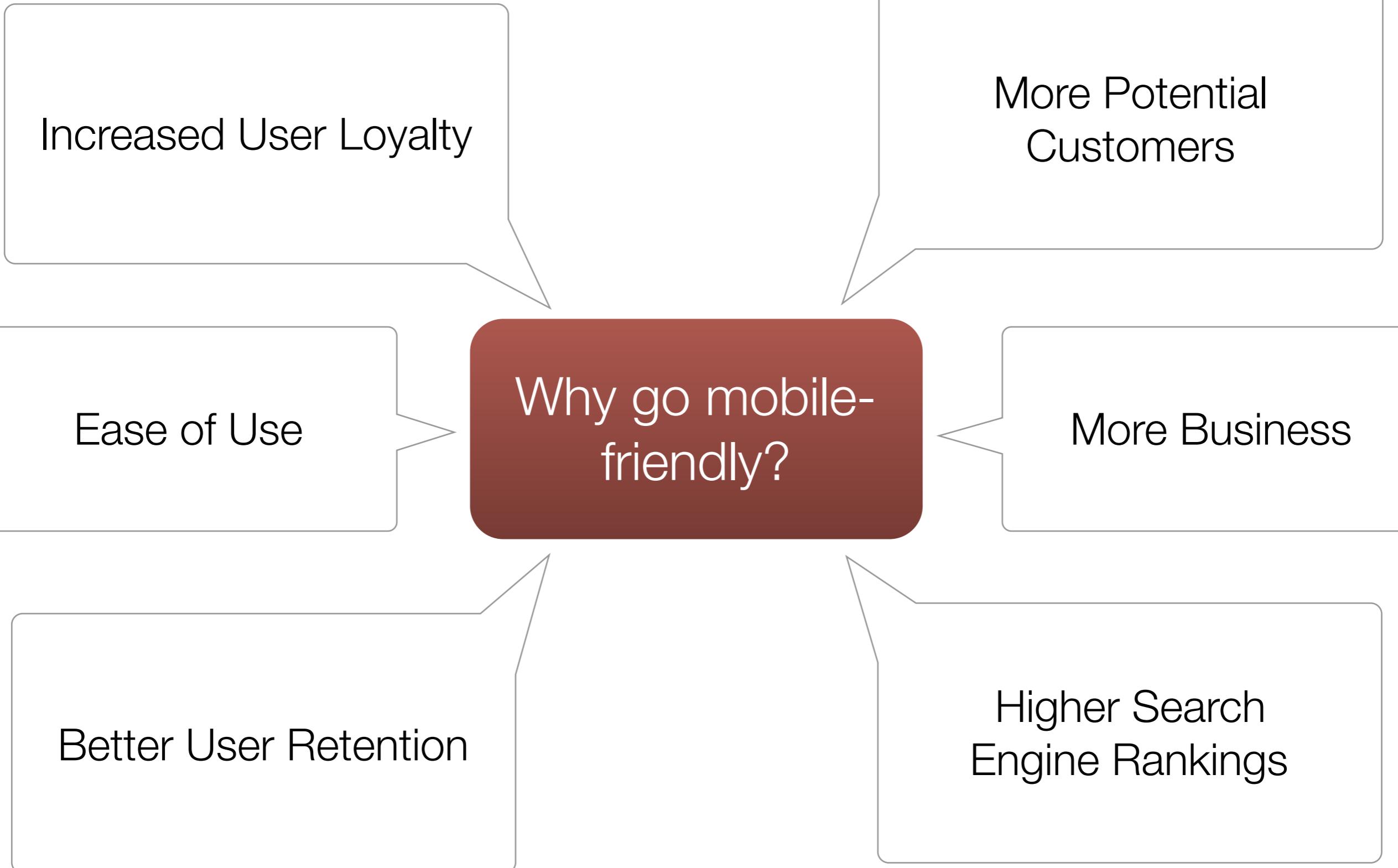


The
University
Of
Sheffield.

The Web - Past and Present



<https://blog.pivotal.io/labs/labs/an-introduction-to-qa-at-xtreme-labs>

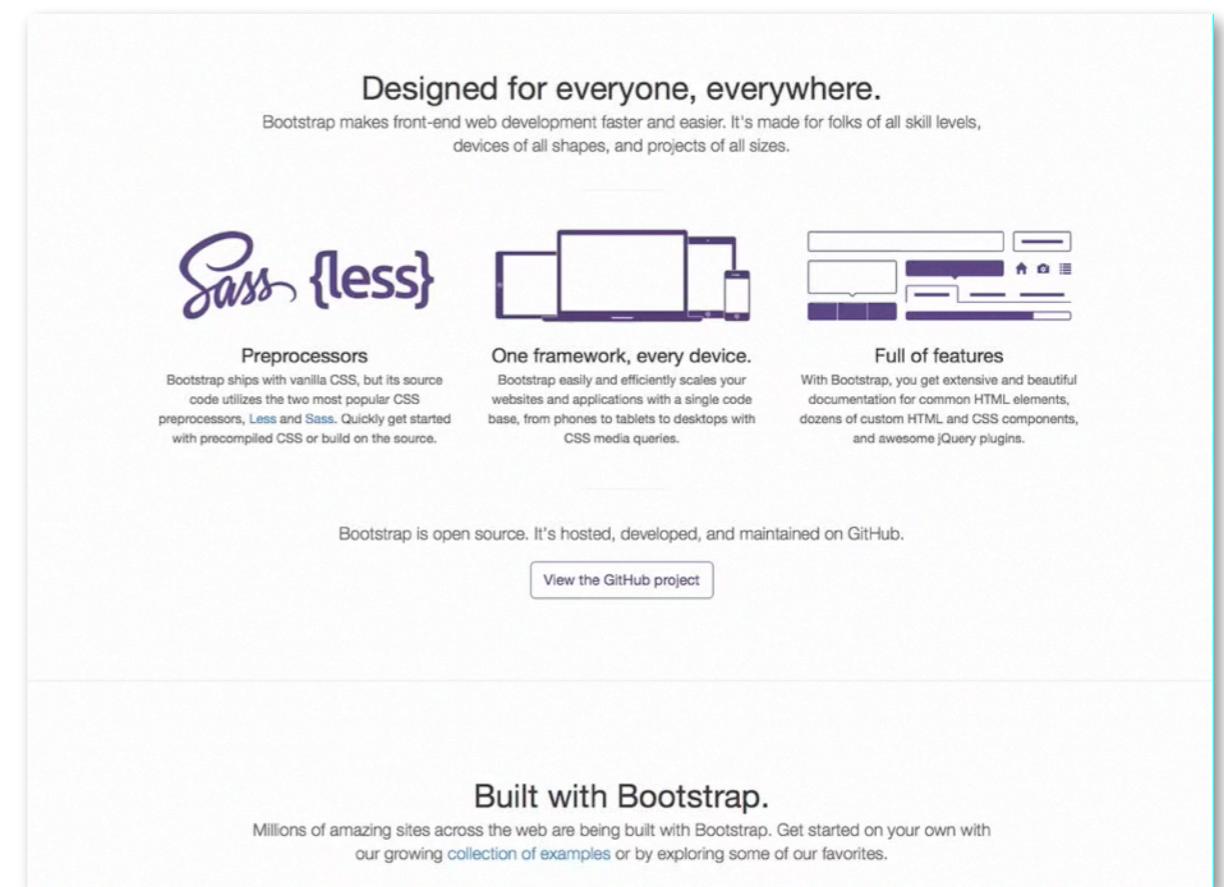


Making a Webpage Mobile-Friendly



Responsive Web Design

- Introduced by Ethan Marcotte in 2011.
- Aims to provide an optimal browsing experience to all devices.
- Described by W3C as “a must for tablet and mobile devices”.
- Based around three main concepts:
 - Flexible grids
 - Flexible images
 - Media queries



