**RNIB App Guidelines Outline**

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# Introduction

The guidelines in this document follow the internal ‘RNIB App Assessment Guidelines’ which are based on the internationally recognised standard ISO 9241-171:2008 – Ergonomics of human-system interaction -- Part 171: Guidance on software accessibility. This standard ensures accessibility for people with a range of disabilities and is available to purchase from ISO or BSI.

It is assumed that the typical end-user will be able to use the access technology on the phone to a basic level.

# Using access technology on phones and tablets

Blind and partially sighted people use phones or tablets via speech or magnification technology which is built in to the operating systems.

Speech technology includes VoiceOver (for iOS devices) TalkBack (for Android). Magnification includes Zoom (for iOS) and is simply called magnification for Android. In addition, to the speech and magnification, the operating systems allow the user to change some settings on the phone to improve accessibility. These can change as the OS versions change but examples of the type of preference settings available include enlarging text, changing the colour scheme (invert colours), changing the transparency of the background, making the text bolder etc.

The method of interaction and the gestures used change when access technology is on. For a person using speech output the primary methods for interaction with a touchscreen are “explore by touch” and “swiping”. With explore by touch the user moves their finger over the screen and the items touched as they move their finger over the screen are voiced. Alternatively, a user can make a swipe gesture to move between elements on screen, a flick of the finger on the screen right will take the user to the next logical element on the screen, a flick left will take them to the previous one. When an element is voiced a double tap gesture with one finger anywhere on the screen will activate it. These gestures work on all devices regardless of the operating system.

To carry out other actions such as moving between pages or moving up and down lists, other gestures will be used (with a number of fingers) and these will vary according to operating system.

The Screen readers on mobile allow ways to make the speech navigation quicker and they provide options to navigate to a specific type of element so a speech user can jump from heading to heading on a page or from link to link.

When magnification is used a portion of the page is enlarged and shown on screen. The user can move around to display other parts of the page magnified on screen. The user has specific gestures to move around and when an element is in view a single tap will activate it.

For both these methods, but particularly with speech output, the user will view elements on screen in isolation from each other. Using a swipe gesture to hear elements one at a time means the user must remember what they have heard to place the current element in context. Therefore, the labelling of each element is very important to ensure that people using speech output are easily able to understand where they are and what they are doing.

In addition, the structure of the page can be difficult to determine and the correct use of headings will help with this as will identifying all elements (for example, ensuring that the user knows what is a button and what is a heading will help identify the structure of the page and let the user know what to do).

# Guidelines

## Principle: provide a name for each element

If a blind person is not able to see what is on screen they need to be provided with feedback in speech that is accurate and complete. They need to know what is on screen but they also need to know what is an element that they can interact with such as a button or link.

If they know if the element is a button or a picker wheel or an edit box, then the user knows how they can interact with it and what gesture to use. If the app is coded correctly then the information about the type of element should be provided automatically by the screen reader. A blind person also needs to know what the function of that element is, there is no point in knowing it is a button if you do not know that the button is a Sign in button. This label should be clear visually but also programmatically so that the screen reader will voice it.

It should be clear not only what the element is for but also if it is part of a group of buttons or what its status is, if it is selected or not. This information should be announced by the screen reader by using programmatic associations.

### Images

If an image is not just cosmetic and performs a function, it is important that it is correctly labelled visually and programmatically so that it is clear to both visual and speech users what the image is indicating.

If an image is just cosmetic and performs no function, it is perfectly acceptable for it to be removed from the swipe order and not to take the focus. Then the user is not wasting time with extra swipes that are not required.

However, if the image, despite being just cosmetic, occupies a significant part of the screen it is important that the user is alerted that there is a large cosmetic background image on the screen.

### Vocalization of text, dates and numbers

All text that is spoken within one swipe needs to be spoken correctly in a sensible order and all information such as value of products, days of the week, duration of journeys, etc needs to be clear when spoken.

## Principle: Headings and Window titles

All screen pages should have page titles that are unique and meaningful reflecting the content of the page. Headings on the page should indicate structure and aid navigation. All screen titles should be announced as the user moves to the new page so they have a clear understanding of where they are in the app or process within the app. Speed and accuracy of navigation through the app will be improved if page titles and headings are used correctly.

## Principle: Link names must be clear

It is important that links are identifiable as links and that the names are comprehensible in isolation of the visual context and the other words around them as a screen reader user will often read them in isolation. If there are two links on a screen that have the same name, it is important that they take the user to the same place. In addition, links should receive the focus in isolation so that they are easy to reach using a screen reader shortcut or for a user using a switch.

## Principle: Navigation should be consistent, logical and easy to follow

The basic principle of good design to ensure navigation is consistent and logical will greatly assist people using access technology. It is also important to consider from a usability point of view if the navigation is reasonable to the user, for example the user should not have to swipe too many times to obtain linked information. For example, when investigating the details for the calling stops for a train journey, it is easier to understand what time the train will stop at a certain station if the time and name of the station are associated and announced as one to the user.

A speech user may use ‘explore by touch’ or swipe across the screen to navigate through an app. Both methods need to be supported.

It is important to consider consistency and conventions within a particular operating system as this will make it easier for a user to find elements and understand the structure of the app. For example, if the back button is usually the first element at the top left of the screen, it is not helpful to change its position breaking with conventions making it confusing and more difficult to find for a screen reader user.

