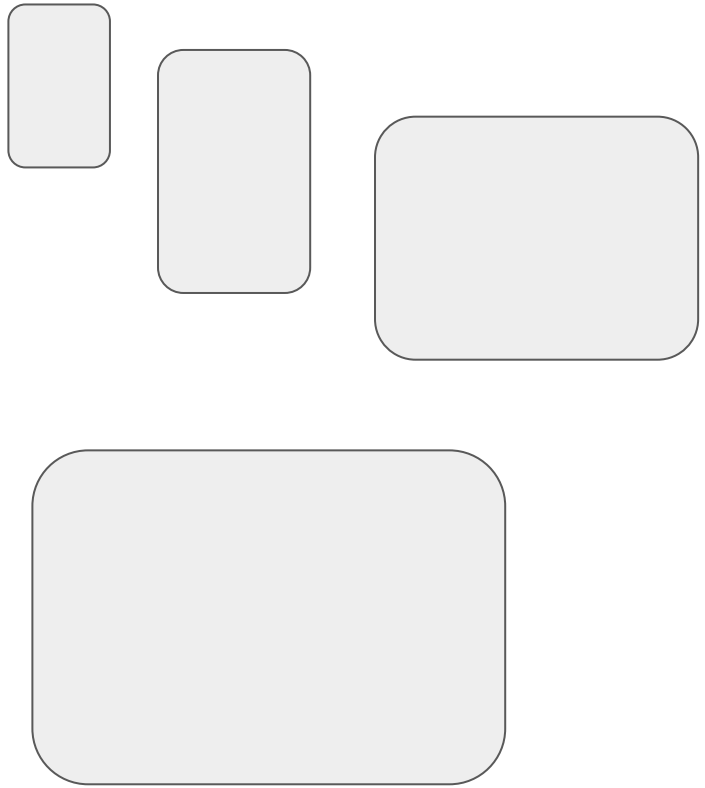
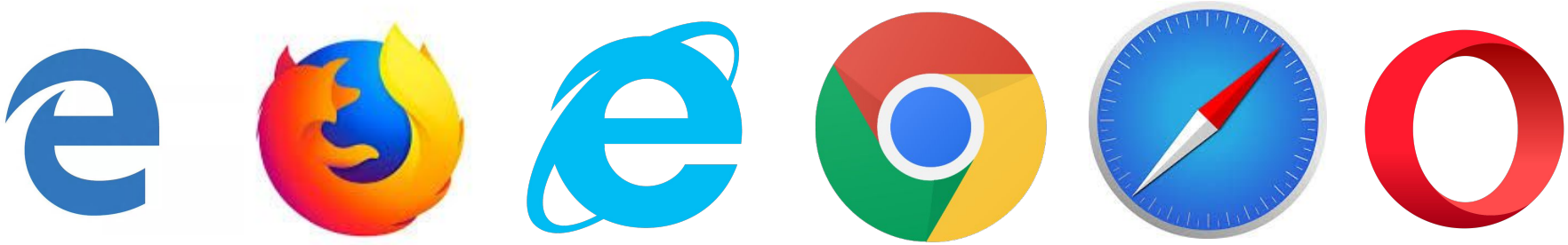
Automated Visual Testing

GovTech QE Chapter
December 2018

Responsiveness

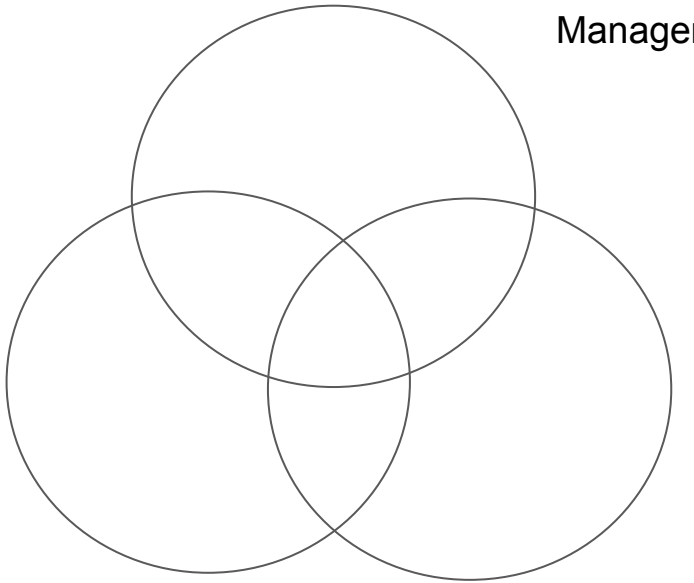


Browser Compatibility



Why Applitools?