Testing Responsive Web Pages



Insufficient suite of developer tools

SEE YOUR SITE RESPONSIVE

<http://thomaswalsh.co.uk> **GO!**

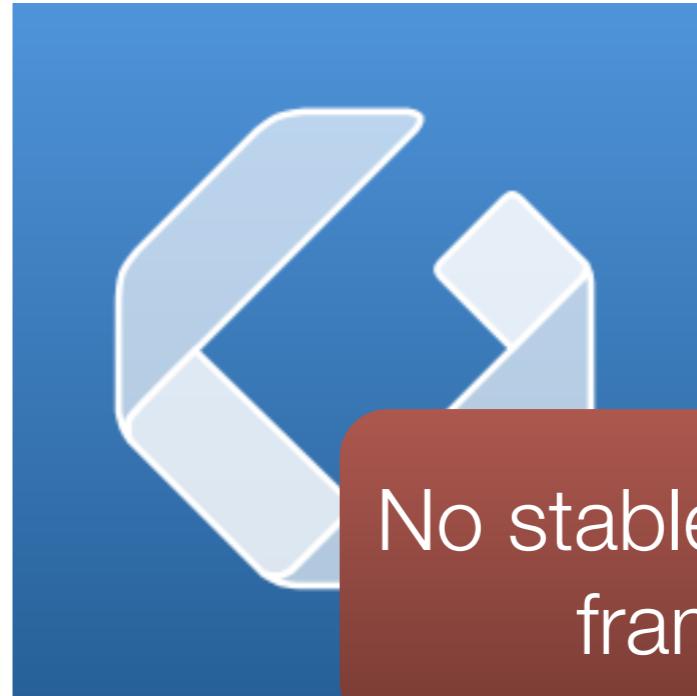
Hooray! Am I Responsive won the Side Project of the Year at this years The Net Awards if you voted for us please let me say a huge thank you!

How it works

1. Add your URL to the input field
2. Click GO (reloads the preview) or press Enter (reloads the page)
3. Admire your good work

If you're interested there's now a post on the process of building Am I Responsive

Responsive Design Weekly | **Am I RWD Bookmarklet**

A screenshot of the Am I Responsive website. It shows a desktop and a mobile device both displaying a preview of a website. Below the preview, there's a red section with instructions on how to use the tool. At the bottom, there are links to "Responsive Design Weekly" and "Am I RWD Bookmarklet".

No stable automation framework

Layout Faults

DIV[1]

Placeholder text for DIV[1].

DIV[2]

Placeholder text for DIV[2].

DIV[3]

Placeholder text for DIV[3].

DIV[4]

Placeholder text for DIV[4].

Link 1 Link 2 Link 3 Link 4 Link 5

DIV[1]

Placeholder text for DIV[1].

DIV[2]

Placeholder text for DIV[2].

DIV[3]

Placeholder text for DIV[3].

DIV[4]

Placeholder text for DIV[4].

DIV[5]

Placeholder text for DIV[5].

DIV[6]

Placeholder text for DIV[6].

Layout Faults

DIV[1]

Placeholder text for DIV[1].

DIV[2]

Placeholder text for DIV[2].

DIV[3]

Placeholder text for DIV[3].

DIV[4]

Placeholder text for DIV[4].

Link 1 Link 2 Link 3 Link 4 Link 5

DIV[1]

Placeholder text for DIV[1].

DIV[2]

Placeholder text for DIV[2].

DIV[3]

Placeholder text for DIV[3].

DIV[4]

Placeholder text for DIV[4].

DIV[5]

Placeholder text for DIV[5].

DIV[6]

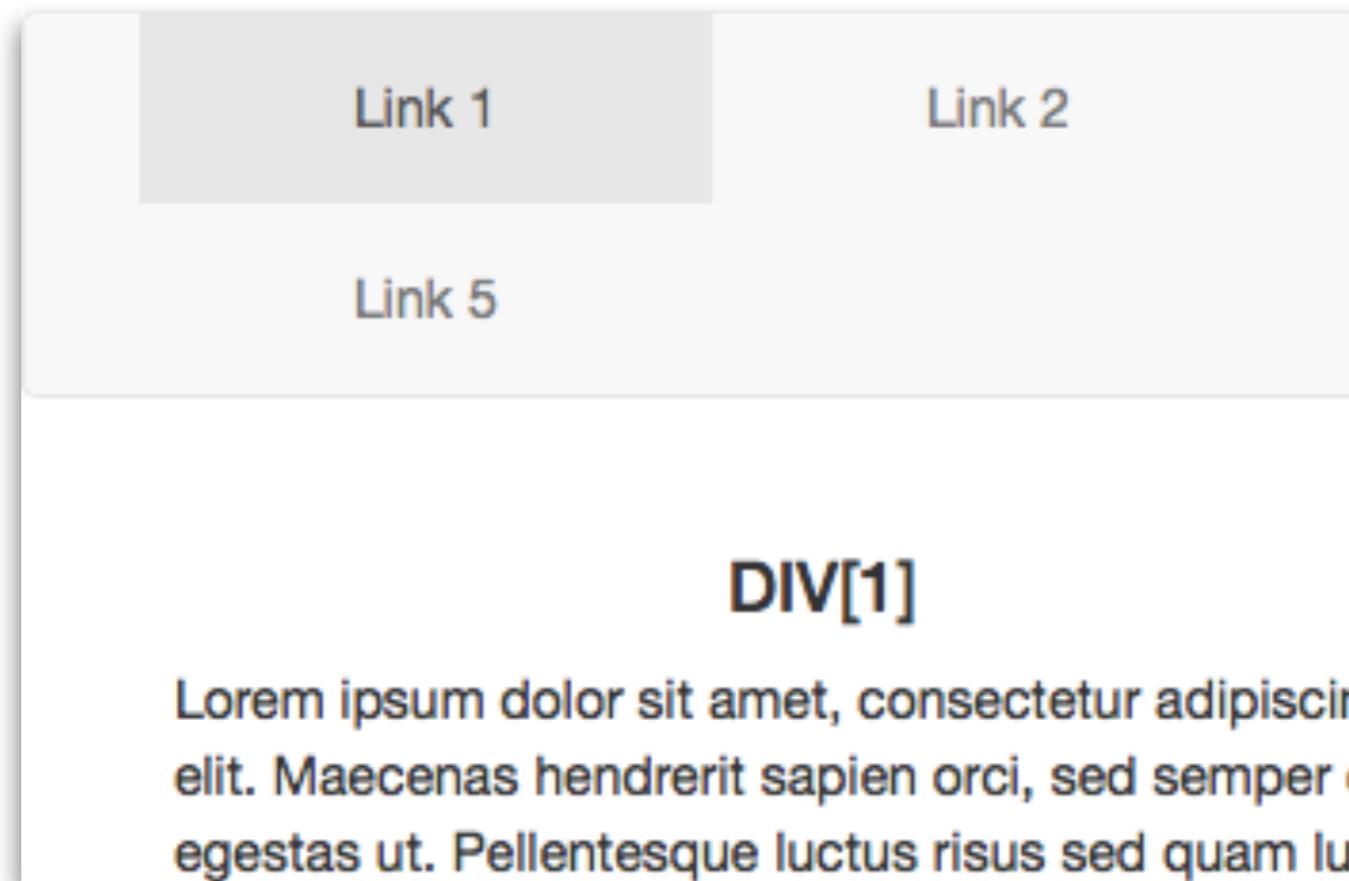
Placeholder text for DIV[6].

