# Introduction

**Context and Background**

This set of Accessibility Testing Criteria is intended to be used to check the accessibility of an application for users with impairments in one or more categories of *vision, colour perception, hearing, speech, dexterity, cognition* on an Android Device.

The basis for this is built on input from a number of sources including:

- Mobile Manufacturers Forum GARI website,
- W3C WCAG 2.0 recommendations on accessibility,
- Android developer site recommendations on accessibility,
- AT&T recommendation on website accessibility,
- AQuA members experience and their accessibility teams.

More details and links to sources are at the end of this document.

Accessibility needs to be designed into applications from the outset, therefore use of this set of Testing Criteria is to be encouraged at the prototype development stage, before delivery of a finished product, and when further updates or amendments are made to the application, to ensure that accessibility is not broken by subsequent changes. As the tests only look at the Application's accessibility, the Application should also be tested against the AQuA Testing Criteria for Android applications (which focuses on the general usability of the Application).

Not all applications will be needed to be tested for all categories, and requirements across the different categories may be contradictory (e.g. enhancing the sound based feedback is great for improving accessibility for usage with limited vision, but may load too much information to audio for usage with limited hearing). Application providers will need to consider how to approach accessibility for different categories of impairment, as appropriate for their application and their audience. Therefore, rather than simply running all tests on any application, it will be necessary to understand which usage conditions are appropriate to an application, and only run those sections of the tests that are relevant to its intended use and audience.

The Application will be considered to have passed the testing if it has passed for one category. All passes will be categorized appropriately. (e.g. Pass for Usage With Limited Vision). Note that a judgement call will need to be made on whether to test for usage with a particular limitation, i.e. it may not always be appropriate for a sound-based application to be tested for usage with limited hearing – although, conversely, users with limited hearing may still be able to enjoy part of the frequency range of a music player application.

**General points to note**

Applications intended to meet the needs of users with specific impairments should not be developed in isolation from the users they intend to support; rather, wherever possible the developer should maintain contact with appropriate organizations or communities, and should seek to involve representatives in design and testing.

These tests are written so they can be performed by a tester without impairments. However, we would advise that, if possible, there should be at least one cycle of testing carried out by people with the specific impairment or impairments which the tests address.

When using this set of Testing Criteria, please bear in mind that it is not designed purely as a set of prescriptive step-by-step tests. Rather, it is a guide to questioning assumptions that may be made in the design and development stages, and of finding ways to check that those assumptions do not reduce usability. Such a process normally enhances usability.

No specific distinction is made between accessibility features provided by an application and those provided by the device's operating system, as the focus is on the end user experience as a whole, which should ideally be seamless and consistent regardless of the source of the function. Within that context, it should be borne in mind that these tests are only intended for evaluating the behavior of applications or an update to them.

The TalkBack accessibility service will need to be installed and enabled on the Android Device. This is usually pre-installed on devices with Android 4.0 or higher, where it can be found as an option under Accessibility in the device Settings menu.

For devices without the option, it can be installed from Google Play (https://play.google.com/store/apps/details?id=com.google.android.marvin.talkback).

General advice on Android accessibility can be found at the Android Accessibility Help pages - https://support.google.com/accessibility/android#topic=6007234.

Help on using TalkBack can be found at the Enable TalkBack page - https://support.google.com/accessibility/android/answer/6007100?hl=en-GB&ref_topic=3529932.

It is recommended that the tester goes through the tutorial for TalkBack if they are unfamiliar with it. Injudicious use can render the phone hard to use as familiar touch controls no longer function as expected – the tester should particularly note that single-tap only selects an item while TalkBack is in use, and double-tap is always required to action a control or item.

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# Structure of the Criteria

The accessibility tests fall into basic categories (with a few sub-categories) for users with restrictions in that area.

The categories or sub-categories are set out in this document as sections of tests. The Application may be tested against each section, or against several sections below:

- **Usage with limited vision** (includes *usage without vision* for the purposes of this document)
- **Usage without perception of colour / minimising photosensitive seizure triggers**
- **Usage with limited hearing** (includes *usage without hearing* for the purposes of this document)
- **Usage without vocal capability**
- **Usage with limited manipulation or strength** (includes *usage with limited reach* for the purposes of this document)
- **Usage with limited cognition**

Each category is broken down into a set of functional areas:

- **Navigation**
- **Control** (execution of actions)
- **Feedback**
- **Display**
- **Adjustments / Settings**
- **External devices**

External devices include but are not limited to:

- Keypads
- D-pads
- Joystick
- Braille displays
- Induction loop
- Hearing aids
- Headsets
- Switch control
- Sip and puff control systems
- Location beacons

# Critical and Warning levels of Tests

We recognise that many of the tests that are performed do not produce a binary result. They are often subjective leaving the interpretation to the tester. It is unfair therefore to fail an application for one minor error that may be down to a tester's opinion.

To account for this, the individual tests are each marked as either *Critical* or *Warning*.

### Critical Level Tests

As the name suggests, a *Critical level* test must be passed.
If the Application fails the test then the Application has an overall fail.

### Warning Level Tests

For a test which is considered *Warning level*, we have allowed for four different results; *pass, annoying, difficult* and *impossible*.

These *warning* levels are described as follows;
*Pass* = the Application has passed the test. There are no issues
*Annoying* = a minor error has occurred with the Application - e.g. one or two typos that would make the Application not perfect but still very useable
*Difficult* = a more serious issue has occurred with the Application e.g. multiple typos making the Application difficult to use but not impossible
*Impossible* = a very serious issue has occurred with the Application - the errors are so bad as to make the Application unusable.

Once all appropriate tests have been carried out, points should be attributed according to the following scale.

Warning levels:
Annoying = 1 points
Difficult = 2 points
Impossible = 4 points

For the Application to pass, the errors must not add up to more than 3 points.
4 points or more is a failure.

| Severity of error | Warning test type | Critical test type |
|---|---|---|
| No error | 0 points | 0 points |
| Annoying error | 1 point | |
| Difficult error | 2 points | |
| Impossible error | 4 points | |
| Fail test | | 5 points |

(As an example, the Application could have 3 *annoying* results, or 1 *difficult* and 1 *annoying* and still pass.)

