

Early Accessibility and Performance Solution (CxSolution)

1. Download the Project

Download the maven project from GitHub to setup the solution in the user system.

2. Pre-requisite

The following software required to be installed to use this solution.

| Software | Version | Download Link |
|---------------|----------------|----------------------|
| Java (JDK) | 1.8 | Link |
| Eclipse IDE | Latest Version | Link |
| ElasticSearch | Latest Version | Link |

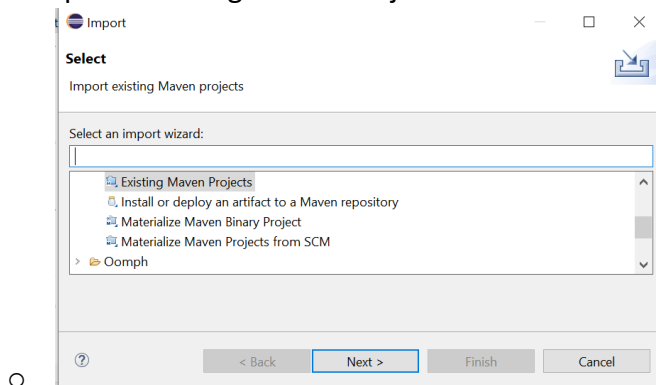
3. Standalone Solution

Integrate this solution into the existing java selenium automation framework or create the new java maven project to perform early accessibility audits and client-side performance of the web pages. This document will describe the details of the usage as a standalone solution however it can be modified slightly to integrate it with the existing selenium framework.

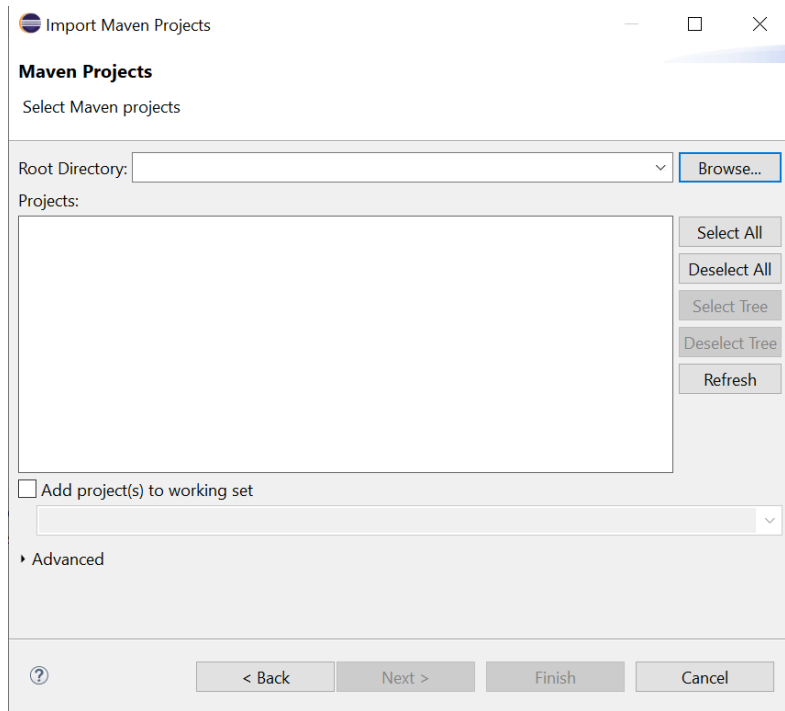
4. Import as Maven Project

Follow the below steps to import the maven project.

- Open Eclipse
- File->Import->Existing Maven Projects



- Select the downloaded project directory and click 'finish'



5. Invoke the web page using Java Selenium

Use the below code snippet to perform accessibility audits for your webpage:

```
driver.get("<YOUR WEB PAGE URL>");  
filelist = runA11y.exec("<PATH_TO_CREATE_JSONREPORT>", "<WEB PAGE NAME>", driver);
```

Use the below code snippet to perform client-side performance evaluations:

```
PerformanceExecution("<BROWSER_NAME_TO_USE>", "<ENV>", "YOUR WEB PAGE URL", "WEB PAGE NAME",  
                    "<XPATH>", "<PRE_DEFINED_RESPONSE_TIME_SLA_FOR_PAGE>");
```

JSON response for the accessibility and performance audits will be created with the audit results and recommendations to the performance and accessibility issues at the end of the run. It can be viewed in the user preferred format. This document shows the custom report prepared by our own HTML report and Kibana dashboard as an example.