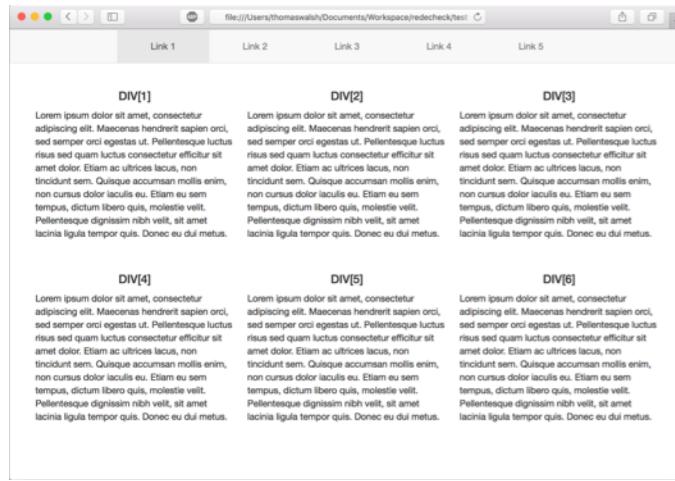
Layout Faults

Link 1	Link 2	Link 3	Link 4	Link 5
DIV[1] Lorem ipsum dolor sit amet, consectetur adipiscing elit. Maecenas hendrerit sapien orci, sed semper orci egestas ut. Pellentesque luctus risus sed quam luctus consectetur efficitur sit amet dolor. Etiam ac ultrices lacus, non tincidunt sem. Quisque accumsan mollis enim, non cursus dolor iaculis eu. Etiam eu sem tempus, dictum libero quis, molestie velit. Pellentesque dignissim nibh velit, sit amet lacinia ligula tempor quis. Donec eu dui metus.	DIV[2] Lorem ipsum dolor sit amet, consectetur adipiscing elit. Maecenas hendrerit sapien orci, sed semper orci egestas ut. Pellentesque luctus risus sed quam luctus consectetur efficitur sit amet dolor. Etiam ac ultrices lacus, non tincidunt sem. Quisque accumsan mollis enim, non cursus dolor iaculis eu. Etiam eu sem tempus, dictum libero quis, molestie velit. Pellentesque dignissim nibh velit, sit amet lacinia ligula tempor quis. Donec eu dui metus.			
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DIV[5]	DIV[6]			

Link 1	Link 2	Link 3	Link 4
Link 1	Link 2	Link 3	Link 4
DIV[1] Lorem ipsum dolor sit amet, consectetur adipiscing elit. Maecenas hendrerit sapien orci, sed semper orci egestas ut. Pellentesque luctus risus sed quam luctus consectetur efficitur sit amet dolor. Etiam ac ultrices lacus, non tincidunt sem. Quisque accumsan mollis enim, non cursus dolor iaculis eu. Etiam eu sem tempus, dictum libero quis, molestie velit. Pellentesque dignissim nibh velit, sit amet lacinia ligula tempor quis. Donec eu dui metus.	DIV[2] Lorem ipsum dolor sit amet, consectetur adipiscing elit. Maecenas hendrerit sapien orci, sed semper orci egestas ut. Pellentesque luctus risus sed quam luctus consectetur efficitur sit amet dolor. Etiam ac ultrices lacus, non tincidunt sem. Quisque accumsan mollis enim, non cursus dolor iaculis eu. Etiam eu sem tempus, dictum libero quis, molestie velit. Pellentesque dignissim nibh velit, sit amet lacinia ligula tempor quis. Donec eu dui metus.		
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Layout Faults





Sample
Webpage



Extract
Layout
Constraints

(400, 767) => W

(400, 1300) => X

(768, 1023) => Y

(992, 1300) => Z

Responsive Layout Graph

Models responsive behaviour of web page across a wide range of viewport widths

Focusses on three layout features:
visibility, width and alignment

Comparing two RLG models results in a set of layout differences between the two versions of the page

Body

Nav

Container

Link 1

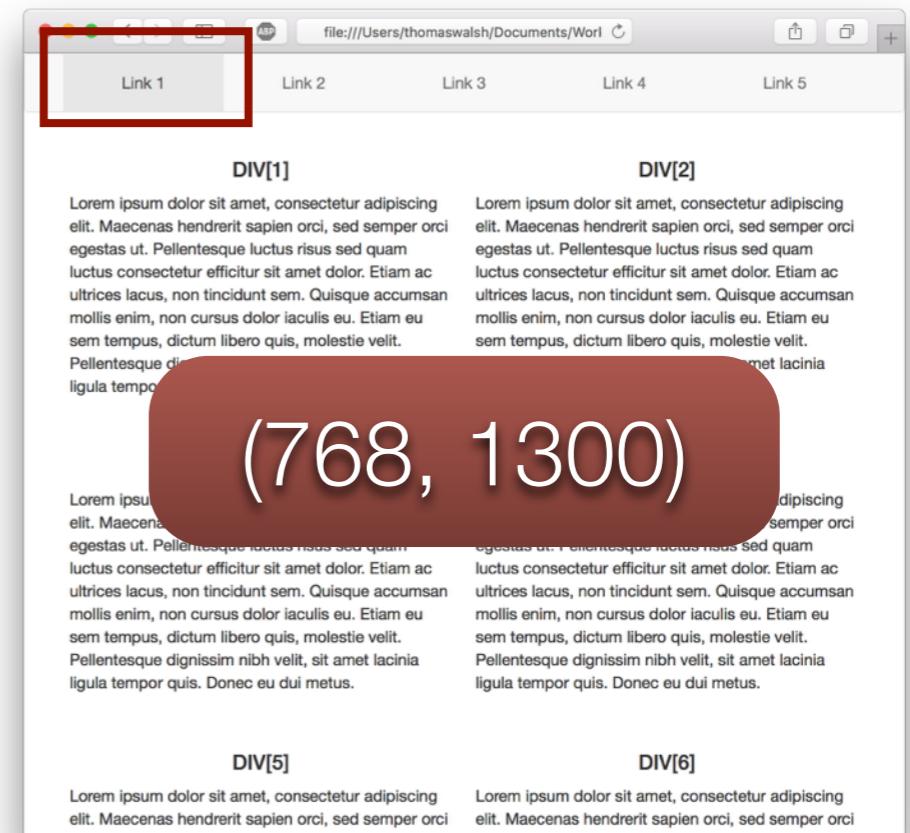
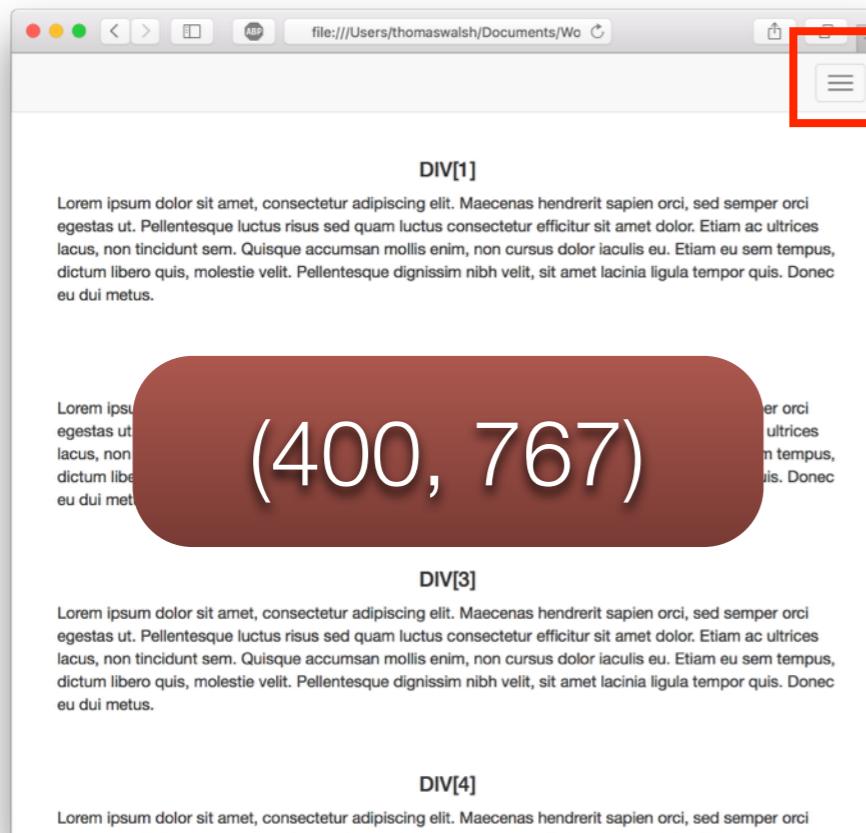
Div 1