Dashboard and Project Management



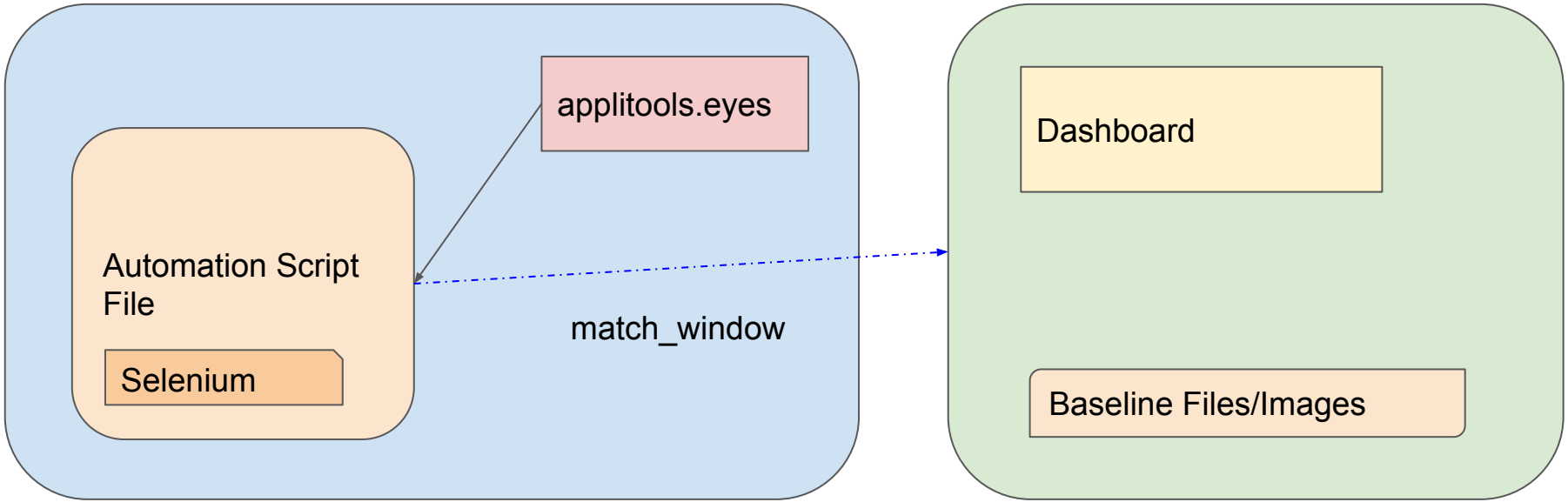
DevOps Integration

Visual Automated Testing

Visual ~~Automated~~ AI Testing

- Applitools

Applitools Overview



Applitools Demo

Need Benchmarks
Need Use Cases
Need User Pain Points

Other Visual Automated Testing Options

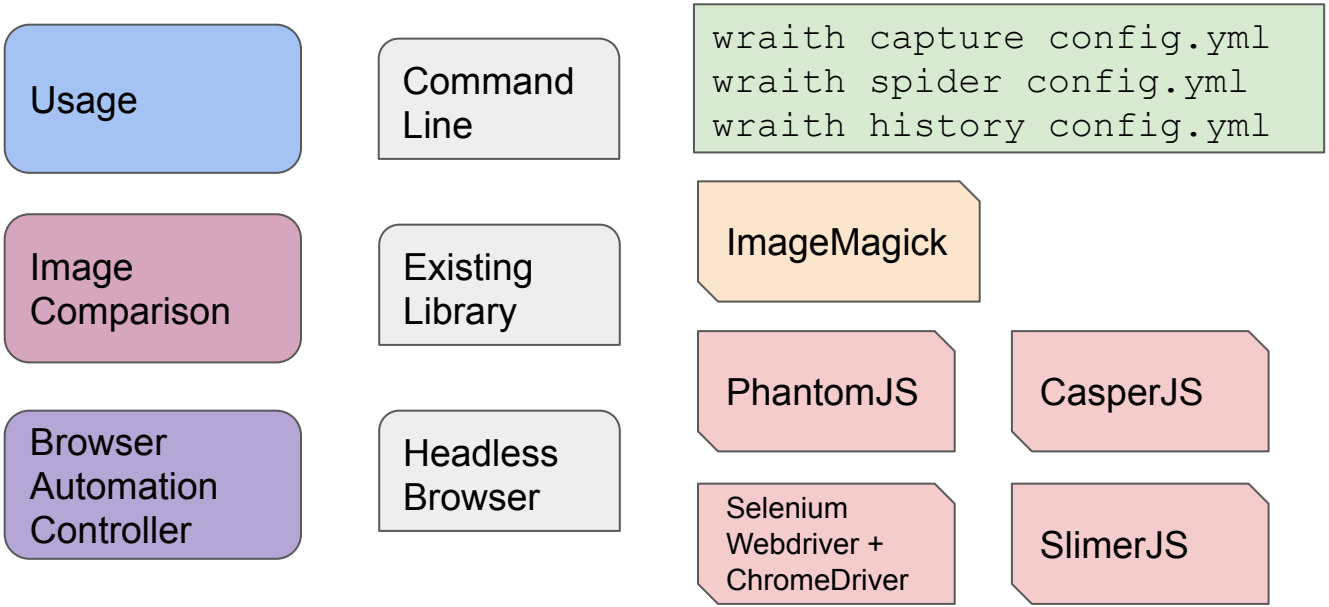
- Wraith
- WebdriverCSS
- Galen Framework
- Phantom CSS
- Gemini