# Contents

# Testing Criteria

## 1. Usage with limited vision

### 1.1. Navigation

#### 1.1.1. Install

| *Test ID*<br>**1.1.1** | *Test Title*<br>**Install** | **Critical** |
|---|---|---|
| *Test Description*<br>**Check that the Application installs with the correct information for TalkBack and screen readers.** | | |
| *Required for:*<br>**All applications.** | | |
| *Testing Note*<br>*Ensure that the Android accessibility service 'TalkBack' is installed on the device, and enabled when testing compatibility with TalkBack.*<br>*Audio prompting should also be checked with a screen reader if this is able to read installation prompts, and during screen reader testing TalkBack should be turned off unless specifically required by the screen reader.*<br>*Ensure that speech output pitch and speed settings, where provided, are set to values that produce optimum results for the tester.*<br><br>*Testing Steps*<br>1. Install the Application.<br>2. Navigate the focus to the Application icon on the screen.<br>3. Listen to the name of the Application.<br><br>*RESULT:*<br>The Application name should be clearly and understandably spoken aloud and should be unambiguous in the target language or languages of the device. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

### 1.1.2. Audio prompts for all content

| *Test ID* **1.1.2** | *Test Title* **Audio prompts for all content** | **Critical** |
|---|---|---|

*Test Description*

**Verify that user interface controls that provide information (graphics or text) or allow user action, have clear and accurate audio descriptions when TalkBack is enabled or a screen reader used, and controls are focused.**

*Required for:*

**All applications.**

*Testing Note*

*Ensure that the Android accessibility service 'TalkBack' is installed on the device, and enabled when testing compatibility with TalkBack.*
*Audio prompting should also be checked with a screen reader where practical, and during screen reader testing TalkBack should be turned off unless specifically required by the screen reader.*
*Ensure that speech output pitch and speed settings, where provided, are set to values that produce optimum results for the tester.*

*Testing Steps*

1. Launch the Application.
2. Use directional controls to move the focus between Application layout elements.
3. Check that all controls, images, text and other elements that present information visually have meaningful audio descriptions, which present the same amount of information that is available visually.
4. Check that all labels and tags have meaningful names.
5. Check that non-informational elements (e.g. UI decoration) do not generate audio feedback, as this could be confusing.

*RESULT:*
A single audio description of displayed elements is given, which enables understanding of the Application without use of the visual interface.

*Result of Test*

☐ **PASS** ☐ **FAIL**

## 1.2. Control (execution of actions)

### 1.2.1. Explore By Touch

| *Test ID* **1.2.1** | *Test Title* **Explore By Touch – Android Accessibility** | **Critical** |
|---|---|---|

*Test Description*

**Verify that Explore By Touch prompts and controls are correctly presented and actioned.**

*Required for:*

**All applications.**

*Testing Note*

*Ensure that the Android accessibility service 'TalkBack' is installed on the device, and enabled.*
*Ensure that Explore By Touch is enabled in TalkBack settings.*
*If the Application is intended to be used with TalkBack and a screen reader in combination, this use case should also be checked.*
*Ensure that speech output pitch and speed settings, where provided, are set to values that produce optimum results for the tester.*

*Testing Steps*

1. Launch the Application.
2. Move a finger all over the screen to hear audio descriptions that identify screen elements and controls.
3. Check that tags and labels have meaningful names.
4. Double-tap to open applications, menus and other controls.
5. Navigate within the Application to ensure that all navigation prompts and selections are valid, menu structures are correctly presented and usable, and exiting the Application or putting it into background and restoring it can still be properly executed.
6. If Help information is provided, access it and check that the content is presented correctly through audio.
7. Swipe with two fingers to change screens and scroll within lists.
8. Check that application-specific gestures requiring swiping, zooming or scrolling continue to work properly after TalkBack, or TalkBack and Explore By Touch are enabled, or that an alternative interface for these functions is provided.
9. Where speech input and control are provided, check that these operate correctly and the level of mis-recognition of input is no greater than would be found in general use of speech recognition outside of the Application (e.g. in existing facilities like Google Search or Navigation).

*RESULT:*
All controls should be correctly identified, and it should be possible for a user to navigate and use the Application without reference to the visual content. Speech control and input where provided should be sufficiently functional for normal usage.

*Result of Test*

☐ **PASS** ☐ **FAIL**

### 1.2.2. Gesture control interaction

| *Test ID*<br>**1.2.2** | *Test Title*<br>**Gesture control interaction** | **Critical** |
|---|---|---|
| *Test Description*<br>**Actions controlled by gestures should be usable when TalkBack is enabled.** | | |
| *Required for:*<br>**All applications.** | | |
| *Testing Note*<br>*Ensure that the Android accessibility service 'TalkBack' is installed on the device, and enabled.*<br><br>*Testing Steps*<br>1. Launch the Application.<br>2. Explore all the functionality of the Application.<br>3. Check that application-specific gestures, such as zooming images, scrolling lists, swiping between pages or navigating carousel controls all continue to work when TalkBack is enabled. If these gestures do not function, then an alternative interface for these actions must be provided.<br><br>*RESULT:*<br>All actions normally controlled by gestures should still be provided by a suitable interface when TalkBack is enabled. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

## 1.3. Feedback

### 1.3.1. Feedback - sufficient

| *Test ID*<br>**1.3.1** | *Test Title*<br>**Feedback - sufficient** | **Critical** |
|---|---|---|
| *Test Description*<br>**Verify that audio / haptic feedback is sufficient for usage conditions.** | | |
| *Required for:*<br>**All applications.** | | |
| *Testing Note*<br>*Ensure that the Android accessibility service 'TalkBack' is installed on the device, and enabled when testing compatibility with TalkBack.*<br>*Audio prompting should also be checked with a screen reader if practical, and during screen reader testing, TalkBack should be turned off unless specifically required by the screen reader.*<br><br>*Testing Steps*<br>1. Launch the Application.<br>2. Explore navigation and use of the Application's functions.<br>3. Check that auditory prompts are provided before use of a function.<br>4. Check that haptic and audio confirmation of a function being used is available.<br>5. Check that spinning wheels, progress bars and other progress indicators have a suitably informative non-visual equivalent.<br>6. Check that dialog boxes have full audio description.<br>7. Check that when it is possible to scroll to data above or below the displayed screen, rising or falling tones are used to give feedback on current position when scrolling<br><br>*RESULT:*<br>All audio / haptic feedback should be sufficiently informative, and should be adequate to make the Application usable without reference to the visual content. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