To aid navigation the focus should be presented in a suitable location when a page is loaded.

## Principle: All elements must be discoverable and operable

The user must be able to find all elements and operate the relevant elements within the app via assistive technology. There should not be actions that cannot be completed when access technology is on that can be completed without. However, alternative ways of access are acceptable, especially using standard gestures.

In some instances, alternative options may be provided for content for example, a list of bus stops is an accessible and appropriate option to having the bus stops shown on a map.

## Principle: Accessible alternatives should be provided for media

All media available in the app needs to be accessible and the controls should be accessible with speech, magnification and in the highlight order for switch users. For videos, captions (subtitles) and audio description should be provided. There should not be any media that plays automatically, it should be up too the user to choose to play it and pause it.

## Principle: Forms must be accessible and usable

Where form elements such as edit fields, radio buttons and checkboxes are used they need to be accessible to all users whether they are speech, magnification or switch users. The screen reader user must know what each item in the form is and how to fill it in and therefore the labels need to be programmatically associated with the form control they relate to. It must also be easy to review the form and easy to submit it.

The user needs to know the status of items such as checkboxes or radio buttons and know if an entry field is essential or not. If the selection of an item alters another selection this needs to be clear both visually and in speech.

## Principle: Overlays and pop ups must be accessible

When pop ups or overlays are used, accessibility issues are encountered by users for many reasons. One of the issues can be that the screen reader does not move to the pop up and is trapped on the screen underneath, so a blind person will not know that the pop up has actually appeared on screen. Alternatively, the focus can move to the pop up but then the user is trapped within the pop up unable to move back to the previous screen.

The focus needs to move to the pop up, how to close the pop needs to be clear and when moving back to the screen the focus must be placed back at a sensible location.

## Principle: Appropriate feedback should be provided so the user knows what action to perform and when it is completed

The user must be aware of all information that they need to complete an action. This could be information elsewhere on the screen and not within the focus so the use of good wording and, where appropriate, hints will assist the user in this. The user also needs to understand when the action has been completed for example an announcement that a button is now ‘on’ or an item ‘selected’.

It is important that the person using speech output or magnification has access to the information they need related to the task they are completing. This could be accessing a different page of the app or accessing related information on the same page for example, a selection in a picker wheel changes information displayed on another part of the page.

## Principle: Accessibility features and OS preferences must be considered

### Avoid interference with accessibility gestures

It is important that the gestures used as standard with access technology (e.g. swipe left/right, two or three finger swipe left or right to change page) are allowed and do not perform other functions that would interfere with the use of speech or magnification.

### Allow use of preference settings within the OS

There are a number of useful preference settings in the OS to provide the possibility to people with disabilities to change the interface to suit their needs.

For example there are options in the operating systems to change how text is showing using larger text sizes or text with higher contrast that stands out more from the background. The app needs to be provide the ability for the user to use bolder text or larger text or use the app in their preferred orientation for example in landscape mode.

### The user is able to apply any accessibility settings provided within the app

If the app provides its own accessibility options within the app then these should work with the existing accessibility options that are already in place on the operating system.

## Principle: Audio and Haptic output must be considered

It is important to consider where audio and haptic output is used that it is distinctive and it is easy to understand what it refers to. For example, having haptic feedback as a vibration when an item is added to the basket in an app can be helpful to reinforce the visuals or the speech output. Information should not be provided by audio or haptic output alone.

## Principle: Visual design, including fonts and colours, must be clear

Fonts and colours should be clear and provide good contrast. As many blind and partially sighted people have some residual vision it is important that the visual information is clear. This includes:

* good colour contrast with a minimum colour contrast ratio of 4.5:1 for standard size text, aiming for a 7:1 ratio,
* clear font type (a sans serif font is easier i to read) and a sensible size,
* good line spacing of at least 150% the font size
* avoiding strings of text all in uppercase or italic which are difficult for partially sighted and dyslexic people to read as the shape of the word is lost with these styles

## Principle: Notifications and error messages should be clear and appropriate

### Notifications and error messages should be identifiable

The user must be able to easily find notifications and they should not clear until the user dismisses them. If the notification stays on screen for a limited amount of time a magnification user might not be aware of the presence of the notification as with the page magnified the overview is lost. They might reach the part of the screen where the message is only when it has already timed out.

It must be clear when there is an error on the page and users must know what the issue is, where it has occurred and how to solve it.Where colour is used to present information, this information must be available to users who can't see colour**.** Colour alone should not be used to convey information.

### Timeouts should not hinder the user

There should not be timeouts in the app unless it is a security issue. A person using access technology may, especially in early use of the app, take longer to explore the app. Any timeouts must cater for this and not prevent the user from completing a task. Any app that has a timeout should notify the user that they are going to be timed out and allow the user to extend the timeout.

### Avoid seizure inducing flash rates

Any flashing text must not produce more than 3 flashes in any 1 second period.

## Principle: The user is able to use alternative input and output devices, where appropriate

The app must work with external devices such as external keyboards or switches.

## Principle: Where help is used, it is accessible and easy to use

Help information or FAQs can be very useful for people when trying out a new app or service. These should be plain, easy to use and provide a section on accessibility which would include information on any accessibility features specific to the app e.g. colour options, font sizes settings etc and information on layout or if anything has been provided in an alternative way for speech users for example.