Website Accessibility Review

Summary Report

July 2022

RiDC

Contents

Report compiled by: Research Institute for Disabled Consumers

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Executive summary

The Research Institute for Disabled Consumers (RiDC), a research agency which specialises in user centred research involving disabled and older consumers, was commissioned by Office of Rail and Road (ORR) to conduct an accessibility review of 24 train operating company websites. The intention was to augment the analysis of technical compliance with user-driven insight, reporting on the real experience of disabled customers.

RiDC was asked to audit compliance of each of the Train Operating Company (TOC) websites to the obligations relating to the provision of accessibility information, as set out in the Assisted Travel Policy (ATP) guidance A2.5.1, A2.5.2(a-g) and A2.5.3. RiDC were also asked to report on examples of good practice and innovation.

The three areas looked at were:

- A WCAG 2.1AA technical assessment of 24 TOC websites, which used SortSite 6 to run full scans of each TOC website.
- An audit of accessibility information of 24 TOC websites, in which a researcher visited the TOC websites and crosschecked a compliance checklist for the accessible information. This repeated an earlier audit completed by ORR in July 2020.
- User testing of 24 TOC websites where auditors reported on two customer journeys by level of difficulty to complete the tasks (very easy-very difficult) and ranked their experience (extremely easy-extremely difficult). Auditors also reported on how much they agreed or disagreed with a set of ten statements related to accessibility guidelines.

Four key headlines emerge from the review:

1. Performance has significantly improved since the first review in 2020. In particular, the design elements scored well (see point 2). There is however still some room for improvement to ensure that assistive technology works correctly.
2. Many design elements of TOC websites such as consistency of look and feel, ease to understand and navigate, and the use of plain and understandable language scored well across TOCs.
3. There is a difference in results concerning the failure of website elements supporting interaction with assistive technology, such as screen readers. Assistive technology is largely reliant on HTML labels being correctly applied,

otherwise problems occur such as not being able to enter station information or dates without using workarounds.

4. The connection between all three research channels was noticeable. Performance in the WCAG and /or ATP audits was typically reflected in the user testing. Poor results are present throughout the research channels, and good results likewise are consistent across the channels.

Background

The purpose of the research was to review the accessibility of Train Operating Company (TOC) websites, expanding on an earlier series of audits undertaken by The Shaw Trust during August 2020. The previous research involved the use of a web crawler to identify where each TOC website either passed or failed WCAG 2.1AA criteria. Some limited user testing of each website was also provided.

The project started on the 17th of January 2022 with the fieldwork undertaken from February to March 2022. A total of 24 TOC websites were audited. This summary reports on all four elements of this research; WCAG 2.1 web crawler, ATP compliance audit, user testing, and examples of good practice. The intention was to use positive and negative results to help promote and support improved website development and by doing so, to improve the experiences for disabled and older people. Detailed findings will be shared with all train operators.

The approach taken was to:

- Review the existing evidence base
- Undertake a gap analysis for 24 TOC websites based on WCAG 2.1 AA technical assessment using previously used automated software toolkit
- Provide a compliance audit of ATP 2.5 obligations for 24 TOC websites
- Enlist 27 RiDC panel members who have a variety of accessibility needs, in User-led testing of 24 TOC websites
- Report at both a TOC and national level the results of these work packages highlighting case examples of best practice

The value of user testing websites by disabled people in their home environment cannot be underestimated. The customer experience when undertaking meaningful customers journeys, such as finding a ticket or enquiring about accessibility is real and genuine. This approach is all the more insightful when the user is working with

familiar equipment, both computer and assistive technology, and gives a window into the real-world messy problems that can exist.

In addition to this summary report, there is a more detailed report of technical findings, a PowerPoint slide-pack of 230 slides with a detailed breakdown of results for each TOC, which has been published alongside the report. A technical file of WCAG test results will also be shared with each TOC.

Methodology and findings

WCAG 2.1AA technical assessment

Methodology and approach

In accordance with ORR's ATP guidance, TOCs must commit to working towards the industry-recognised Web Content Accessibility Guidelines (WCAG2.1 – AA level). TOCs must also highlight the accessibility of their website and provide information on how the website will work with assistive technology. To assess compliance with the WCAG standards we used SortSite 6, a 'web-crawler' programme that automatically assesses each page of a TOC website against the numerous accessibility criteria specified in the WCAG.

The programme that was used duplicated that used in the earlier review in 2020. However, the exact configuration that was previously used could not be confirmed. We chose to run full scans of each site with the configuration settings across all the TOC websites, the exact details of which are supplied as part of the detailed report: SortSite 6.42.924.0. Full configuration file 'SortSite test setting.sset'. These settings will allow future such audits to be conducted against the same criteria.

The results from undertaking full scans of the TOC websites varied considerably. This was not only a reflection of compliance with certain WCAG criteria but also a reflection of the different approaches taken across the TOCs when designing their websites. This would make any comparisons between the TOCs of the number of faults found and pages tested, unsafe.

What can be helpful in providing insight into the compliance of TOC websites, is to see what the impact is when removing the most frequently seen issues for each website (WCAG2.1AA compliance failures). The nature of the most common failures for each website is often different for each website tested.

This produces a gap analysis, showing how much further work is required to bring the website closer to full compliance. If it takes the removal of just four or five of the

most frequently seen issues (failures) to improve the percentage of pages with issues from 95% to 7%, then this would suggest the website is already relatively accessible and can further significantly improve its accessibility performance by resolving the four or five issues identified.

Conversely, if it takes 15 or 20 issues to be removed to achieve a similar result (from 95% to 7% of pages with issues), then the website's accessibility could be said to be poor and would need more substantial work to improve its performance.