### 1.3.2. Feedback – audio elements differentiated

| *Test ID*<br>**1.3.2** | *Test Title*<br>**Feedback – audio elements differentiated** | **Critical** |
|---|---|---|
| *Test Description*<br>**Verify that audio feedback of multiple elements is not confusingly similar.** | | |
| *Required for:*<br>**All applications.** | | |
| *Testing Note*<br>*Ensure that the Android accessibility service 'TalkBack' is installed on the device, and enabled when testing compatibility with TalkBack.*<br>*Audio prompting should also be checked with a screen reader, and during screen reader testing TalkBack should be turned off unless specifically required by the screen reader.*<br><br>*Testing Steps*<br>1. Launch the Application.<br>2. Explore any elements that present elements in grouped areas, such as lists or contact details.<br>3. Check that closely related elements are given sufficiently different audio description such that it is possible to easily distinguish between them without reference to visual content. E.g. in a contacts list entry, the contact picture, telephone, email etc should not be simply labeled with the contact's name identically for each element.<br><br>*RESULT:*<br>Audio feedback should be sufficiently differentiated that all elements within groups and list can be identified correctly without reference to visual content. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

### 1.3.3. Feedback – audio prompt overloading / underloading

| *Test ID*<br>**1.3.3** | *Test Title*<br>**Feedback – audio prompt overloading / underloading** | **Critical** |
|---|---|---|
| *Test Description*<br>**Verify that audio prompting is neither too little nor too great for clarity.** | | |
| *Required for:*<br>**All applications.** | | |
| *Testing Note*<br>*Ensure that the Android accessibility service 'TalkBack' is installed on the device, and enabled when testing compatibility with TalkBack.*<br>*Audio prompting should also be checked with a screen reader, and during screen reader testing TalkBack should be turned off unless specifically required by the screen reader.*<br><br>*Testing Steps*<br>1. Launch the Application.<br>2. Explore grouped controls in each part of the Application.<br>3. Check that closely related controls provide an appropriate level of audio information that enables users to understand and act on a screen element. Too much or too little prompting can make it difficult to understand and use a control.<br><br>*RESULT:*<br>The level of audio prompting should be sufficient for easy use of all controls, but not so great that confusion can arise through inability to retain / recall multiple complex prompts. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

## 1.4. Display

### 1.4.1. Display element sizing / portrayal

| *Test ID* **1.4.1** | *Test Title* **Display element sizing / portrayal** | **Critical** |
|---|---|---|

*Test Description*

**Verify that display elements are correctly sized and depicted that they allow users with limited vision to distinguish between them.**

*Required for:*

**All applications.**

*Testing Note*

*http://www.afb.org/info/living-with-vision-loss/reading-and-writing/making-print-more-readable/235 provides some context as to what is acceptable in printed formats, and from which it should be possible to make a judgement about the displayed size on electronic device screens.*

*Testing Steps*

1. Launch the Application.
2. Examine all display elements.
3. Check that these elements are of sufficient size, spacing and distinctive design as to allow users with limited vision to distinguish between them, understand their purpose, and operate them in a touchscreen environment.

*RESULT:*

All visual elements should be sized, spaced and designed so that they are practical for use with restricted vision.

*Result of Test*

☐ **PASS** ☐ **FAIL**

### 1.4.2. Display orientation

| *Test ID* **1.4.2** | *Test Title* **Display orientation** | **Critical** |
|---|---|---|
| *Test Description* **The Application must be usable in supported orientations and make limitations clear before use.** | | |
| *Required for:* **All applications.** | | |
| *Testing Note*<br><br>*Testing Steps*<br>1. Launch the Application.<br>2. If the Application is restricted to a single orientation (portrait / landscape) of the device, it should give an audio announcement of this at launch. It is permissible for there to be a user setting to turn this announcement off, as long as it is on by default at installation.<br>3. Check that switching between orientations does not cause display elements to fail test 1.4.1 (Display element sizing / portrayal).<br>4. Check that audio prompts continue to function correctly after change of orientation.<br><br>*RESULT:*<br>The Application should remain usable regardless of any changes caused by device reorientation. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

## 1.5. Adjustments / Settings

### 1.5.1. Contrast Control

| *Test ID*<br>**1.5.1** | *Test Title*<br>**Contrast Control** | **Critical** |
|---|---|---|
| *Test Description*<br>**The Application should offer different display contrast levels.** | | |
| *Required for:*<br>**All applications.** | | |
| *Testing Note*<br>*To pass this test, the Application should offer a minimum contrast ratio between background and text / elements of 4.5:1 to meet the WCAG2.0 level AA standard. See [http://www.w3.org/TR/WCAG20-TECHS/G18.html](http://www.w3.org/TR/WCAG20-TECHS/G18.html) for details of the W3C recommendations.*<br>*For the purposes of this test, it is not necessary to formally measure the luminance of elements. It will be sufficient if the contrast appears, when judged by eye, to be not less than the 4.5:1 samples provided at [http://trace.wisc.edu/contrast-ratio-examples/](http://trace.wisc.edu/contrast-ratio-examples/). The set of examples in the section headed "Text Samples that just pass at several Contrast Ratios" may provide the easiest comparison for judging by eye.*<br><br>*Testing Steps*<br>1. Launch the Application.<br>2. If the Application does not offer a high-contrast display by default, open its Settings and confirm that there is at least one high-contrast display option.<br>3. Check that the either the provided default or the high-contrast display option provides a contrast level that meets the recommended standard.<br><br>*RESULT:*<br>The Application should offer a high-contrast display option that gives a significant contrast increase when used. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

### 1.5.2. Volume control

| *Test ID*<br>**1.5.2** | *Test Title*<br>**Volume control** | **Critical** |
|---|---|---|
| *Test Description*<br>**Audio prompt volume should be sufficient and remain responsive to device controls.** | | |
| *Required for:*<br>**All applications.** | | |
| *Testing Note*<br>*Ensure that the Android accessibility service 'TalkBack' is installed on the device, and enabled when testing compatibility with TalkBack.*<br>*Audio prompting should also be checked with a screen reader, and during screen reader testing TalkBack should be turned off unless specifically required by the screen reader.*<br>*If the Application provides audio prompts without TalkBack, the test should be performed twice, once with TalkBack on, and once with it off.*<br><br>*Testing Steps*<br>1. Launch the Application.<br>2. Examine the Application's Settings and audio controls for evidence of any option to boost the maximum volume above the maximum normally offered, e.g. for speaker announcement of prompts in noisy situations. If such an option exists, the test should be performed once with it off, and once with it at the maximum setting.<br>3. Check that it is possible to achieve an adequate volume level for prompts to be clearly heard. Volume level without any boost should be at least sufficient for normal usage indoors, but where the Application would normally be expected to be used outdoors at least part of the time, the volume level achieved – with boost if offered – should be sufficient for this usage. If the Application is expressly designed for use only with headphones and makes this clear to the user, adequate headphone volume will be sufficient.<br>4. Check that the volume delivered responds promptly to the operation of the device volume keys.<br>5. Where a boosted volume is such that there is a risk of hearing damage if the device is held close to the ear, check that "press and hold" of the device Volume Down key can reduce the volume to safe levels within a second or less.<br><br>*RESULT:*<br>Audio prompt volume should be sufficient for the intended use and should respond quickly to device controls. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