Link 2

Div 2

RLG - Visibility Constraints

(W_{min}, W_{max})



(400,1300)
Body

(768,1300)
Nav

(400,1300)
Container

(768,1300)
Link 1

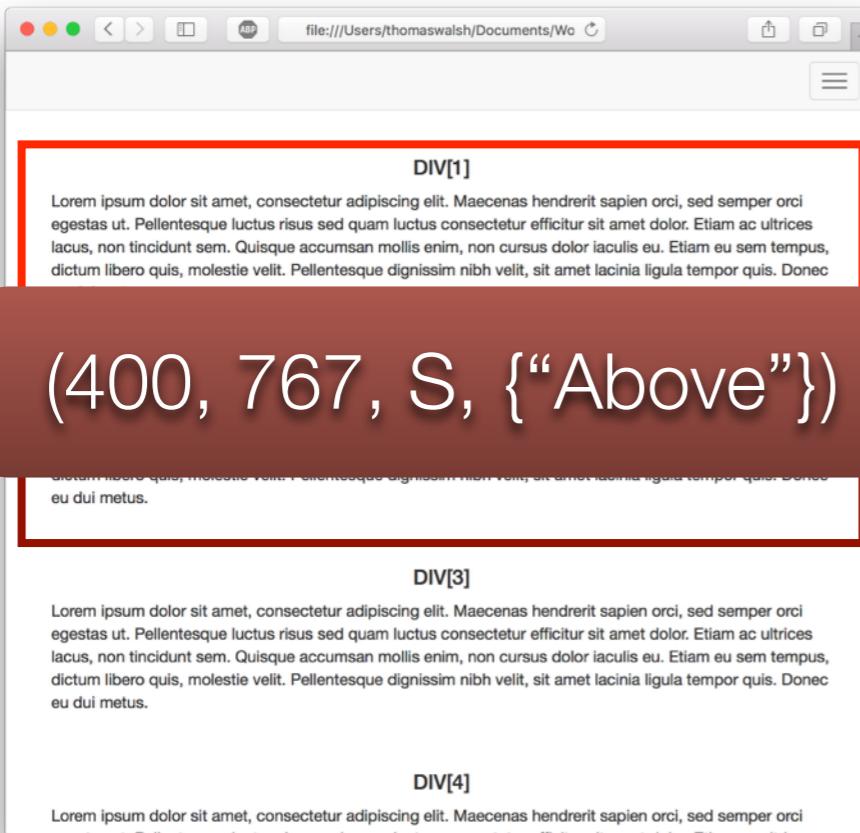
(400,1300)
Div 1

(768,1300)
Link 2

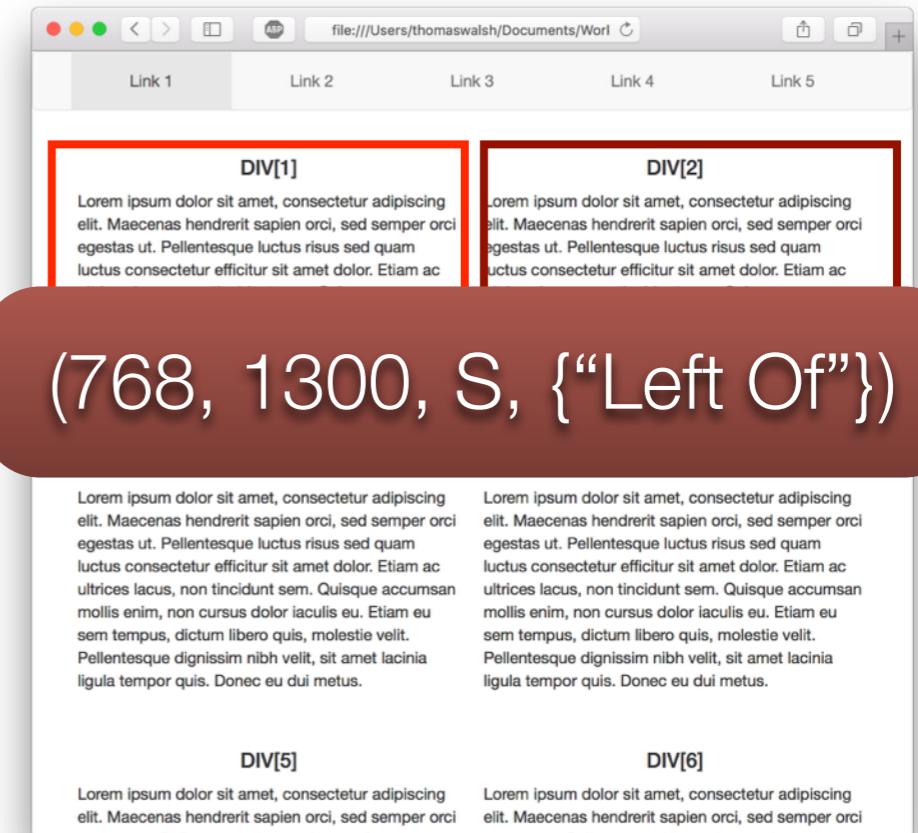
(400,1300)
Div 2

RLG - Alignment Constraints

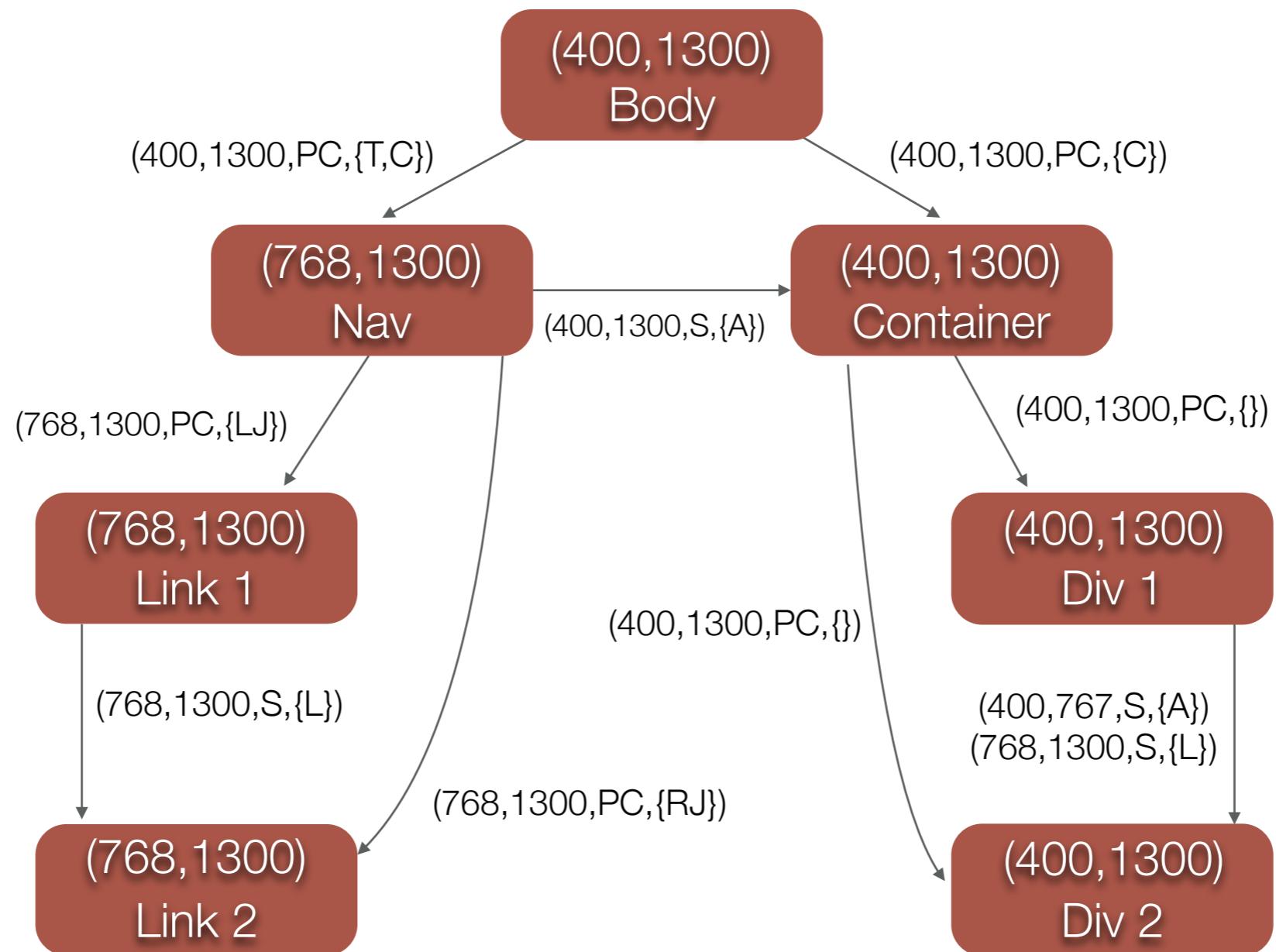
(W_{min}, W_{max}, t, A)