Findings

The technical assessment identified issues with all 24 websites that were scanned, although there was considerable variation between the best and worst performers. Appendix 3 shows a ranking of TOC websites by WCAG performance.

The most common kinds of issues identified during this audit concerned:

- Supporting Accessible Rich Internet Applications (ARIA), where semantic information about widgets, structures and behaviours are not being correctly coded to support assistive technologies for disabled people.
- Ensuring text and background colours have enough contrast, and links on pages with the same text going to different destinations.
- Although there were some instances of 'alt text' either not being applied to images or being applied with the use of computer-generated default text, this issue was in the minority.

The following TOC websites showed the biggest impact from removing the most prevalent issues: East Midlands Railway, Cross Country, South Eastern Rail, West Midlands Railway, C2C and Lumo.

The following TOC websites showed the least impact, which suggests that these TOCs need to put in the most effort to bring their websites closer to full compliance: Avanti West Coast, South Western Railway, London Overground, Northern Rail, Transport for London (TfL) and London North Eastern Railway.

A full scan readout for each TOC website is included within the detailed report. This details the webpages where coding errors are to be found (as of February/March 2022), what the error classification is, and the WCAG best practice.

Audit of accessibility information

Methodology

ORR's ATP guidance identifies 18 requirements for the provision of accessibility information online. We set out to audit compliance with those requirements.

The review of the provision of accessibility information repeated an earlier audit undertaken by ORR in July 2020 which identified compliance, partial compliance, and non-compliance with requirements established by ORR. The review entailed a researcher visiting the TOC websites and crosschecking a compliance checklist for the accessible information.

Findings

Appendix 3 shows a ranking of TOC websites on accessibility information. Of the 24 TOC websites audited:

- Six met all the obligations (21%): Southern/Thameslink, Southeastern, West Midlands Railway, Chiltern, Caledonian Sleeper, Hull
- Eight met all the obligations with some being partially met (33%): Southern/Thameslink, Southeastern, West Midlands Railway, Chiltern, Caledonian Sleeper, Hull, Heathrow Express, Lumo
- Eleven failed to meet one obligation (46%): East Midlands Railway, South Western Railway, Great Western Railway, Greater Anglia, Transport for Wales, Avanti West Coast, C2C, Cross Country, Grand Central, Scotrail, London Overground
- Five failed to meet more than one obligation (21%): LNER, Transpennine Express, Merseyrail, Northern, TfL

Table 1. ATP compliance across all TOCs

Year	Met all obligations	Met all obligations with some being partially met	Failed to meet just one obligation	Failed to meet more than one obligation
2022	6	8	11	5
2020	0	0	1	23

These results show improvement against the previous 2020 audit where almost all TOCs failed to meet multiple obligations, and no TOC met all obligations.

In the 2022 audit, the following obligations were met by all the TOCs:

- A2.5.2: Assisted travel icon/hyperlink on homepage
- A2.5.2: The term Passenger Assist is used when referring to assistance booking services
- A2.5.2.b: Contact information and provisions for passengers to book assistance
- A2.5.2.b: National Freephone Passenger Assist line
- A2.5.2.b: Details of any national discounts available to disabled passengers or persons with reduced mobility
- A2.5.2.f: A link to enable passengers to access the passenger document (ATP/DPPP) documents
- A2.5.3: Where information is located elsewhere, a hyperlink to it is on the Assisted Travel page
- A2.5.2.e: Where applicable - how to obtain a scooter card, assistance card or priority card

The three most failed obligations in the 2022 audit were:

1. A2.5.2.g – Details on the availability of redress for when assistance has not been delivered as booked. Seven failures. For comparison, in 2020, there were 20 failures.
2. A2.5.2.c – Links or expandable sections providing information of on-board facilities. Five failures. In 2020, there were seven failures.
3. A2.5.2f – Details of how to obtain the passenger document (ATP/DPPP) in accessible formats. Four failures. In 2020, there were 14 failures.

User Testing

Methodology

During the user testing the auditors were asked to report on the two customer journeys:

- Customer journey 1: To find the times of a train departing from one station and arriving at another station and follow the steps to purchase a ticket (without entering payment details).

- Customer journey 2: To find information on how to book assistance and download two documents: (1) Accessible Travel Policy and (2) Train Accessibility Information.

Customer journey 2 was scored on three sub-task counts:

1. The ease of finding the accessible travel information webpage
2. The success in downloading the Accessibility Travel Information
3. The success in downloading the Train Accessibility Information

Auditors reported on the customer journeys by how easy or difficult they found the task and by ranking their experience from extremely difficult to extremely easy. After completing the two customer journeys they were given a series of ten statements (heuristic questions) and asked how much they agreed or disagreed with them.

The accessibility heuristics used included ten statements related to accessibility guidelines. These heuristics were formed based on the technical requirements outlined in the Web Content Accessibility Guidelines (WCAG) 2.1, which consists of four main principles: perceivability, operability, understandability, and robustness. More information about these statements and how they align to the guidelines is found on slide 249 in the detailed report.

Findings

The scores for each question are used to create a 'heat map' across all the TOCs which shows the areas where difficulties and good practice are being seen, which is shown in appendix 2. Appendix 3 then ranks TOCs based on overall user testing performance.

Across all TOC websites, the average ease of achieving task one (Finding train times) 83%, was significantly higher than the ease of achieving task two (Finding and downloading accessibility information) 66%. While scores for task one are quite consistent among TOCs, there is a broader range in performance for task two. This shows that some TOCs need to make improvements to ensure that accessibility information is easier for users to locate and download.