Visual Automated Testing

- **Wraith**
- WebdriverCSS
- Galen Framework
- Phantom CSS
- Gemini

Wraith

- Developed at BBC
- Used for checking CSS changes; intentional and unintentional



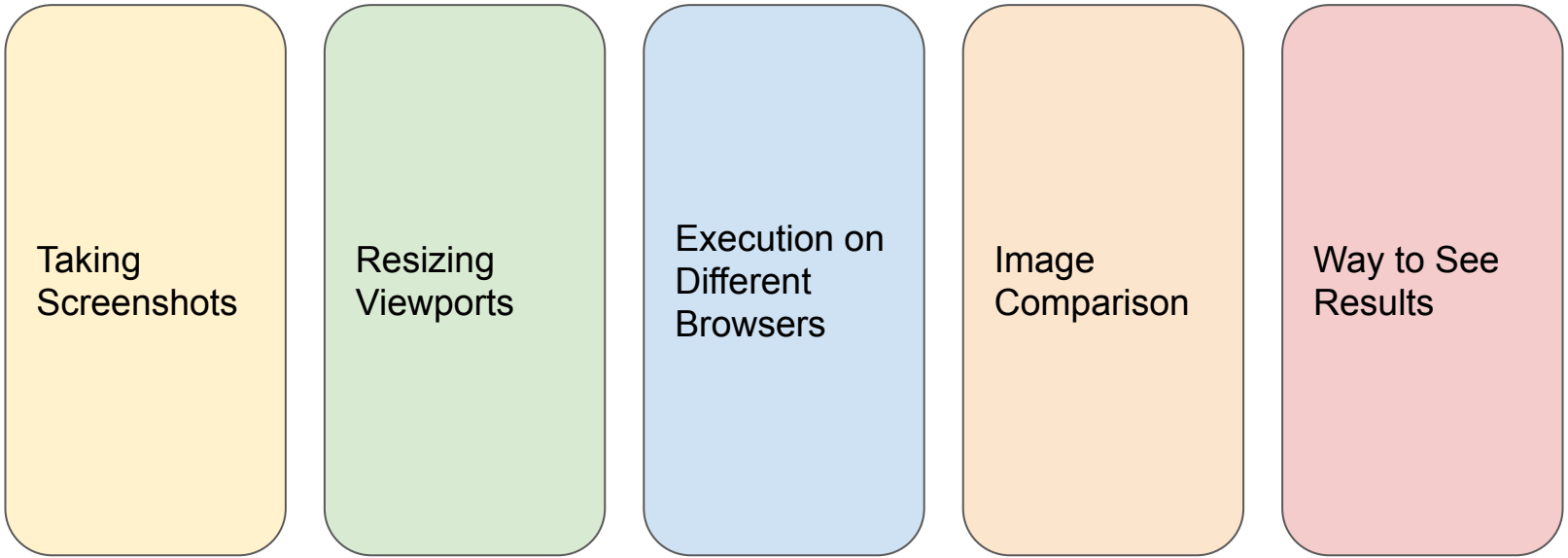
```
#Headless browser option
browser:
  phantomjs: "phantomjs"
  # slimerjs: "slimerjs"

#If you want to have multiple snapping files, set the file name here
#snap_file: "javascript/snap.js"

# (optional) JavaScript file to execute before taking screenshot of every path. Default: nil
#before_capture: 'javascript/disable_javascript--phantom.js'
before_capture: '../javascript/wait--phantom.js'

# Type the name of the directory that shots will be stored in
directory: 'gallery_bbc_shots'

# Add only 2 domains, key will act as a label
domains:
  #default: "http://www.bbc.co.uk/news"
  russian: "http://www.bbc.co.uk/russian"
  #english: "http://www.bbc.co.uk/english"
  burmese: "http://www.bbc.co.uk/burmese"
  #chinese: "http://www.bbc.co.uk/chinese"
  #asia: "http://www.bbc.co.uk/asia"
  #chinese: "http://www.bbc.co.uk/french"

#Type screen widths below, here are a couple of examples
screen_widths:
  - 320
  - 600
  - 768
  - 1024
  - 1280
```

```yaml
#Type screen widths below, here are a couple of examples
screen_widths:
  - 320
  - 600
  - 768
  - 1024
  - 1280

#Type page URL paths below, here are a couple of examples
paths:
  home: /
  uk_index: /uk

#Amount of fuzz ImageMagick will use
fuzz: '20%'

#Set the number of days to keep the site spider file
spider_days:
  - 10

#Choose how results are displayed, by default alphanumeric. Different screen widths are always grouped.
#alphanumeric - all paths (with, and without, a difference) are shown, sorted by path
#diffs_first - all paths (with, and without, a difference) are shown, sorted by difference size (largest first)
#diffs_only - only paths with a difference are shown, sorted by difference size (largest first)
mode: diffs_first

threshold: 5
```