(400, 767, S, {"Above"})

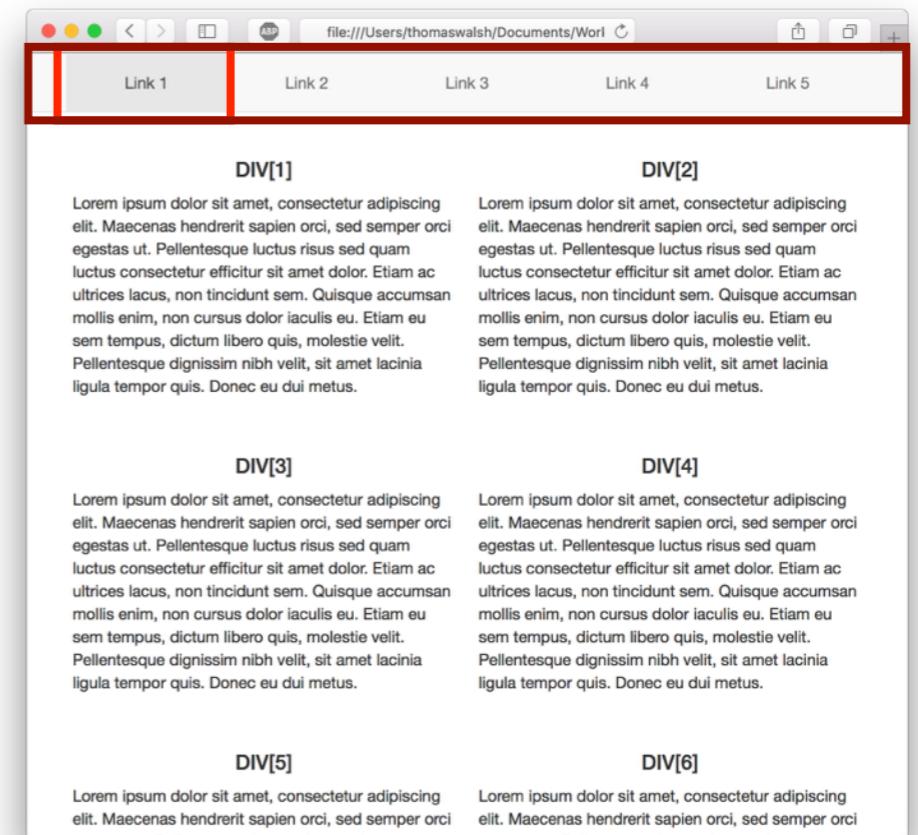
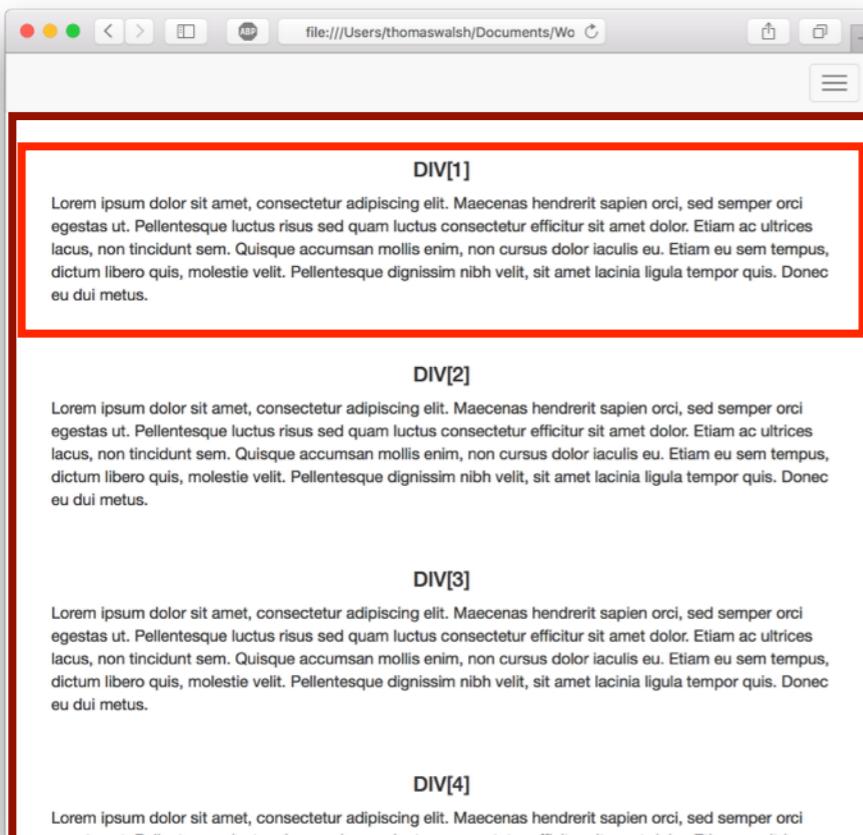


(768, 1300, S, {"Left Of"})