### 1.5.3. Expanded font sizes

| *Test ID*<br>**1.5.3** | *Test Title*<br>**Expanded font sizes** | **Critical** |
|---|---|---|
| *Test Description*<br>**Where large fonts are used, all elements should be clearly presented.** | | |
| *Required for:*<br>**All applications.** | | |
| *Testing Note*<br>*Select the largest font size / clearest font face available in the device's Settings – Display – Screen Display menu for this test.*<br><br>*Testing Steps*<br>1. Launch the Application.<br>2. Open the Application's Settings and identify whether larger fonts are offered. If they are, select the largest one available. If not, continue with the default font provided by the device / application.<br>3. Check that the largest font available in the App is suitable for users with visual impairment. Use of screen zoom is permissible so long as this does not render the Application difficult to use correctly.<br>4. Check that when an extra large font is used, that neither individual characters nor blocks of text are misaligned, distorted, overlaid or otherwise presented unreadably.<br><br>*RESULT:*<br>The Application should be able to correctly present text in a font size suitable for users with visual impairment. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

## 1.6. External Devices

### 1.6.1. Alert on connection / disconnection

| *Test ID*<br>**1.6.1** | *Test Title*<br>**Alert on connection / disconnection** | **Critical** |
|---|---|---|

*Test Description*

**Connection or disconnection of external devices should generate an informative alert.**

*Required for:*

**All applications.**

*Testing Note*

1. *Ensure that the Android accessibility service 'TalkBack' is installed on the device, and enabled.*
2. *If a sufficiently informative alert is generated by the device OS rather than the Application, this will be equally acceptable and constitute a Pass.*

*Testing Steps*

1. Launch the Application.
2. Connect, and then disconnect any external devices which can be used with the Application (e.g. D-pad, joystick, switch control, Braille display, puff and sip controls).
3. Check that a clearly understandable confirmation of connection / disconnection is given, whether by spoken audio, distinct tones that clearly identify the two states, or other feedback (e.g. haptic), and that these confirmations are not easily confused with other confirmations received during use of the device in general, and the Application in particular.

*RESULT:*

Confirmation of the connection / disconnection of external devices should leave the user in no doubt as to the status of each device, without needing to reference any visual confirmations that may be produced.

*Result of Test*

☐ **PASS** ☐ **FAIL**

### 1.6.2. Navigation with external directional control device

| *Test ID*<br>**1.6.2** | *Test Title*<br>**Audio prompts with external directional control device** | **Critical** |
|---|---|---|
| *Test Description*<br>**Audio prompts should be satisfactory when using external directional control devices instead of touchscreen control.** | | |
| *Required for:*<br>**All applications.** | | |
| *Testing Note*<br>*Ensure that the Android accessibility service 'TalkBack' is installed on the device, and enabled.*<br>*If the Application provides audio prompts without TalkBack, the test should be performed twice, once with TalkBack on, and once with it off.*<br>*Testing Steps 1 & 2 can be reversed if the Application is designed to be used with a specific device that has to be connected while it is running.*<br><br>*Testing Steps*<br>1. Connect an external directional control device such as a D-pad or joystick.<br>2. Launch the Application.<br>3. Navigate through the Application's functions and menus, interact with controls, and attempt to understand the Application's layout and operation.<br>4. Check that the audio prompts and confirmations generated by the Application while using the external directional control device are sufficient for the Application to be usable.<br><br>*RESULT:*<br>When using an external directional control device, audio prompts and confirmations should be sufficient that the Application can be used without reference to the visual context for navigation. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

### 1.6.3. Operation with external switch control

| *Test ID*<br>**1.6.3** | *Test Title*<br>**Audio prompts with external switch control** | **Critical** |
|---|---|---|

*Test Description*

**Audio prompts should be satisfactory when using external switch control instead of touchscreen control.**

*Required for:*

**All applications.**

*Testing Note*

*Ensure that the Android accessibility service 'TalkBack' is installed on the device, and enabled.*

*If the Application provides audio prompts without TalkBack, the test should be performed twice, once with TalkBack on, and once with it off.*

*Testing Steps 1 & 2 can be reversed if the Application is designed to be used with a specific device that has to be connected while it is running.*

*Testing Steps*

1. Connect an external switch control.
2. Launch the Application.
3. Navigate through the Application's functions and menus, interact with controls, and attempt to understand the Application's layout and operation.
4. Check that the audio prompts and confirmations generated by the Application while using the external switch control are sufficient for the Application to be usable.

*RESULT:*

When using an external switch control, audio prompts and confirmations should be sufficient that the Application can be used without reference to the visual context for the function or functions that the switch control provides.

*Result of Test*

☐ **PASS** ☐ **FAIL**

### 1.6.4. Interaction with location beacons

| *Test ID*<br>**1.6.4** | *Test Title*<br>**Interaction with location beacons** | **Critical** |
|---|---|---|
| *Test Description*<br>**Non-visual prompts, messages or tones should be presented correctly and in a timely manner when interacting with location beacons.** | | |
| *Required for:*<br>**All applications.** | | |
| *Testing Note*<br>*Ensure that the Android accessibility service 'TalkBack' is installed on the device, and enabled.*<br>*If the Application provides audio prompts without TalkBack, the test should be performed twice, once with TalkBack on, and once with it off.*<br><br>*Testing Steps*<br>1. Launch the Application.<br>2. Ensure the Application is correctly set up to make connection with external beacons, whether by Bluetooth or other means, and prompts are set to be triggered by the interaction.<br>3. Check that the non-visual prompts, messages or tones generated by the Application while interacting with location beacons are sufficient for the Application to be usable.<br>4. Check that information is never absent or presented incorrectly in any way that would be likely to put the user at risk.<br>5. Check that disconnection or exiting from the area of beacon coverage is unambiguously signaled to the user without excessive delay.<br><br>*RESULT:*<br>When interacting with external beacons, non-visual prompts and confirmations should be sufficient that the Application can be used safely and without reference to any visual context. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