Wraith Promise

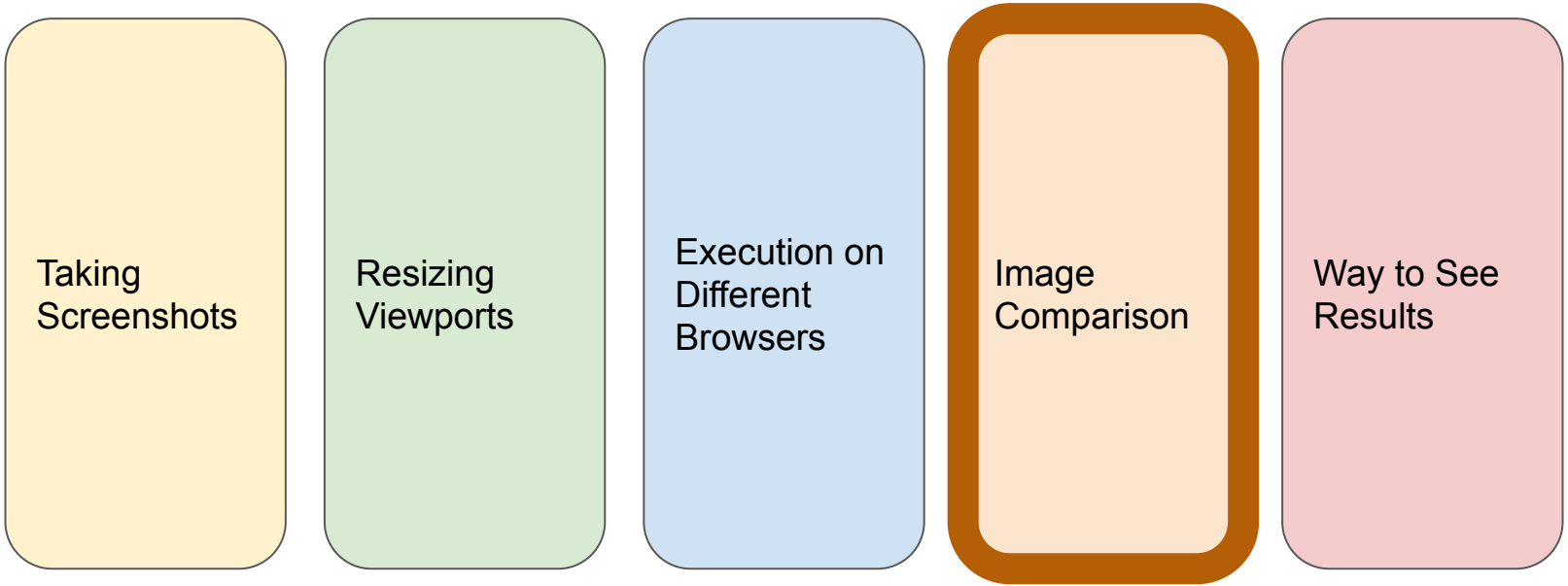
- takes screenshots of your webpages
- runs a comparison task across them
- outputs a diff PNG file comparing the two images, and a data.txt file which contains the percentage of pixels that have changed
- packages all of this up into a gallery.html, ready for you to view
- if any screenshot's diff is above the threshold you specified in your configuration file, the task exits with a system error code (useful for CI)
- the failed screenshot will also be highlighted in the gallery