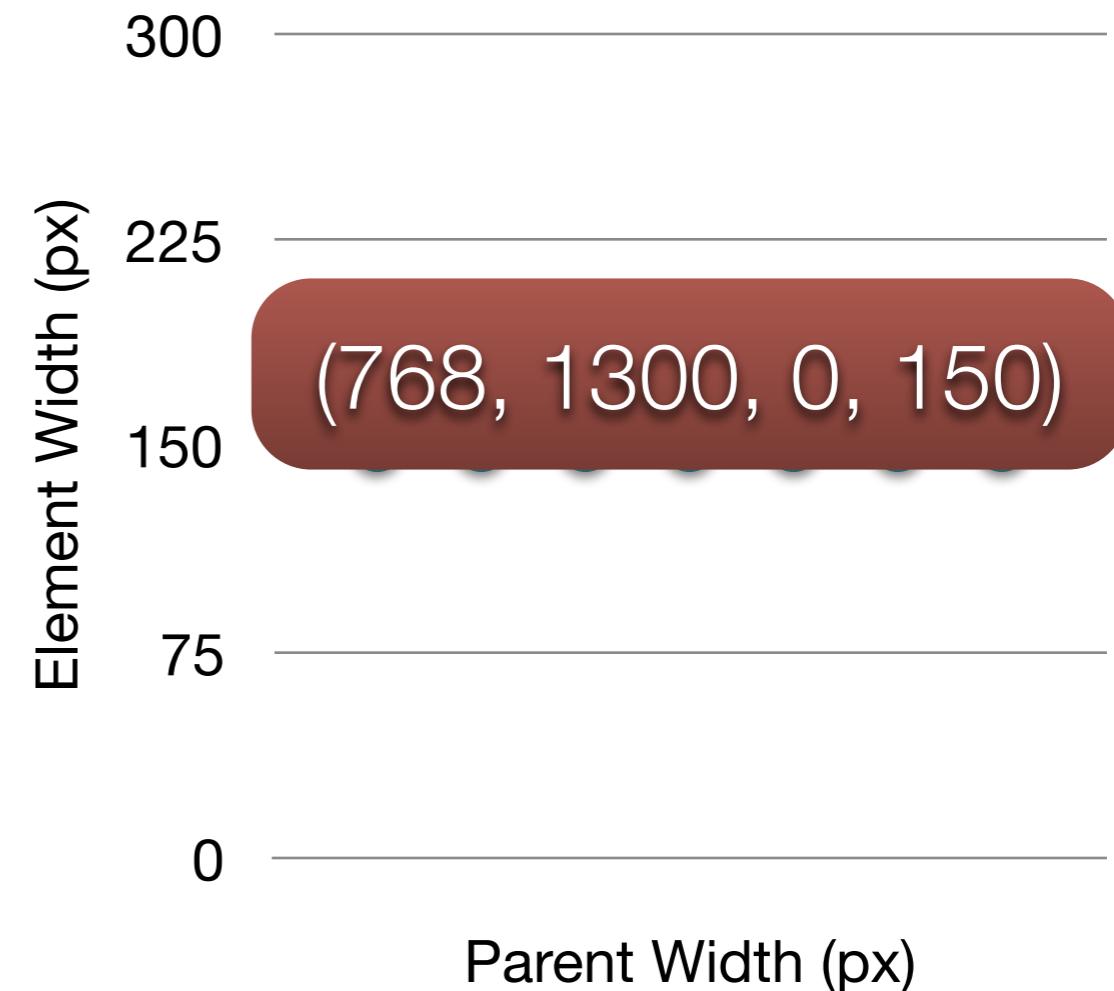
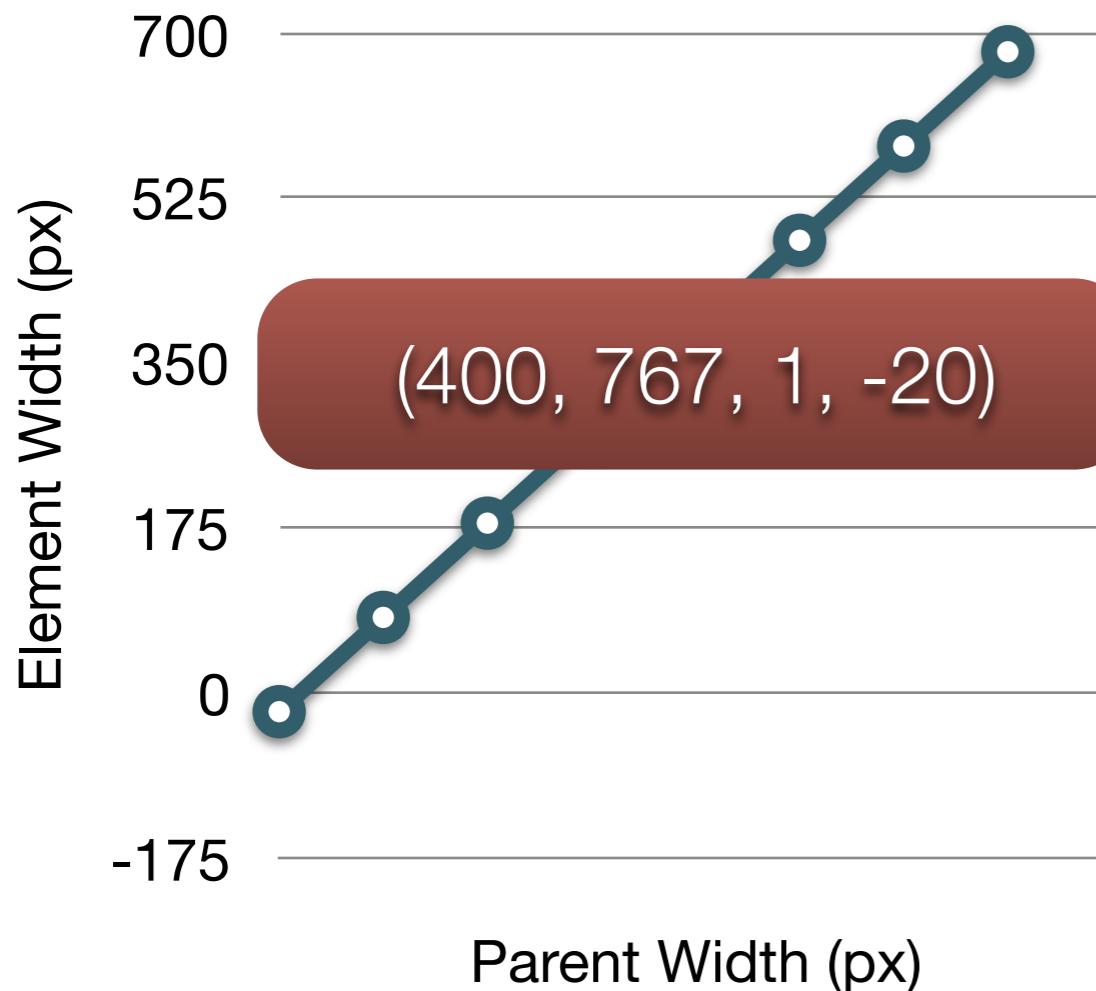
RLG - Width Constraints

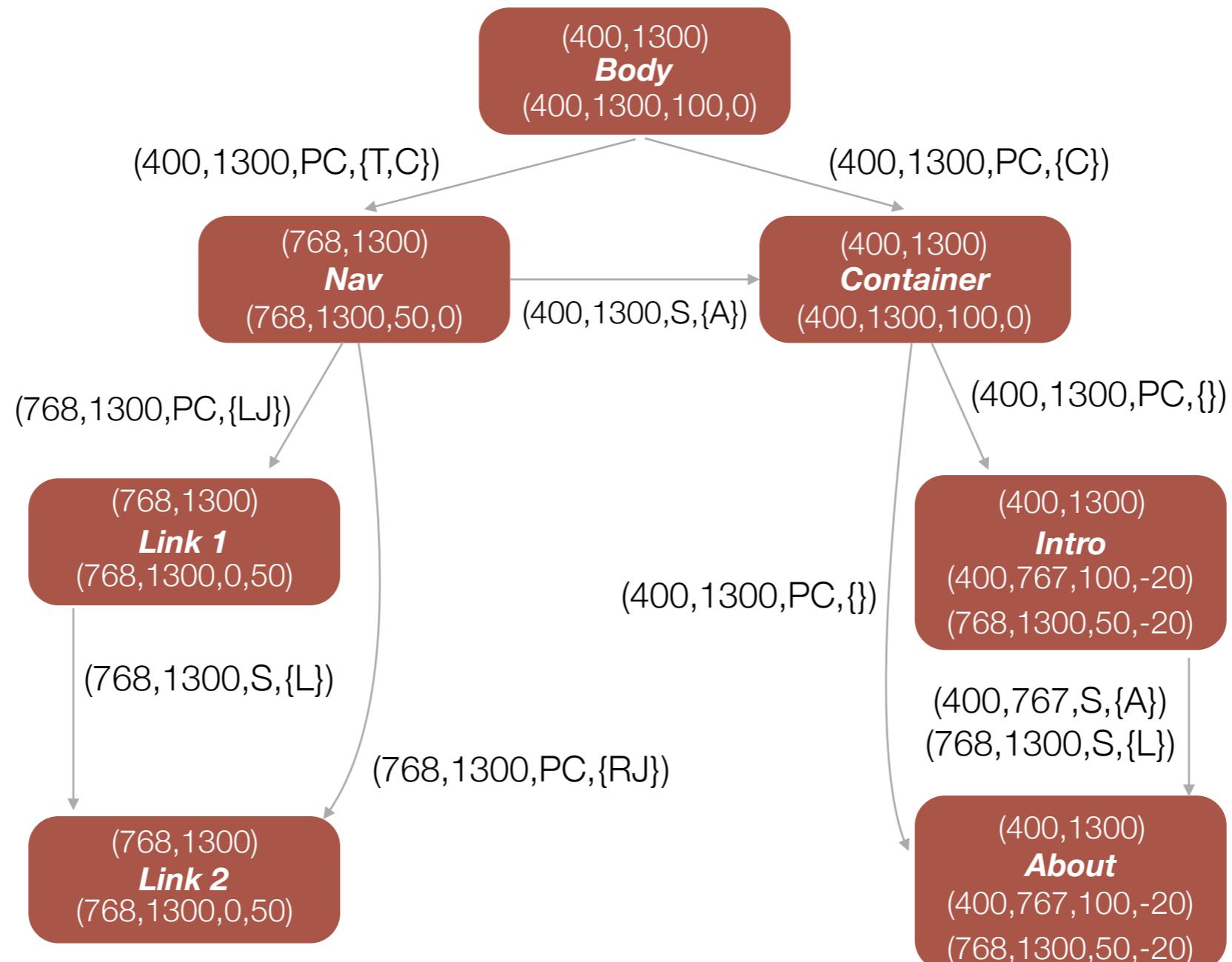
(W_{min} , W_{max} , m , c)