Task one, finding train times (average ease of task score = 83%)

The range of scores for ease of task were between 62% and 96% with most of the TOC websites (18 of the 24) scoring 80% or more, which is a positive score.

Task two, finding and downloading accessibility information (average ease of overall task score = 66%)

This task was scored on three sub-task counts, and within these sub-tasks there was a large variation in the results. The average scores across all TOCs are contained in brackets followed by the range of scores:

1. The ease of finding the accessible travel information webpage (69%, ranging from 42% to 84%)
2. The success in downloading the Accessible Travel Policy (66%, ranging from 33% to 100%)
3. The success in downloading the Train Accessibility Information (53%, ranging from 11% to 100%)

The overall picture in the second customer journey (finding and downloading accessibility information) shows reasonable success in finding the accessible travel webpage but less success in finding and downloading the Accessible Travel Policy and the Train Accessibility Information.

Finding and downloading the Train Accessibility Information, sometimes referred to as 'Rolling Stock Accessibility Information', returned the poorest success rates, with some websites having only one of the nine auditors being able to achieve this.

Accessibility Heuristics

Accessibility heuristic evaluation[1] is a process that uses rules of thumb to measure the accessibility of user interfaces in user testing and reporting issues. Users respond to a set of qualitative statements (heuristics) and identify to what extent they agree or disagree with each one. Heuristics reveal insights that can help enhance product or service accessibility.

An average score was created across the ten questions for each TOC which reflected the experience the auditors had while undertaking the two customer journeys. These ranged widely from 51% through to 83%, the average score across all TOCs being 64%.

The six highest average heuristic scores were from: Greater Anglia, West Midlands, Transport for Wales, GWR, Cross Country Trains and Scot Rail.

The six lowest average heuristic scores were from: Mersey Rail, Northern Rail, London Overground, Avanti West Coast, TransPennine Express and Chiltern Railways/East Midlands Railways.

[1] https://www.nngroup.com/articles/ten-usability-heuristics/

Examples of quotes from the highest performing TOC websites:

Greater Anglia

"So professional and the homepage was so easy to navigate, not overcrowded and both clear and concise headings in correct colours and size, which made it so much easier as a disabled passenger."_Cognitive

West Midlands

"Professional and a pleasure to use. The homepage was so easy to navigate with clear instructions and headings that all made sense and were not overcrowded with irrelevant information."_Cognitive

Transport for Wales

"Fantastic website that is clearly laid out. Accessibility and assistance is included as part of the ticket buying process"_Dexterity

GWR

"There is an alternative accessible booking tool which is fairly close to the top which I have used before and is straightforward to use [...]."_Visual (Magnifying glass)

CrossCountry Trains

"Good highlighting of certain elements such as cheapest ticket price, good contrast buttons, layobetter spacing, good white space, obvious navigation menu, found easily."_Visual

ScotRail

"Station selections were good, and very pleased to see an alternative accessible option to display the times and fares results, very easy to navigate."_Visual, uses a screen reader

Examples of quotes from the lowest performing TOC websites:

Merseyrail

"As I would enter the station name and selected, I would then find another station selected. It took several attempts for the correct station names to come up. I did try using the cursor keys, but this option did not work."_Visual, uses a screen reader

Northern Rail

"No obvious link or section to be able to download info - there was supposed to be a link to policies and procedures - but the link either didn't exist or was hard to find."_Dexterity

London Overground

"Everything was confusing, kept getting details of buses, time it took, but not how much the ticket was. It then seemed you didn't book but put on a card. It's the most confusing and convoluted one I've been on. I went through so many sections, I forgot what I was looking for!"_ Cognitive

Avanti West Coast

"Unable to use the ticket and times search. Unable to set the date or time. When I typed the outward and destination stations there appeared to be nothing in the box, so unable to review whether this was correct or not. Some links and buttons were not labelled clearly, e.g., "graphic 500" announced before a link name in some cases."_ Visual, uses a screen reader

TransPennine Express

"Not a good layout, too many colours, bad contrast, focus on unimportant details."_ Visual

Chiltern Railways/East Midlands Railways

"It's hard to know what to look for. There are lots of things named accessibility and it's crowded. I found it in end with help at bottom of the page, but it wasn't obvious."_ Visual

Insight

This research returned consistent results across the three data collection methods: WCAG2.1AA web crawler, ATP compliance audit and user testing. The TOCs identified as good or poor performers within one research method were seen with similar relative performance scores in the other methods. Appendix 3 shows ranked performance across WCAG, ATP and user testing.

Although there were difficulties experienced by all the three disability groups (visual, cognitive and dexterity) during the user testing research, the clearest distinction seen between groups was with the failure of website elements supporting interaction with assistive technology such as screen readers. Assistive technology is largely reliant on HTML labels being correctly applied. Where this is not the case, problems such as, not being able to enter a destination station or change the departure date without using workarounds start to be encountered.

Notably, many of the design elements of TOC websites such as consistency of look and feel, ease to understand and navigate, and plain and understandable language used throughout, scored well across the TOCs. There were some exceptions to this. However, the requirement for text size and contrast to be readable provided a more diverse set of results.

The results show the three common points noted above; however, each individual TOC has its own areas of improvement to consider.

We have included a series of seven examples of where the TOCs have gone above their regulatory obligations. These are listed below.