6. Sample Accessibility Audit Reports

Snapshots shown below are the sample HTML report created from the JSON response after the audits:

Accessibility Test Report

This page contains the accessibility test report for each test scenarios. Please click on the report button to view the detailed test report and recommendations for each test scenarios.

Accessibility Test Scenario Summary

| Test Scenario Name | Report Link | Test Status |
|--------------------|------------------------|-------------|
| SampleTest_1 | Report | FAIL |

Note

Test scenarios which do not have either **critical** or **serious** accessibility violations are marked as **PASS** else **FAIL**.



Accessibility Test Scenario Summary

Report Time: 2023-07-06 09:04
Browser Used: chrome:108.0.5359.125

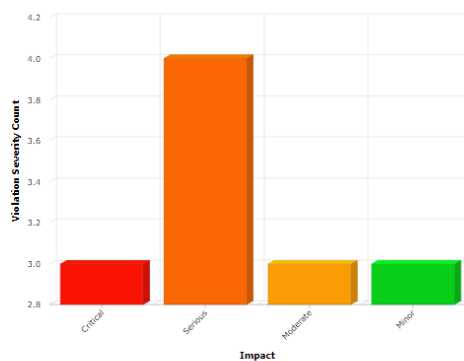
| Category | Test Summary |
|--------------------|---|
| Test Type | Accessibility Audit against WCAG 2.1 Guidelines |
| Overall Review | Needs Improvement |
| Total Pages Tested | 3 |
| Violations | <ul style="list-style-type: none">Number of Critical Accessibility Violations - 3Number of Serious Accessibility Violations - 4Number of Moderate Accessibility Violations - 3Number of Minor Accessibility Violations - 3 |
| Impacted Users | <ul style="list-style-type: none">Number of physical ability users impacted - 3Number of cognitive ability users impacted - 0Number of visual ability users impacted - 13Number of deafblind ability users impacted - 9Number of hearing ability users impacted - 0 |
| Test Case Status | FAIL |

[Detailed Report](#)

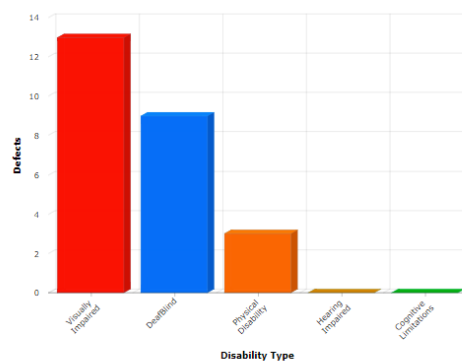
Please click [here](#) to view the detailed accessibility report.

Violation Analysis

Violation Severity



Impacted Users



Appendix

Accessibility - WCAG 2.1 is the most commonly used standard for checking accessibility to ensure the site is friendly for the disabled community. As part of this automated assessment 42% of the Guideline are covered (Partially).

Guideline Validated: WCAG2.1 Level A & AA

| | |
|------------------------|----|
| Total no of guidelines | 50 |
| Guidelines Validated | 21 |

Cognizant

Cx Report | Is Your Website Fast & Accessible

Menu

Detailed Accessibility Test Report

| Parameters | Values |
|-----------------|---|
| PageName | 01_HomePage |
| Violations | Elements must have sufficient color contrast |
| Description | Ensures the contrast between foreground and background colors meets WCAG 2 AA contrast ratio thresholds |
| Recommendations | -->Ensures the contrast between foreground and background colors meets WCAG 2 AA contrast ratio thresholds. --> Expected contrast ratio of 4.5:1 for the below mentioned issues |
| Issues | https://www.homeserve.com/uk/about/cookies Accept all |
| Impact | serious |
| Guidelines | cat.color,wcag2aa,wcag143,ACT |
| Violations | IDs used in ARIA and labels must be unique |

7. Sample Client-Side Performance Reports:

Snapshots shown below are the sample HTML report created from the JSON response after the performance evaluation:

Cognizant

Cx Report | Is Your Website Fast & Accessible

Menu

Client-Side Performance Test Report

This page lists the summary of the performance test scenarios executed for this test. Please click on the report button to view the detailed test report and recommendations for each test iterations and scenarios.