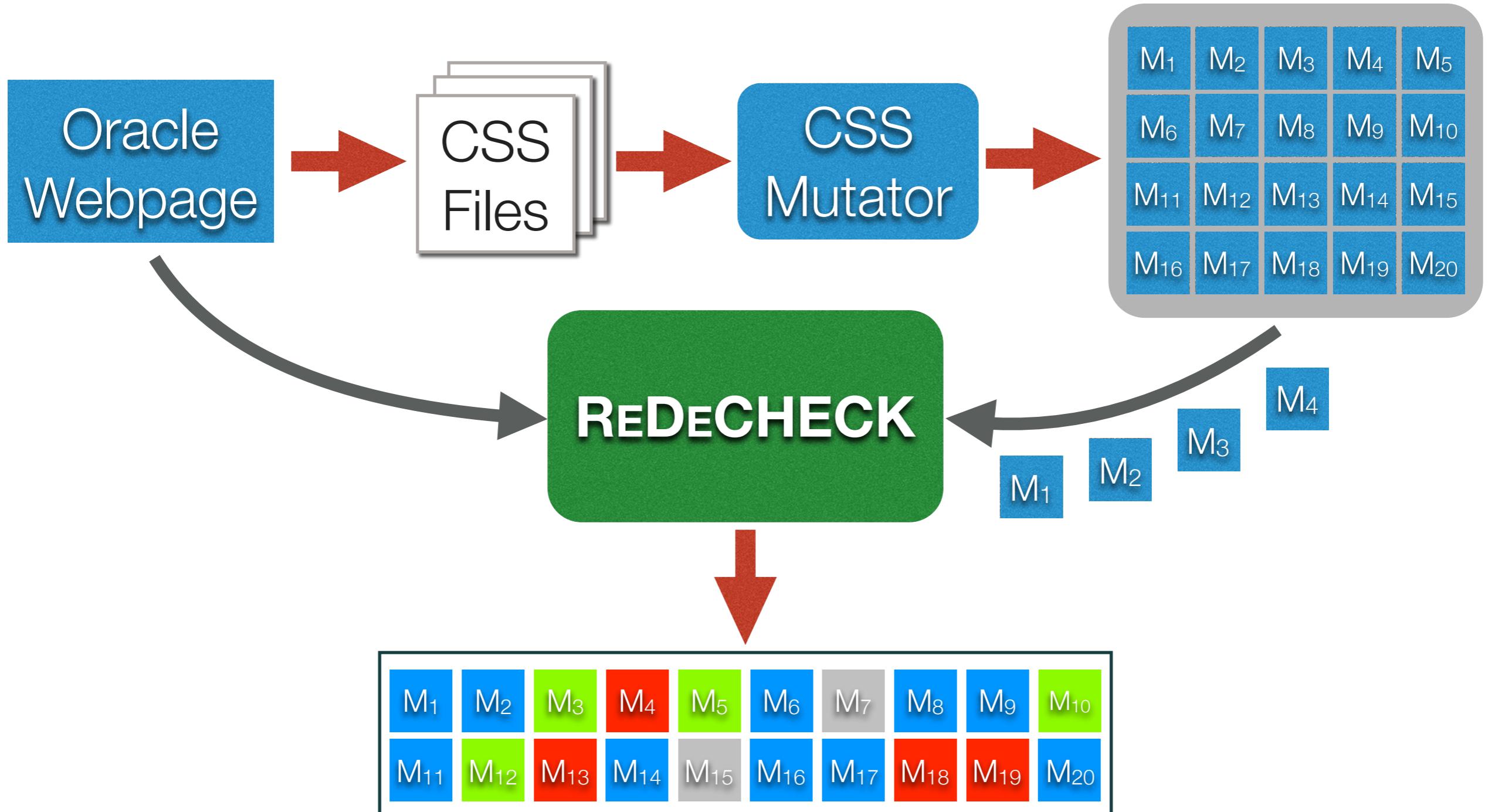
RLG - Width Constraints

$(W_{\min}, W_{\max}, m, c)$



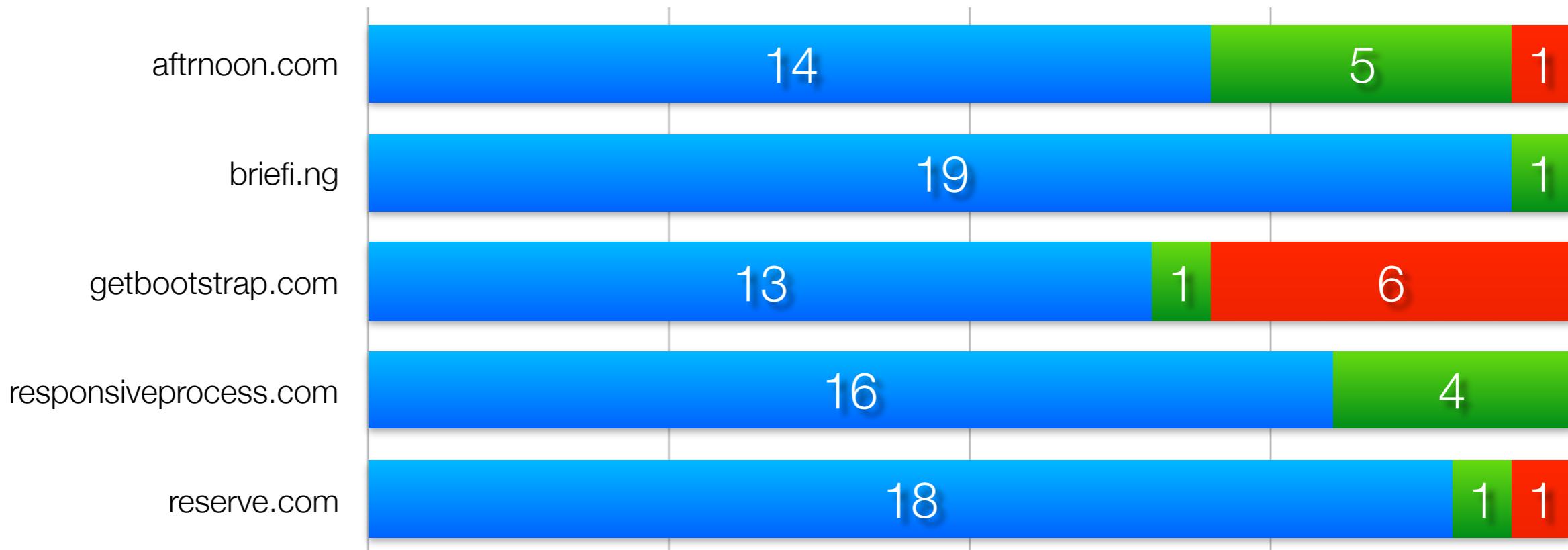


Experimental Procedure



Results

True Pos True Neg False Pos False Neg



The REDECHECK Tool

The screenshot shows the GitHub repository page for `redecheck/redecheck-tool`. The repository has 198 commits, 1 branch, 0 releases, and 2 contributors. The latest commit was made 2 days ago by Thomas Walsh. The repository is public and has 2 stars and 0 forks. The right sidebar includes links for Code, Issues (0), Pull requests (0), Wiki, Pulse, Graphs, and Settings. It also provides an HTTPS clone URL and options to Clone in Desktop or Download ZIP.