# 2. Usage without perception of colour / Minimising photosensitive seizure triggers

## 2.1. Display

### 2.1.1. Adjust colour scheme

| *Test ID*<br>**2.1.1** | *Test Title*<br>**Adjust colour scheme** | **Critical** |
|---|---|---|
| *Test Description*<br>**Display options should be offered to suit differing colour perception.** | | |
| *Required for:*<br>**All applications.** | | |
| *Testing Note*<br><br>*Testing Steps*<br>1. Launch the Application.<br>2. Open the available Settings.<br>3. Check that a range of display schemes are offered that will suit users with differing colour perception, e.g. red/green distinction.<br><br>*RESULT:*<br>The Application should offer display schemes that are suited to users with differing colour perception, and which will render all displayed elements in acceptably distinct shades. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

### 2.1.2. Monochrome presentation

| *Test ID*<br>**2.1.2** | *Test Title*<br>**Monochrome presentation** | **Critical** |
|---|---|---|
| *Test Description*<br>**Display options should include a monochrome format.** | | |
| *Required for:*<br>**All applications.** | | |
| *Testing Note*<br>*Note that when using monochrome formats care should be taken to avoid strongly contrasting geometric patterns, which can act as a trigger for photosensitive epilepsy (see also the test covering these issues).*<br><br>*Testing Steps*<br>1. Launch the Application.<br>2. Open the available Settings.<br>3. Check that a monochrome display option is available, and the contrast levels chosen are suitable for users with all kinds of colour perception limitation.<br><br>*RESULT:*<br>The Application should offer a monochrome display option that delivers acceptable levels of contrast for users with all types of colour perception limitation. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

### 2.1.3. Photosensitive seizure triggers

| *Test ID* **2.1.3** | *Test Title* **Photosensitive seizure triggers** | **Critical** |
|---|---|---|

*Test Description*

**Display schemes and content should avoid using known photosensitive seizure triggers.**

*Required for:*

**All applications.**

*Testing Note*

1. *Where multiple display schemes are available in the Application, presentation should be checked in each scheme.*
2. *Known triggers include (but are not limited to) lights or images which flash at rates between 3 Hz (flashes per second) and 60 Hz, or contrasting light and dark geometric patterns, such as black/white stripes or checks.*
3. *Embedded video should not include multiple flash photography.*

*Testing Steps*

1. Launch the Application.
2. Check all displayed pages and content for photosensitive seizure triggers.

*RESULT:*

Display schemes and content should avoid using known photosensitive seizure triggers.

*Result of Test*

☐ **PASS** ☐ **FAIL**

## 2.2. Feedback

### 2.2.1. Feedback elements – colour schemes

| *Test ID* **2.2.1** | *Test Title* **Feedback elements – colour schemes** | **Critical** |
|---|---|---|

*Test Description*

**Colour choices for all displayed feedback elements should be suitable for users with colour perception limitations.**

*Required for:*

**All applications.**

*Testing Note*

*Where multiple colour display schemes are available in the Application, presentation of feedback elements should be checked in each scheme.*

*Testing Steps*

1. Launch the Application.
2. Check the presentation of feedback elements such as spinning wheels, progress bars, shadows, error messages and action confirmations.
3. Check that colour is never used alone to convey information (for example, using red text to show a message is an error). Text or icons must convey the full message content without needing perception of a particular colour.

*RESULT:*

Available display colour schemes for feedback elements should cater for the needs of users with all common limitations of colour perception.

*Result of Test*

☐ **PASS** ☐ **FAIL**

### 2.3. Adjustments / Settings

Not Applicable

# 3. Usage with limited hearing

## 3.1. Navigation

### 3.1.1. Visual navigation

| *Test ID*<br>**3.1.1** | *Test Title*<br>**Visual navigation** | **Critical** |
|---|---|---|
| *Test Description*<br>**Navigation within the Application should not rely on audio prompts.** | | |
| *Required for:*<br>**All applications.** | | |
| *Testing Note*<br>*Before performing this test, set the device to silent mode; or if this setting is not available, mute all sounds and notifications within the Settings menu.*<br><br>*Testing Steps*<br>1. Launch the Application.<br>2. Explore the Settings and functionality of the Application.<br>3. Check that it is possible to navigate all elements of the Application without use of audio prompts or confirmations.<br><br>*RESULT:*<br>Visual and tactile (e.g. haptic) feedback within the Application should be sufficient to enable navigation of all features without use of audio responses. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

## 3.2. Control (execution of actions)

### 3.2.1. Visual notification of actions

| *Test ID*<br>**3.2.1** | *Test Title*<br>**Visual notification of actions** | **Critical** |
|---|---|---|
| *Test Description*<br>**Actions within the Application should be notified visually.** | | |
| *Required for:*<br>**All applications.** | | |
| *Testing Note*<br>*Before performing this test, set the device to silent mode; or if this setting is not available, mute all sounds and notifications within the Settings menu.*<br>*If the handset and the Application both support multi-application windowing, have another application open at the same time as the Application under test, to observe whether onscreen messages appear within the Application's display area.*<br><br>*Testing Steps*<br>1. Launch the Application.<br>2. Explore the functionality of the Application.<br>3. Check that all pending and completed actions are notified visually by onscreen messages within the Application display area.<br><br>*RESULT:*<br>All actions within the Application should be notified visually and within the screen area used for display of the Application. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

## 3.3. Feedback

### 3.3.1. No audio-only feedback

| *Test ID* | *Test Title* | **Critical** |
|---|---|---|
| **3.3.1** | **No audio-only feedback** | |

*Test Description*

**The Application should not rely on audio-only feedback at any point.**

*Required for:*

**All applications.**

*Testing Note*

*Before testing, ensure that the device is not set to silent mode, and that sounds and audible notifications are turned on in the Settings menu (both in the device and Application where present), so that audible and visual feedback can be compared.*

*Testing Steps*

1. Launch the Application.
2. Explore the functions of the Application.
3. Check that visual feedback is always offered at any time that audio feedback is present.

*RESULT:*

The Application should always present the user with visual equivalents to any audio feedback given.