1. Tailored information for disabled people about what to do in an emergency. (Southern)
2. Provision of information in different formats such as BSL (video), easy-to-read English, large print, etc. (Greater Anglia)
3. Virtual station tours allowing passengers to explore station layout online, including important features such as accessible toilets and lifts (Greater Anglia)
4. The use of Cascading Style Sheets (CSS) for visual layout. (Southern Railway, Southeastern, South Western)
5. Independent travel initiatives, such as information on audio clips about Assisted Travel, Invisible disability schemes (orange wallet, sunflower lanyards and BSL app). (Transport for Wales)

6. Autism Guides – Advice for travellers with autism to navigate their journey with confidence. (Lumo)
7. Including accessibility information as part of the purchasing process. (Greater Anglia, Transport for Wales)

Conclusion

The value of this research exercise is two-fold, first in triangulating results data from the three elements (WCAG2.1AA compliance, ATP compliance, and user testing), and second in aligning the results with previous similar investigations.

Four key takeaways can be drawn from the review.

1. WCAG compliance and provision of accessibility information has significantly improved since the first review in 2020. There is still some room for improvement as there is a large number of ARIA issues in terms of coding to ensure that assistive technology works correctly. A few changes in this area could make a positive difference to website accessibility.
2. Many design elements of TOC websites such as consistency of look and feel, ease to understand and navigate, and the use of plain and understandable language scored well across TOCs.
3. There is a difference across the TOCs in results concerning the failure of website elements supporting interaction with assistive technology, such as screen readers. Assistive technology is largely reliant on HTML labels being correctly applied, otherwise problems occur such as not being able to enter station information or dates without using workarounds.
4. The connection between all three research channels was noticeable. Performance in the WCAG and /or ATP audits is typically reflected in the user testing. Poor results are present throughout the research channels, and good results likewise are consistent across the channels.

Of the three research elements used, the interpretation of the WCAG2.1AA results is the most problematic. The relationship between 'found issues' and the 'number of pages with issues on', is not straightforward. In most TOC websites a small number of issues (under ten) accounted for the majority of affected webpages. Removing this small number typically resulted in a vastly improved compliance score, i.e., in some cases from 90% or above of webpages affected down to below 10%. Unpicking how existing WCAG issues impact the difficulties the user testing auditors were

having was equally problematic. Correlation between WCAG and user testing could only be inferred within the individual TOC reports.

If further TOC website audits are to be made to monitor accessibility performance trends, it is important to replicate as closely as possible the parameters used in this study.

Appendix 1. Participant details

Table 2 Participant impairement details

Group	Number	Detail
Visual	12	4 x Blind with light perception 4 x Blind with no light perception 1 x Blind with residual vision 3 x Partially sighted
Cognitive	9	2 x Autism 4 x Depression, stress, anxiety, bipolar 1 x Chromosomal learning disability 2 x Age related cognitive decline
Dexterity	6	2 x Cerebral Palsy 1 x Multiple Sclerosis 1 x Paraplegic/Carpal tunnel syndrome 2 x Arthritis/Fibromyalgia