Description: Short description of this repository

Website: Website for this repository (optional)

Save or Cancel

198 commits, 1 branch, 0 releases, 2 contributors

Branch: master / [redecheck-tool](#) / +

Thomas Walsh Fixing merge. Latest commit 4875787 2 days ago

readme-images Think this is pretty much ready to go. a month ago

resources Removing the phantomjs binary from the repository; it is platform 3 days ago

src Ready to try a push to GitHub 2 days ago

testing Removed all the websites we can't release with the tool, and a few ot... 3 days ago

.classpath Not sure if this works 22 days ago

.gitignore Fixing merge. 2 days ago

README.md Making improvements to the introductory paragraph in the README file. 3 days ago

pom.xml End of day sync. 11 days ago

README.md

Unwatch 2 | Star 0 | Fork 0

Code

Issues 0

Pull requests 0

Wiki

Pulse

Graphs

Settings

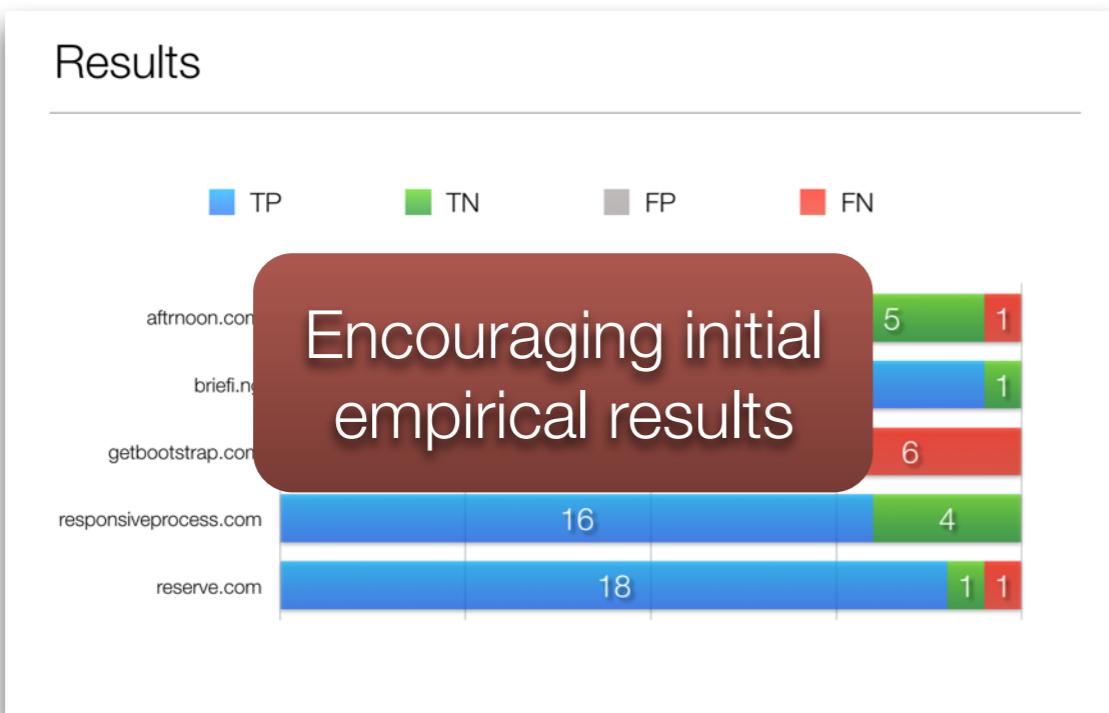
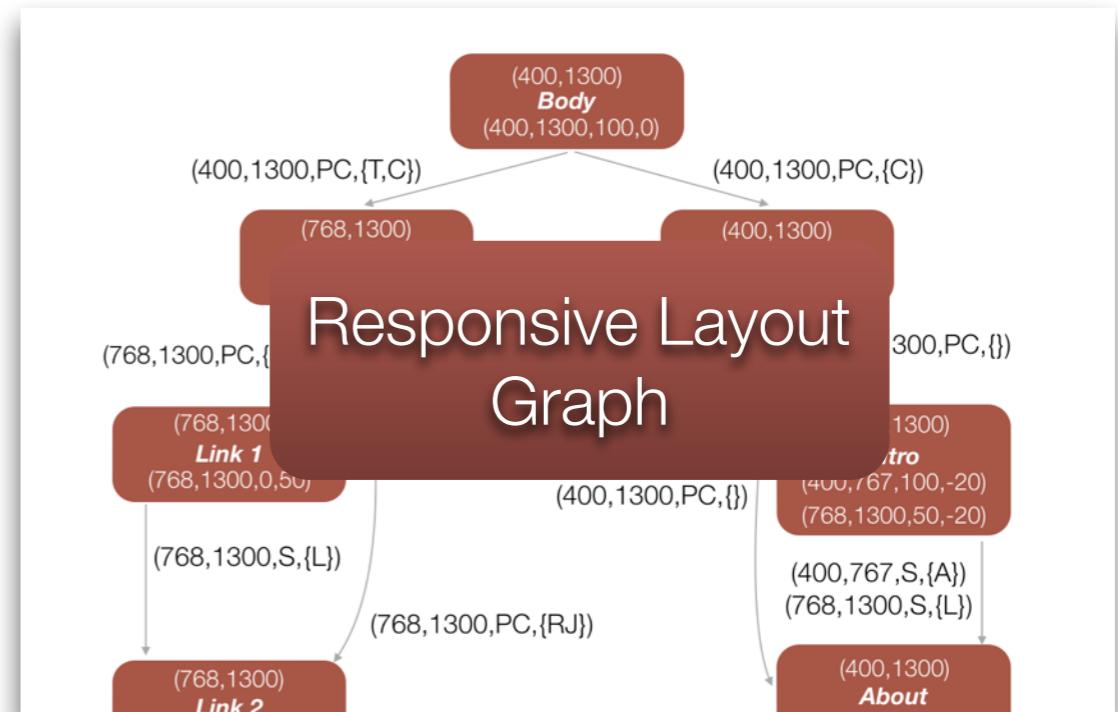
HTTPS clone URL
<https://github.com/redecheck/redecheck-tool>

You can clone with [HTTPS](#), [SSH](#), or [Subversion](#).

Clone in Desktop

Download ZIP

Available at <https://github.com/redecheck/redecheck-tool>



redecheck / redecheck-tool

Description Website

Short description of this repository Website for this repository (optional) Save or Cancel

198 commits 1 branch 0 releases 2 contributors

Branch: master redecheck

Thomas Walsh Fixing merge...

readme-images Think thi...

resources Remov...

src Ready...

testing Remov...

.classpath Not sur...

.gitignore Fixing merge...

README.md Making improvements to the introductory paragraph in the README file...

pom.xml End of day sync...

README.md

Welcome to ReDeCheck!

Unwatch 2 Star 0 Fork 0

Issues 0 Pull requests 0 Wiki Pulse Graphs Settings

HTTPS clone URL https://github.com/redecheck/redecheck-tool You can clone with HTTPS, SSH, or Subversion.

Clone in Desktop Download ZIP