*Result of Test*

☐ **PASS** ☐ **FAIL**

### 3.3.2. Visual alerts

| *Test ID*<br>**3.3.2** | *Test Title*<br>**Visual alerts** | **Critical** |
|---|---|---|
| *Test Description*<br>**All alerts issued by the Application should have a visual component.** | | |
| *Required for:*<br>**All applications.** | | |
| *Testing Note*<br>*For this test, alerts are treated as being different from feedback in that they are either unanticipated or asynchronous – that is, they may occur an indeterminate amount of time after the action that will eventually trigger them.*<br>*Before testing, ensure that the device is not set to silent mode, and that sounds and audible notifications are turned on in Settings, so that audible and visual alerts can be compared.*<br><br>*Testing Steps*<br>1. Launch the Application.<br>2. Explore the functionality of the Application.<br>3. Check that all generated alerts have a sufficiently informative visual component so that they can be properly understood without reference to the audible component.<br><br>*RESULT:*<br>All alerts issued by the Application should be capable of drawing attention to themselves and being understood by the user, without that user having reference to any audio component of the alert. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

## 3.4. Display

### 3.4.1. Notification bar

| *Test ID*<br>**3.4.1** | *Test Title*<br>**Notification bar** | **Critical** |
|---|---|---|
| *Test Description*<br>**The Notification Bar should be used for persistent feedback or alerts.** | | |
| *Required for:*<br>**All applications.** | | |
| *Testing Note*<br>*Before performing this test, set the device to silent mode; or if this setting is not available, mute all sounds and notifications within the Settings menu.*<br><br>*Testing Steps*<br>1. Launch the Application.<br>2. Explore the functionality of the Application.<br>3. Check that all feedback and alerts which should require user interaction to dismiss make proper use of notifications posted to the Notification Bar. The Application should never rely solely on constant or repeating audio alarms to solicit action from the user.<br><br>*RESULT:*<br>All persistent feedback or alarms / alerts that require user dismissal should have a visual component posted to the Notification Bar. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

## 3.5. Adjustments / Settings

### 3.5.1. Replacement of audible alerts with visual ones

| *Test ID*<br>**3.5.1** | *Test Title*<br>**Replacement of audible alerts with visual ones** | **Critical** |
|---|---|---|
| *Test Description*<br>**The Application should offer a simple one-step option for replacing all audio alerts with visual ones.** | | |
| *Required for:*<br>**All applications.** | | |
| *Testing Note*<br>1. *Before testing, ensure that the device is not set to silent mode, and that sounds and audible notifications are turned on in the device Settings.*<br>2. *Standard alerts and notifications generated outside the Application are not included in the scope of this test.*<br><br>*Testing Steps*<br>1. Launch the Application.<br>2. Check that the Application's Settings menu or other functionality offers an easily-understood single-step process to replace all audio alerts with visual ones.<br>3. Check that when this option is selected, the Application does not generate any audible alerts.<br><br>*RESULT:*<br>The Application should offer a simple way for all of its audio alerts to be replaced with visual ones, so that a user with hearing limitation does not inadvertently generate audio alerts in situations where they may be unwelcome or inconvenient. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

## 3.6. External Devices

### 3.6.1. Support for external volume control with hearing assistance devices

| *Test ID*<br>**3.6.1** | *Test Title*<br>**Support for external volume control with hearing assistance devices** | **Critical** |
|---|---|---|
| *Test Description*<br>**The Application should respect and not counteract the operation of external volume controls used with hearing assistance devices.** | | |
| *Required for:*<br>**All applications.** | | |
| *Testing Note*<br><br>*Testing Steps*<br>1. Launch the Application.<br>2. Use the functionality of the Application whilst making adjustments of volume in both the Application and the external device.<br>3. The Application must never interact uncontrollably with the external device as far as volume control is concerned, and where the Application is intended to interact with volume settings on an external device it should always respond to them correctly and obey any mute / un-mute command when issued.<br><br>*RESULT:*<br>The Application should interact correctly with any volume control used on an external hearing assistance device (e.g. amplifier, filter or hearing aid). | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

### 3.6.2. Detection of external hearing aids and visual notification

| *Test ID*<br>**3.6.2** | *Test Title*<br>**Detection of external hearing aids and visual notification** | **Critical** |
|---|---|---|

*Test Description*

**The Application should correctly detect and connect to external hearing aids and assistance devices, and provide visual confirmation of this.**

*Required for:*

**All applications.**

*Testing Note*

*Set the device into silent mode, or if this is not available, turn off or mute sounds and audio notifications in the device's Settings.*

*Testing Steps*

1. Launch the Application.
2. Bring a suitable external device (hearing aid, microphone pickup or other hearing assistance device with which the Application is designed to work) within range, and set it into a state suitable for connecting with the Application.
3. Set the Application into the appropriate state for connecting to an external device if this is not done automatically at startup.
4. Check that the Application correctly detects and connects to the assistance device, and that detection and connection are confirmed visually, or by haptic feedback if this is sufficiently distinct from other feedback as to be completely unambiguous.
5. Check the handling of error situations during connection by turning the external device off during connection, and likewise by taking it out of range in the same state, and confirm that the feedback (whether visual or haptic) is clear and unambiguous and does not need an audio component to be understood.

*RESULT:*

Connection and disconnection to the external aid should be reliable and easily understood without any audio feedback.

*Result of Test*

☐ **PASS** ☐ **FAIL**

# 4. Usage without vocal capability

## 4.1. Navigation

### 4.1.1. Navigation not limited to speech input

| *Test ID* **4.1.1** | *Test Title* **Navigation not limited to speech input** | **Critical** |
|---|---|---|

*Test Description*

**Non-visual navigation should have an alternative to speech input.**

*Required for:*

**All applications.**

*Testing Note*

*Ensure that the Android accessibility service 'TalkBack' is installed on the device, and enabled.*

*Ensure that Explore By Touch is enabled in TalkBack settings.*

*Testing Steps*

1. Launch the Application.
2. Explore navigation of the Application's functions.
3. Check that it is possible to navigate the Application satisfactorily without being required to use speech input.
4. Where the Application has optional Settings to assist with other accessibility issues (e.g. sight impairment) check that using those options does not render the Application unusable for someone unable to use a speech-driven interface.
5. Check that proper use is made of TalkBack and Explore By Touch to make the Application accessible to a user who cannot fully use visual and speech-driven interfaces.

*RESULT:*

Navigation within the Application should not be limited to solely speech-driven input, even when the Application is intended for users with other accessibility issues such as sight impairment.