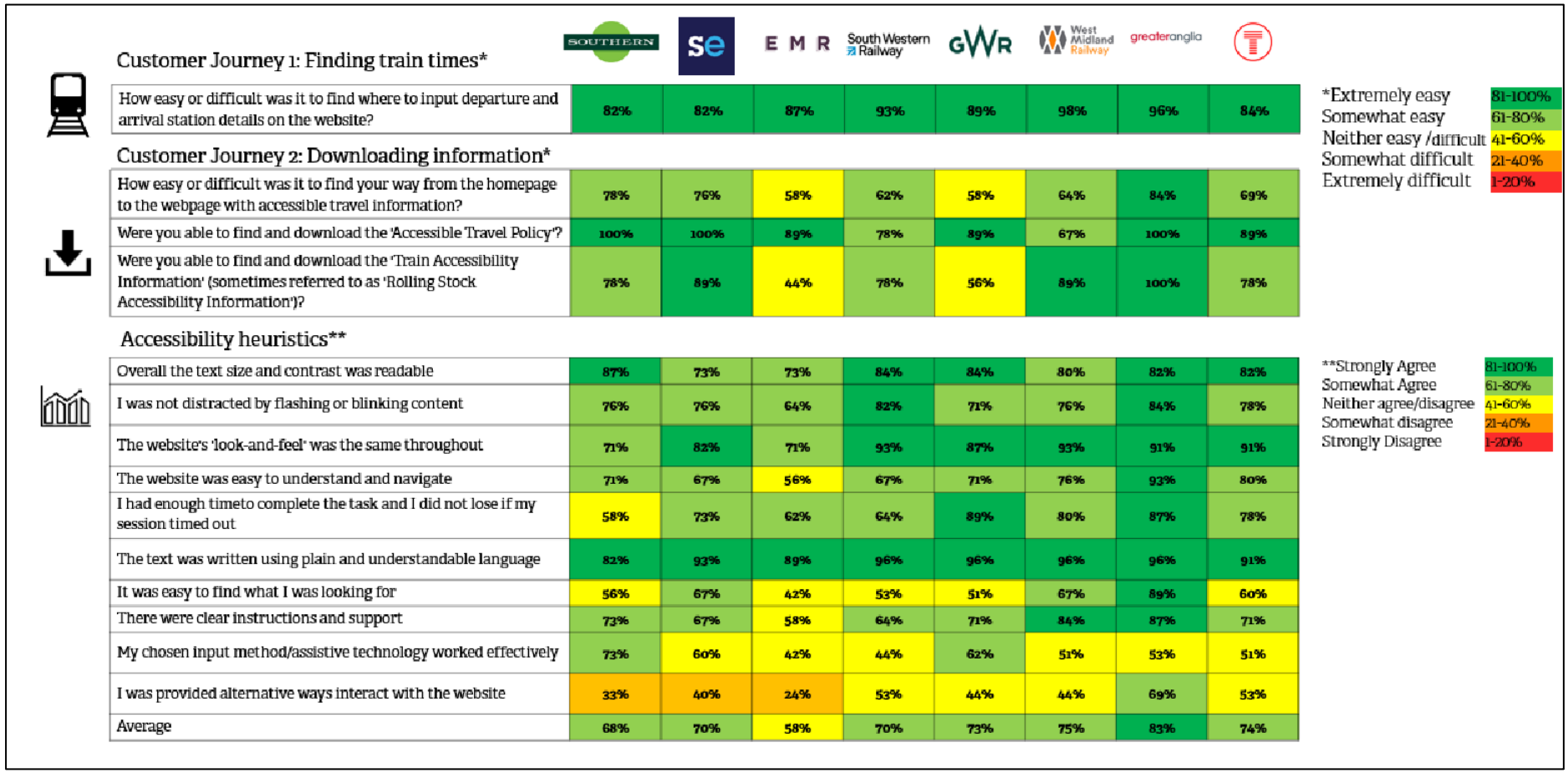
Table 3 Assistive technology used

Group	Assistive technology used
Visual	8 x Screen reader, 1 x Screen magnification, 2 x Keyboard navigation, 1 x Magnifying glass, 3 x Built-in accessibility features on computer, 2 x Browser accessibility features
Cognitive	2 x Screen magnification, 1 x Adapted mouse, 1 x Magnifying glass, 1 x Built-in accessibility features on computer, 1 x Browser accessibility features, 1 x Coloured screen overlay, 1 x Speech input
Dexterity	1 x Built-in accessibility features on computer, 1 x Zoom, 1 x Touch screen, 2 x Speech input, 1 x Screen magnification

Assistive tech	Screen reader, Magnification, Speech input, Tracking pad, Adapted mouse
Computer	15 x Windows, 10 x Mac, 2 x Chromebook
Browser	2 x Windows Edge, 9 x Safari, 4 x Firefox, 12 x Google Chrome

Appendix 2. User testing results by operator

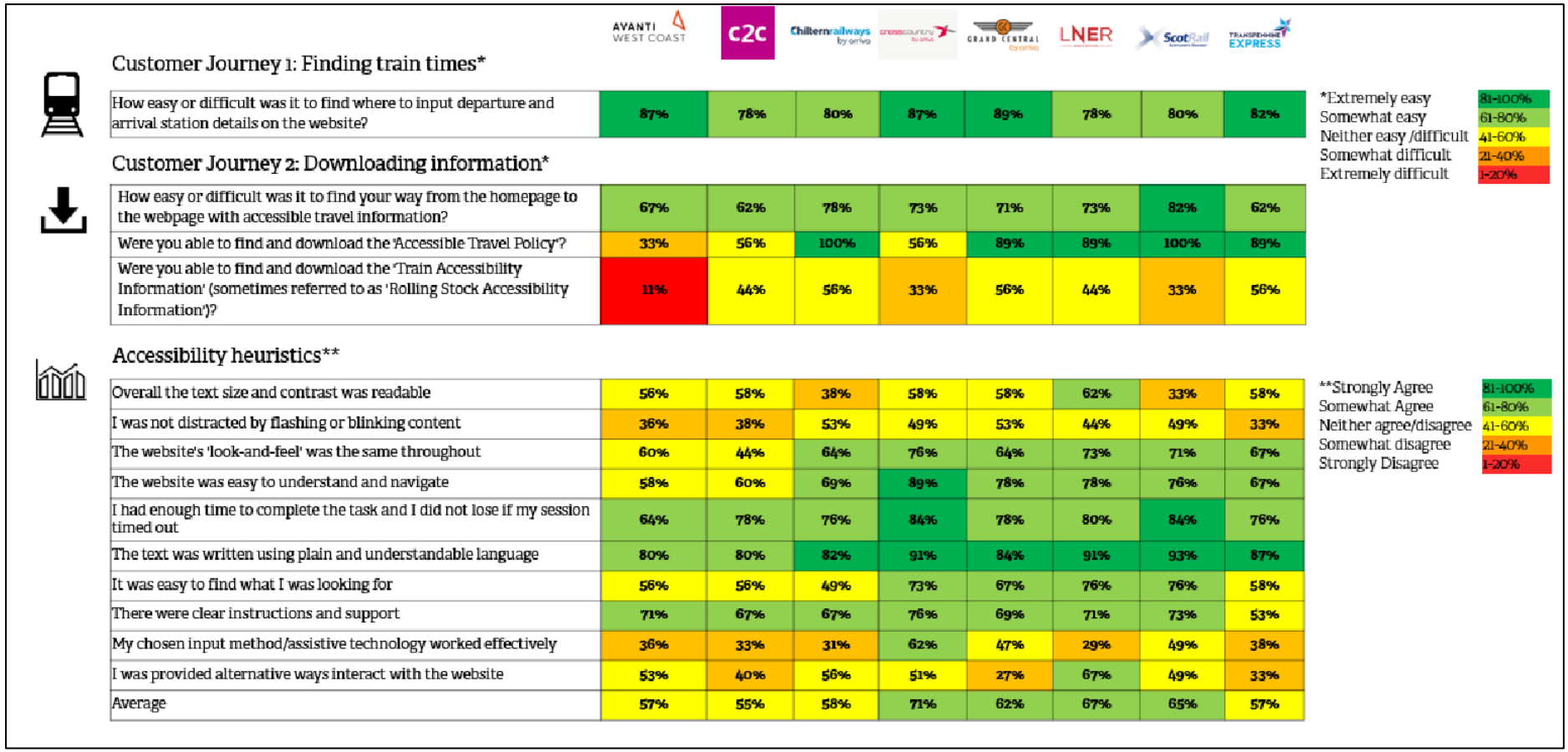
User testing results of first eight of 24 TOCs