Performance Test Scenario Summary

| Test Scenario Name | Iteration 1 | Iteration 2 | Iteration 3 | Total Transactions | Failed Transactions | Average Failure % | Test Status |
|-----------------------|-------------|--------------|--------------|--------------------|---------------------|-------------------|-------------|
| Proximus_SampleTest_1 | Report | Not Executed | Not Executed | 1 | 1 | 100.00 | FAIL |

Menu

Performance Test Summary

This page lists the status of each transaction executed as part of the test run. Please click on the test scenario and transaction links provided in the table below to view the detailed test report.

Transaction Summary

Note

1. Achieved response time denotes page fully loaded time i.e. Time taken to download page until resource download complete
2. Transaction which breached response time SLA is marked as **FAIL** else **PASS**

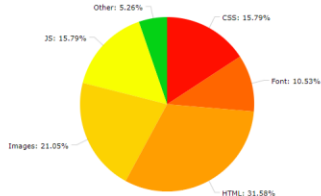
| Iteration # | Test Scenario Name | Transaction Name | SLA (ms) | Achieved Response Time (ms) | Status |
|-------------|-----------------------|------------------|----------|-----------------------------|--------|
| 1 | Proximus_SampleTest_1 | 01_HomePage | 5000 | 13864 | FAIL |

Menu

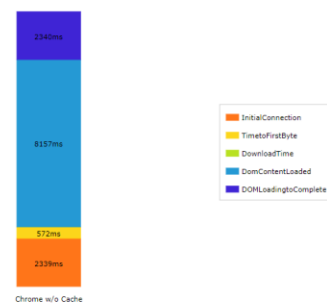
Performance Report

5000ms
SLA13864ms
Fully Loaded Time13414ms
OnLoad Time35.55MB
Page Size19
Request

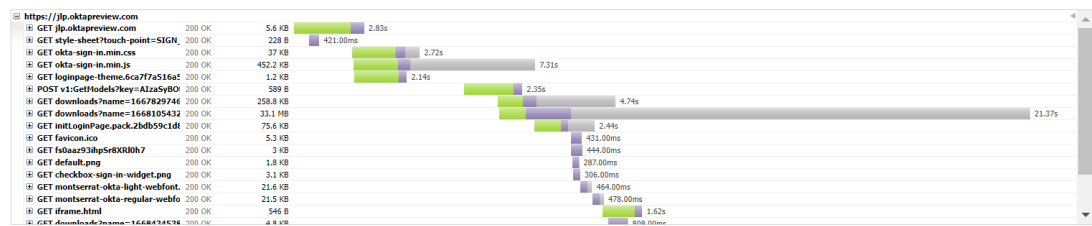
Page Profiling



All OnLoad Time Response Distribution (in ms)



Waterfall Chart



Recommendations

Erroneous Requests

• none

Avoid Redirects

• none

Avoid Duplicate calls

• none

Leverage Browsing Cache

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Leverage Browsing Cache

- For having a good caching strategy, it is recommended to have cache control and expires header for all the resources. Also, as a best practice it is recommended that no resources should get 304 status.

Apply Compression Technique

- It is recommended to apply gzip/deflate/br compression techniques to the resources by which we can minimize the amount of data getting transferred

Combine CSS and JS

- Combine the candidate files into a single file or lesser multiple files which would reduce the number of network calls in the page.

Empty SRC or HREF Tags

- none

Make JS as external

- Make internal javascript to external, if javascript is not simple.

PUT JavaScript at bottom

- Move the Javascript to the bottom of the HTML or use ASYNC or DEFER attribute

PUT CSS at top

- Specifying external stylesheet and inline style blocks in the body of an HTML document can negatively affect the browser's rendering performance. Move the CSS stylesheet to top of the HTML

Dimension of images needs to be mentioned

- none

Avoid image scaling

8. Sample Accessibility Report View from Kibana

The JSON response stored in the elasticsearch can be viewed in the dashboard like Kibana. User can create the dashboard of their own interest based on their requirements. Snapshots shown below are from Kibana for the accessibility audit results.