*Result of Test*

☐ **PASS** ☐ **FAIL**

## 4.2. Control (execution of actions)

### 4.2.1. Control actions not limited to speech input

| *Test ID*<br>**4.2.1** | *Test Title*<br>**Control actions not limited to speech input.** | **Critical** |
|---|---|---|
| *Test Description*<br>**Non-visual control actions should have an alternative to speech input.** | | |
| *Required for:*<br>**All applications.** | | |
| *Testing Note*<br>*Ensure that the Android accessibility service 'TalkBack' is installed on the device, and enabled.*<br>*Ensure that Explore By Touch is enabled in TalkBack Settings.*<br><br>*Testing Steps*<br>1. Launch the Application.<br>2. Explore use of the Application's functions.<br>3. Check that it is possible to operate the Application satisfactorily without being required to use speech input.<br>4. Where the Application has optional Settings to assist with other accessibility issues (e.g. sight impairment) check that using those options does not render the Application unusable for someone unable to use a speech-driven interface.<br>5. Check that proper use is made of TalkBack and Explore By Touch to make the Application accessible to a user who cannot fully use visual and speech-driven interfaces.<br><br>*RESULT:*<br>Control of the Application's functionality should not be limited to solely speech-driven input, even when the Application is intended for users with other accessibility issues such as sight impairment. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

## 4.3. Feedback

Not Applicable

## 4.4. Display

### 4.4.1. Text display

| *Test ID*<br>**4.4.1** | *Test Title*<br>**Text displays** | **Critical** |
|---|---|---|
| *Test Description*<br>**The Application should produce acceptable assistive text on the device display where that is part of its intended function.** | | |
| *Required for:*<br>**Applications which produce assistive text which can be displayed on the device.** | | |
| *Testing Note*<br><br>*Testing Steps*<br>1. Launch the Application.<br>2. Explore the functionality of the Application while making use of the facility to display assistive text to third parties in place of speech.<br>3. Check that the resulting output is of acceptable quality and layout such that it can be easily understood by a viewer without prior training or experience.<br><br>*RESULT:*<br>Useful assistive text is provided wherever the user is likely to need it. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

## 4.5. Adjustments / Settings

### 4.5.1. Text-to-speech configuration & quality

| *Test ID* | *Test Title* | **Critical** |
|---|---|---|
| **4.5.1** | **Text-to-speech configuration & quality** | |

*Test Description*

**Text-to-speech (TTS) assistance should be configurable to produce acceptable quality output.**

*Required for:*

**All applications.**

*Testing Note*

*If additional TTS libraries or voice files are required for full functionality or optimum quality, these should be installed before testing, and device Settings for TTS should be selected for best output quality outside of the Application.*

*Testing Steps*

1. Launch the Application.
2. Using the Settings menu of the Application (if necessary, in conjunction with the device's TTS Settings), select options to produce assistive text-to-speech (unless this is already enabled by default), and to vary the speed and / or pitch of output if available.
3. Check that it is easy for the user to obtain good quality output that would be understood by a listener without training or experience.
4. Check that where different "voices" are offered, each one offers easily understood output of acceptable quality.

*RESULT:*

Configuration options on assistive text-to-speech should make it possible to achieve acceptable output for general use.

*Result of Test*

☐ **PASS** ☐ **FAIL**

## 4.6. External Devices

### 4.6.1. External Text-To-Speech devices

| *Test ID* **4.6.1** | *Test Title* **External Text-To-Speech devices** | **Critical** |
|---|---|---|

*Test Description*

**The Application should operate correctly with external text-to-speech (TTS) devices where that is part of its intended function.**

*Required for:*

**Applications which produce assistive text-to-speech in conjunction with an external audio output device.**

*Testing Note*

*If additional TTS libraries or voice files are required for full functionality or optimum quality, these should be installed before testing, and device Settings for TTS should be selected for best output quality outside of the Application.*

*Testing Steps*

1. Launch the Application.
2. Using the Settings menu of the Application (if necessary, in conjunction with the device's TTS Settings), select options to produce assistive text-to-speech on the external device, and to vary the speed and / or pitch of output if available.
3. Check that it is easy for the user to obtain good quality output that would be understood by a listener without prior training or experience.

*RESULT:*

Text-to-speech functionality using an external device should be of acceptable quality.

*Result of Test*

☐ **PASS** ☐ **FAIL**

### 4.6.2. External text displays

| *Test ID*<br>**4.6.2** | *Test Title*<br>**External text displays** | **Critical** |
|---|---|---|
| *Test Description*<br>**The Application should operate correctly with external text displays where that is part of its intended function.** | | |
| *Required for:*<br>**Applications which produce assistive text which can be output through an external display.** | | |
| *Testing Note*<br>*The device should be set up to obtain optimum quality output on the external display.*<br><br>*Testing Steps*<br>1. Launch the Application.<br>2. Explore the functionality of the Application while making use of the facility to display assistive text to third parties in place of speech.<br>3. Check that the resulting output is of acceptable quality and layout such that it can be easily understood by a viewer without prior training or experience.<br><br>*RESULT:*<br>Assistive text output to external displays should be of acceptable quality for general use. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

# 5. Usage with limited manipulation or strength

## 5.1. Navigation

### 5.1.1. Alternative inputs for navigation

| *Test ID*<br>**5.1.1** | *Test Title*<br>**Alternative inputs for navigation** | **Critical** |
|---|---|---|

*Test Description*

**Where navigation inputs require specific dexterity abilities, alternatives should be offered.**

*Required for:*

**All applications.**

*Testing Note*

*This test should be made with the assumption that the user will have limited finger or joint mobility and control, therefore operations which call for:*

- *finger pinch movements*
- *twisting of the hand or device*
- *rotation of the device*

*will be unacceptable unless alternative navigation methods are available.*

*Testing Steps*

1. Launch the Application.
2. Where the Settings of the Application offer options relevant to users with limited dexterity, ensure those options are selected.
3. Check that the Application can be navigated throughout its normal range of usage by a user with dexterity limitations.

*RESULT:*

The Application must be navigable by a user with limited dexterity.