Customer Journey 1: Finding train times*								
How easy or difficult was it to find where to input departure and arrival station details on the website?	82%	82%	87%	93%	89%	98%	96%	84%
Customer Journey 2: Downloading information*								
How easy or difficult was it to find your way from the homepage to the webpage with accessible travel information?	78%	76%	58%	62%	58%	64%	84%	69%
Were you able to find and download the 'Accessible Travel Policy'?	100%	100%	89%	78%	89%	67%	100%	89%
Were you able to find and download the 'Train Accessibility Information' (sometimes referred to as 'Rolling Stock Accessibility Information')?	78%	89%	44%	78%	56%	89%	100%	78%
Accessibility heuristics**								
Overall the text size and contrast was readable	87%	73%	73%	84%	84%	80%	82%	82%
I was not distracted by flashing or blinking content	76%	76%	64%	82%	71%	76%	84%	78%
The website's 'look-and-feel' was the same throughout	71%	82%	71%	93%	87%	93%	91%	91%
The website was easy to understand and navigate	71%	67%	56%	67%	71%	76%	93%	80%
I had enough timeto complete the task and I did not lose if my session timed out	58%	73%	62%	64%	89%	80%	87%	78%
The text was written using plain and understandable language	82%	93%	89%	96%	96%	96%	96%	91%
It was easy to find what I was looking for	56%	67%	42%	53%	51%	67%	89%	60%
There were clear instructions and support	73%	67%	58%	64%	71%	84%	87%	71%
My chosen input method/assistive technology worked effectively	73%	60%	42%	44%	62%	51%	53%	51%
I was provided alternative ways interact with the website	33%	40%	24%	53%	44%	44%	69%	53%
Average	68%	70%	58%	70%	73%	75%	83%	74%

Data available in 'Excel data tables for user testing of TOCs websites.xlsx'

User testing results for second eight of 24 TOCs



Customer Journey 1: Finding train times*

	AVANTI WEST COAST	c2c	Chiltern Railways	CrossCountry	Grand Central	LNER	ScotRail	TransPennine Express
How easy or difficult was it to find where to input departure and arrival station details on the website?	87%	78%	80%	87%	89%	78%	80%	82%

Customer Journey 2: Downloading information*

	AVANTI WEST COAST	c2c	Chiltern Railways	CrossCountry	Grand Central	LNER	ScotRail	TransPennine Express
How easy or difficult was it to find your way from the homepage to the webpage with accessible travel information?	67%	62%	78%	73%	71%	73%	82%	62%
Were you able to find and download the 'Accessible Travel Policy'?	33%	56%	100%	56%	89%	89%	100%	89%
Were you able to find and download the 'Train Accessibility Information' (sometimes referred to as 'Rolling Stock Accessibility Information')?	11%	44%	56%	33%	56%	44%	33%	56%

*Extremely easy 81-100%
Somewhat easy 61-80%
Neither easy /difficult 41-60%
Somewhat difficult 21-40%
Extremely difficult 1-20%