Essentials


Taking Screenshots
Resizing Viewports
Execution on Different Browsers
Image Comparison
Way to See Results

Ownself develop ownself?

Essentials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Similarity Measures

+ Mean Squared Error

$$MSE = \frac{1}{m\,n} \sum_{i=0}^{m-1} \sum_{j=0}^{n-1} [I(i,j) - K(i,j)]^2$$

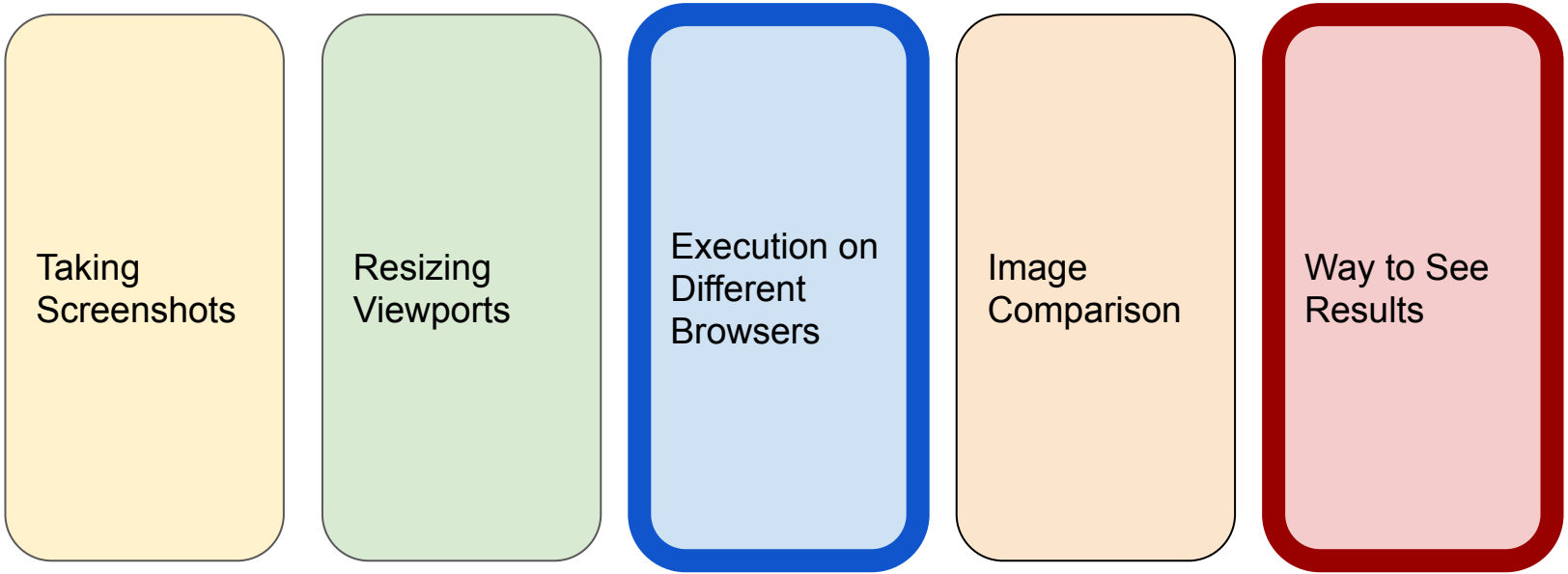
+ Structural Similarity Index

$$\text{SSIM}(x,y) = \frac{(2\mu_x\mu_y + c_1)(2\sigma_{xy} + c_2)}{(\mu_x^2 + \mu_y^2 + c_1)(\sigma_x^2 + \sigma_y^2 + c_2)}$$

Reference:
https://www.pyimagesearch.com/2014/09/15/python-compare-two-images/

Freezer demo

Essentials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That’s all! Thank you and feedback welcomed ~