Sample AT Report from Kibana Dashboard:

LIST OF RUNS:



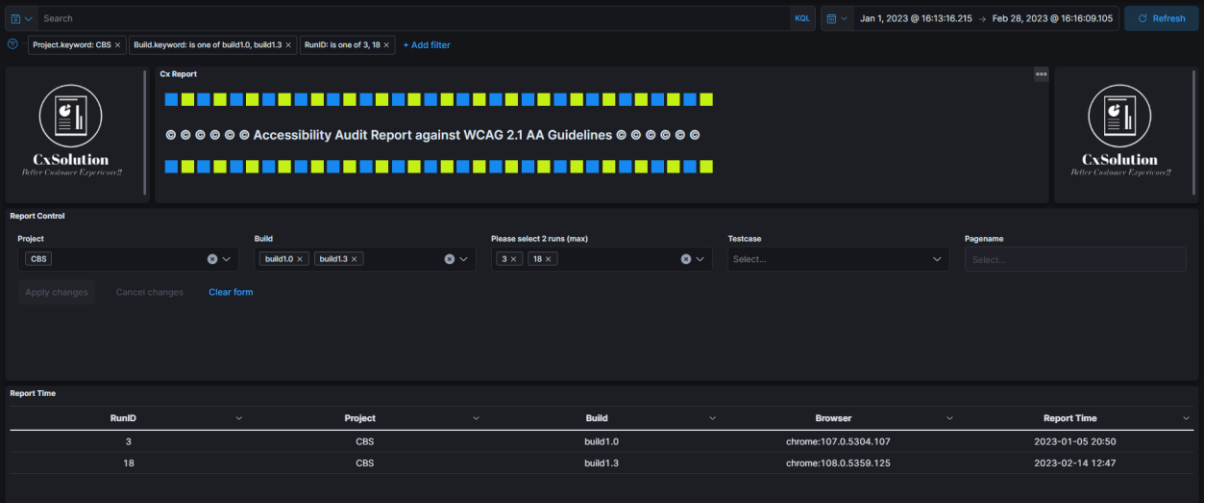
Early Accessibility and Performance Solution (CxSolution)



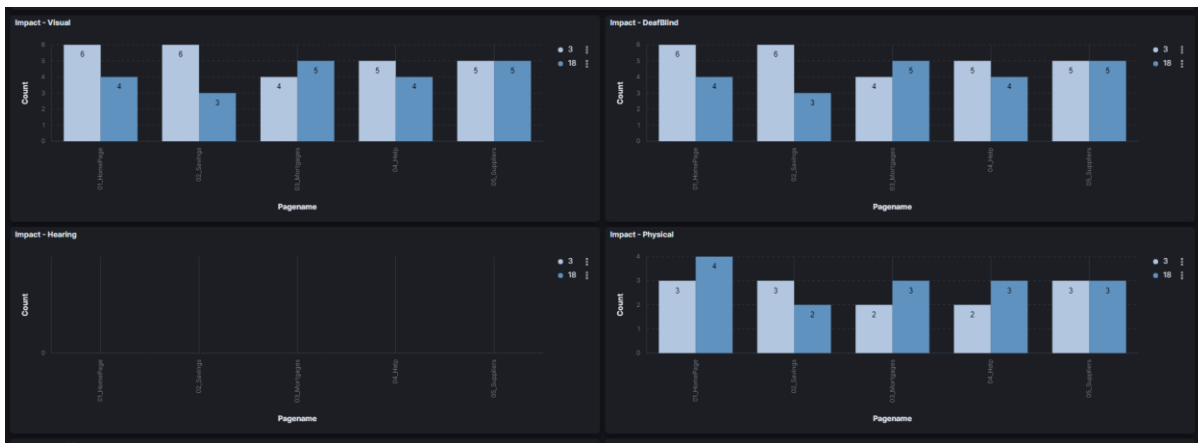
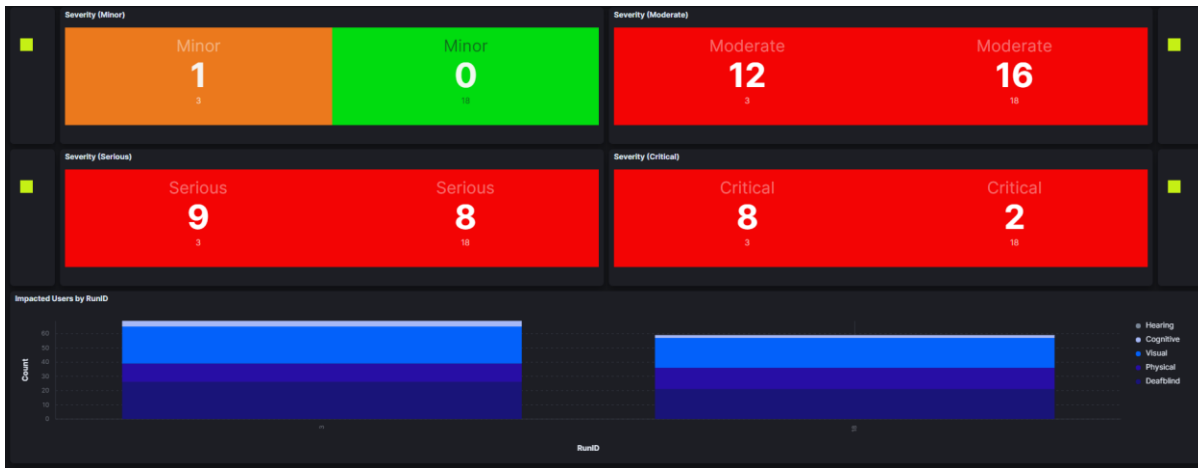
Individual Test Run Report:



Comparison report for the different test runs:



Early Accessibility and Performance Solution (CxSolution)



Impact - Cognitive

| Page Name | Count |
|--------------|-------|
| 01_HomePage | 1 |
| 02_Savings | 1 |
| 03_Mortgages | 1 |
| 04_Help | 1 |
| 05_Suppliers | 1 |

Page Status

| RunID | Page | Testcase | Status |
|-------|--------------|--------------|--------------------|
| 3 | 01_HomePage | SampleTest_1 | Need Improvement!! |
| 3 | 02_Savings | SampleTest_1 | Need Improvement!! |
| 3 | 03_Mortgages | SampleTest_1 | Need Improvement!! |
| 3 | 04_Help | SampleTest_1 | Need Improvement!! |
| 3 | 05_Suppliers | SampleTest_1 | Need Improvement!! |
| 18 | 01_HomePage | SampleTest_1 | Need Improvement!! |
| 18 | 02_Savings | SampleTest_1 | Need Improvement!! |

Detailed Report

| Test Case | Page Name | RunID | Violations | Description | Impact | Disability Type | Recommendation | Guidelines | HelpURL |
|--------------|-------------|-------|------------------------------|-----------------------------|----------|-----------------------------|---------------------------|------------------------------|---|
| SampleTest_1 | 01_HomePage | 3 | ARIA attributes must co... | Ensures all ARIA attrib... | critical | Visual, Deafblind, Physl... | - | cat.aria, wcag2a, wcag... | https://dequeuniversity... |
| SampleTest_1 | 01_HomePage | 3 | Certain ARIA roles must ... | Ensures elements with a... | critical | Visual, Deafblind, Physl... | → Required ARIA child ... | cat.aria, wcag2a, wcag... | https://dequeuniversity... |
| SampleTest_1 | 01_HomePage | 3 | Heading levels should o... | Ensures the order of he... | moderate | Visual, Deafblind, Physl... | - | cat.semantics, best-pra... | https://dequeuniversity... |
| SampleTest_1 | 01_HomePage | 3 | IDs used in ARIA and lab... | Ensures every id attribu... | critical | Visual, Deafblind | - | cat.parsing, wcag2a, wc... | https://dequeuniversity... |
| SampleTest_1 | 01_HomePage | 3 | Images must have alter... | Ensures element... | critical | Visual, Deafblind | → Element does not ha... | cat.text-alternatives, wc... | https://dequeuniversity... |
| SampleTest_1 | 01_HomePage | 3 | Id attribute value must b... | Ensures every id attribu... | minor | Visual, Deafblind | → Document has multi... | cat.parsing, wcag2a, wc... | https://dequeuniversity... |
| SampleTest_1 | 01_HomePage | 18 | All page content should ... | Ensures all page conten... | moderate | Visual, Deafblind, Physl... | - | cat.keyboard, best-prac... | https://dequeuniversity... |
| SampleTest_1 | 01_HomePage | 18 | Document should have ... | Ensures the document h... | moderate | Visual, Deafblind, Physl... | - | cat.semantics, best-pra... | https://dequeuniversity... |