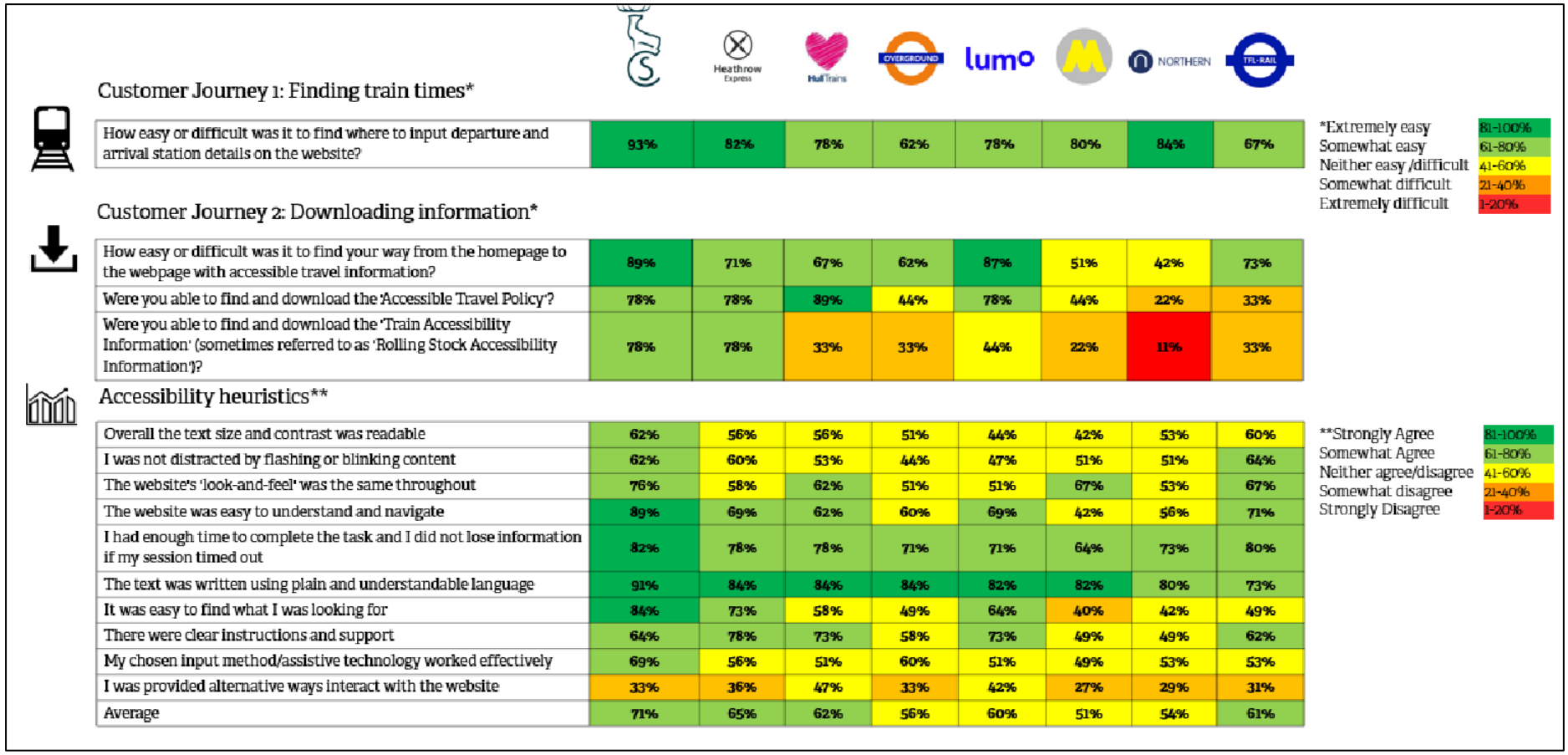
Accessibility heuristics**

	AVANTI WEST COAST	c2c	Chiltern Railways	CrossCountry	Grand Central	LNER	ScotRail	TransPennine Express
Overall the text size and contrast was readable	56%	58%	38%	58%	58%	62%	33%	58%
I was not distracted by flashing or blinking content	36%	38%	53%	49%	53%	44%	49%	33%
The website's 'look-and-feel' was the same throughout	60%	44%	64%	76%	64%	73%	71%	67%
The website was easy to understand and navigate	58%	60%	69%	89%	78%	78%	76%	67%
I had enough time to complete the task and I did not lose if my session timed out	64%	78%	76%	84%	78%	80%	84%	76%
The text was written using plain and understandable language	80%	80%	82%	91%	84%	91%	93%	87%
It was easy to find what I was looking for	56%	56%	49%	73%	67%	76%	76%	58%
There were clear instructions and support	71%	67%	67%	76%	69%	71%	73%	53%
My chosen input method/assistive technology worked effectively	36%	33%	31%	62%	47%	29%	49%	38%
I was provided alternative ways interact with the website	53%	40%	56%	51%	27%	67%	49%	33%
Average	57%	55%	58%	71%	62%	67%	65%	57%

**Strongly Agree 81-100%
Somewhat Agree 61-80%
Neither agree/disagree 41-60%
Somewhat disagree 21-40%
Strongly Disagree 1-20%

Data available in 'Excel data tables for user testing of TOCs websites.xlsx'

User testing results for third eight of 24 TOCs



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Customer Journey 2: Downloading information*								
How easy or difficult was it to find your way from the homepage to the webpage with accessible travel information?	89%	71%	67%	62%	87%	51%	42%	73%
Were you able to find and download the 'Accessible Travel Policy'?	78%	78%	89%	44%	78%	44%	22%	33%
Were you able to find and download the 'Train Accessibility Information' (sometimes referred to as 'Rolling Stock Accessibility Information')?	78%	78%	33%	33%	44%	22%	11%	33%
Accessibility heuristics**								
Overall the text size and contrast was readable	62%	56%	56%	51%	44%	42%	53%	60%
I was not distracted by flashing or blinking content	62%	60%	53%	44%	47%	51%	51%	64%
The website's 'look-and-feel' was the same throughout	76%	58%	62%	51%	51%	67%	53%	67%
The website was easy to understand and navigate	89%	69%	62%	60%	69%	42%	56%	71%
I had enough time to complete the task and I did not lose information if my session timed out	82%	78%	78%	71%	71%	64%	73%	80%
The text was written using plain and understandable language	91%	84%	84%	84%	82%	82%	80%	73%
It was easy to find what I was looking for	84%	73%	58%	49%	64%	40%	42%	49%
There were clear instructions and support	64%	78%	73%	58%	73%	49%	49%	62%
My chosen input method/assistive technology worked effectively	69%	56%	51%	60%	51%	49%	53%	53%
I was provided alternative ways interact with the website	33%	36%	47%	33%	42%	27%	29%	31%
Average	71%	65%	62%	56%	60%	51%	54%	61%

*Extremely easy	81-100%
Somewhat easy	61-80%
Neither easy /difficult	41-60%
Somewhat difficult	21-40%
Extremely difficult	1-20%

**Strongly Agree	81-100%
Somewhat Agree	61-80%
Neither agree/disagree	41-60%
Somewhat disagree	21-40%
Strongly Disagree	1-20%

Data available in 'Excel data tables for user testing of TOCs websites.xlsx'

WCAG 2.1A results across all TOCs (most prevalent errors)

Level	Issue	Description	Number of TOC sites where issue occurred	Notes
A	WCAG 2.1 A 4.1.1	Parsing	18	In content implemented using markup languages, elements have complete start and end tags, elements are nested according to their specifications, elements do not contain duplicate attributes, and any IDs are unique, except where the specifications allow these features
A	WCAG 2.1 A F96	Label in name	10	Failure due to the accessible name not containing the visible label text. The objective of this failure is to describe situations where speech input users cannot reliably speak the name of a control because it differs from the visible label
A	WCAG 2.1 A 1.3.1 ARIA 1.1	Info and Relationships	9	Using the 'aria-describedby' property to provide a descriptive label for user interface controls
A	WCAG 2.1 A F89	Accessible names	6	Not providing an accessible name for an image which is the only content in a link
A	WCAG 2.1 A F73	Use of colour	6	Creating links that are not visually evident without colour vision
A	ARIA 1.1	Various	5	Non-specific reference to WAI-ARIA failure

WCAG 2.1AA results across all TOCs (most prevalent errors)

Level	Issue	Description	Number of TOC sites where issue occurred	Notes
AA	WCAG 2.1 AA F78	Focus visible	12	Styling element outlines and borders in a way that removes or renders non-visible the visual focus indicator
AA	WCAG 2.1 AA F24	Contrast	8	Specifying foreground colours without specifying background colours or vice versa
AA	WCAG 2.1 AA 1.4.3	Minimum contrast	7	Large-scale text and images of large-scale text have a contrast ratio of at least 3:1
AA	WCAG 2.1 AA 1.4.4	Resize text	6	Visually rendered text, including text-based controls (text characters that have been displayed so that they can be seen [vs. text characters that are still in data form such as ASCII]) can be scaled successfully

Appendix 3. Performance tables

Table 4 WCAG performance table

TOC	Number of issues identified	Number of issues removed	Pages left with issues after issues removed	Performance indicator
East Midlands	18	4	2%	0.08
Cross Country	17	9	1%	0.09
Southeastern	23	5	2%	0.10
West Midland	17	6	3%	0.18
C2C	35	9	2%	0.18
Lumo	20	8	3%	0.24
Transpennine	35	9	3%	0.27
Southern	32	5	7%	0.35
Chiltern	15	6	8%	0.48
Greater Anglia	39	5	10%	0.50
Caledonian Sleeper	17	7	10%	0.70
Scotrail	34	5	15%	0.75
Heathrow Express	24	6	15%	0.90
Grand Central	31	9	11%	0.99
Hull Trains	33	9	11%	0.99
Transport for Wales	29	7	18%	1.26
Merseyrail	28	16	10%	1.60
Great Western Railway	28	8	20%	1.60
London Northeastern Railway	39	13	17%	1.73
Transport for London	54	15	15%	2.25
Northern Rail	39	16	18%	2.88
London Overground	54	7	39%	2.73
South Western Railway	48	17	23%	3.91
Avanti West Coast	39	12	40%	4.8

Table 4 WCAG performance table notes:

1. The number of issues removed was based on removing issues which occurred across the most pages (approx. 100 pages or more)
2. Performance indicator = (number of issues removed * % of pages left with issues)
3. The performance indicators are indicative of the level compliance to WCAG 2.1AA, but not an absolute measure

Table 5 ATP compliance table

TOC	Obligations met
Caledonian Sleeper	All obligations
Chiltern	"
Hull	"
Southeastern	"
Southern/Thameslink	"
West Midlands Railway	"
Heathrow Express	All obligations with partials
Lumo	"
Avanti West Coast	Failed one, met all others
C2C	"
Cross Country	"
East Midlands Railway	"
Grand Central	"
Greater Anglia	"
Great Western Railway	"
London Overground	"
Scotrail	"
South Western Rail	"
Transport for Wales	"
London North Eastern Railway	Failed two, met all others
Transport for London	Failed three, met all others
Merseyrail	Failed four, met all others
Northern Rail	"
Transpennine Express	"

Table 5 ATP compliance table notes:

1. TOCs arranged by number of obligations met
2. Expert review of obligations met

Table 6 User testing: customer journey performance ranking table

Ranking	TOC	Customer journey average
1	Greater Anglia	95%
2	Caledonian Sleeper	87%
3	West Midlands Railway	86%
4	Southeastern	85%
5	Southern/Thameslink	84%
6	South Western Rail	83%
=7	Transport for Wales	81%
=7	Grand Central	81%
=9	Chiltern	79%
=9	Heathrow Express	79%
11	Great Western Railway	78%
=12	Scotrail	76%
=12	Transpennine Express	76%
14	East Midlands Railway	75%
15	Lumo	74%
16	London North Eastern Railway	73%
=17	Cross Country	71%
=17	Hull	71%
19	C2C	66%
20	Avanti West Coast	62%
21	Merseyrail	60%
22	Transport for London	57%
23	Northern Rail	55%
24	London Overground	54%

Table 6 User testing: customer journey performance ranking table note:

1. The average score across the two customer journeys is used.
2. Nine users tested each TOC website.

Table 7 User testing: heuristics ranking table

Ranking	TOC	Heuristics average
1	Greater Anglia	83%
2	West Midlands Railway	75%
3	Transport for Wales	74%
4	Great Western Railway	73%
=5	Caledonian Sleeper	71%
=5	Cross Country	71%
=7	Southeastern	70%
=7	South Western Rail	70%
9	Southern/Thameslink	68%
10	London North Eastern Railway	67%
=11	Heathrow Express	65%
=11	Scotrail	65%
=13	Grand Central	62%
=13	Hull	62%
15	Transport for London	61%
16	Lumo	60%
=17	Chiltern	58%
=17	East Midlands Railway	58%
=19	Avanti West Coast	57%
=19	Transpennine Express	57%
21	London Overground	56%
22	C2C	55%
23	Northern Rail	54%
24	Merseyrail	51%

Table 7 User testing: heuristics ranking table notes:

1. The average score was calculated across the scores for each of the ten answers to the heuristic questions
2. Nine users tested each TOC website.

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