*Result of Test*

☐ **PASS** ☐ **FAIL**

## 5.2. Control (execution of actions)

### 5.2.1. Assistive options for control

| *Test ID* **5.2.1** | *Test Title* **Assistive options for control** | **Critical** |
|---|---|---|
| *Test Description* **Control options should exist for combining actions requiring dexterity.** | | |
| *Required for:* **All applications.** | | |
| *Testing Note* *This test should be made with the assumption that the user will have limited finger or joint mobility and control. Operations which call for simultaneous touch inputs or a repeated sequence of inputs should offer options to simplify the actions required, e.g. the "sticky keys" options used to allow some sequential control actions to be treated as if they were simultaneous.* | | |
| *Testing Steps*<br>1. Launch the Application.<br>2. Where the Settings of the Application offer options relevant to users with limited dexterity, ensure those options are selected.<br>3. Check that any control simplifying / combining options would be useful to a user with limited dexterity, and no commonly-used combinations have been omitted.<br><br>*RESULT:*<br>The Application should offer assistive options for control that will assist a user with dexterity impairment, and commonly-used options are not omitted. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

### 5.2.2. Pressure-related input options

| *Test ID*<br>**5.2.2** | *Test Title*<br>**Pressure-related input options** | **Critical** |
|---|---|---|

*Test Description*

**Applications should offer input methods for users with limited ability to control touch input.**

*Required for:*

**All applications.**

*Testing Note*

*This test should concentrate on the needs of users with tremor or muscle control limitations that can create difficulty in maintaining consistent pressure or accuracy for touch / press / hold operations.*

*Testing Steps*

1. Launch the Application.
2. Explore the functionality of the Application.
3. Check that the Application can be used without requiring distinction between single-tap, double-tap, long-press or press-and-drag actions (i.e. the Application responds to all these actions as if they are single-tap).
4. Check that actions like play / pause functions are not limited to single-touch operation of the same control (e.g. separate controls rather than the same control changing function with each touch).
5. Check that any popup messages that contains confirm / cancel or other buttons are not positioned over controls in the background UI that could cause an undesired or irreversible action. The user may be unable to avoid touching twice in the same location, which could cause unintended operation of an underlying control when the popup is dismissed.

*RESULT:*

Options offered should be of genuine value to users with limitations in touch consistency or accuracy, and UI layout should avoid control positioning that risks unintended operation through multiple touches.

*Result of Test*

☐ **PASS** ☐ **FAIL**

### 5.2.3. Multi-finger control options

| *Test ID*<br>**5.2.3** | *Test Title*<br>**Multi-finger control options** | **Critical** |
|---|---|---|
| *Test Description*<br>**Applications should offer an alternative to multi-finger gestures.** | | |
| *Required for:*<br>**All applications.** | | |
| *Testing Note*<br>*This test should ensure that the needs of users who cannot use multiple fingers in gesture controls are met.*<br>*Where Settings offer options that provide alternatives to multi-finger gestures, these should be selected.*<br>*Note that for the purposes of this test, "pinch-to-zoom" would be counted as a multi-finger gesture as it requires two fingers in contact with the screen to execute.*<br><br>*Testing Steps*<br>1. Launch the Application.<br>2. Explore the Application by navigating through all of its screens and using its functions, using only one finger in contact with the screen at any time.<br>3. Check that all of its functionality can be used without needing to use multi-finger gestures (i.e. that where multi-finger gestures exist, single-point equivalents using tap or press are available).<br><br>*RESULT:*<br>The Application should be fully usable without the use of multi-finger gestures. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

## 5.3. Feedback

Not Applicable

## 5.4. Display

### 5.4.1. Dialogue boxes & timeouts

| *Test ID*<br>**5.4.1** | *Test Title*<br>**Dialogue boxes & timeouts** | **Critical** |
|---|---|---|
| *Test Description*<br>**Interactive elements should not pressure users to respond quickly.** | | |
| *Required for:*<br>**All applications.** | | |
| *Testing Note*<br><br>*Testing Steps*<br>1. Launch the Application.<br>2. Explore the functionality of the Application.<br>3. Check that all dialogue boxes & controls allow the user unlimited time to read information, provide responses or operate controls.<br>4. Where auto-scrolling or auto-refreshing text is used, it must be possible for the user to cancel or pause these actions without restriction, to allow unlimited time for information to be understood and responded to if required.<br>5. Where timeouts are in use by default, the user should be provided with adequate warning of an imminent timeout, and the ability to prevent that timeout from acting.<br><br>*RESULT:*<br>The Application should always wait for as long as the user needs to interact with it and should not dismiss informative displays or move to another function if the user cannot respond in a set time. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

### 5.4.2. Displayed information – cognitive overload

| *Test ID*<br>**5.4.2** | *Test Title*<br>**Displayed information – cognitive overload** | **Critical** |
|---|---|---|
| *Test Description*<br>**Applications should not display successive interactive or informational messages until each preceding one has been actioned by the user.** | | |
| *Required for:*<br>**All applications.** | | |
| *Testing Note*<br><br>*Testing Steps*<br>1. Launch the Application.<br>2. Explore the functionality of the Application.<br>3. Check that the language used is plain and simple to understand, with use of icons where possible, to simplify the presentation of information.<br>4. Check that whenever information is presented to the user or interaction requested, it is always in manageable quantities, and if successive messages need to be displayed, the Application waits for user input / acknowledgement before proceeding to the next message.<br><br>*RESULT:*<br>The Application should always present information in manageable quantities and wait for user input before stepping to the next message. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

## 5.5. Adjustments / Settings

### 5.5.1. Touch-related settings

| *Test ID* **5.5.1** | *Test Title* **Touch-related settings** | **Critical** |
|---|---|---|

*Test Description*

**Applications should offer adjustment to suit users with difficulty in maintaining optimum touch pressure, consistency or accuracy.**

*Required for:*

**All applications.**

*Testing Note*

*This test should concentrate on settings that address the needs of users with tremor or muscle control limitations that can create difficulty in maintaining consistent pressure or accuracy for touch / press / hold operations.*

*Testing Steps*

1. Launch the Application.
2. Explore use of Settings touch / pressure / key repetition rate options.
3. Check that the options available implement real-world benefits for users with these limitations, e.g.
    a. Haptic pulsing (for tremor),
    b. Ability to vary touch / hold pressure thresholds.
    c. Options for replacing augmenting long-press / hold actions with other single-touch controls.
    *d.* Options for enlarging the size of control sensing areas (not just the size of the displayed control element).
    *e.* Actions like long press to trigger a key-repetition function can be disabled.

*RESULT:*

Options offered should be of genuine value to users with limitations in touch consistency or accuracy.

*Result of Test*

☐ **PASS** ☐ **FAIL**

## 5.6. External Devices

### 5.6.1. Connection and operation with external devices

| *Test ID*<br>**5.6.1** | *Test Title*<br>**Connection and operation with external devices** | **Critical** |
|---|---|---|

*Test Description*

**The Application should operate correctly with external devices and controls that provide dexterity assistance.**

*Required for:*

**All applications.**

*Testing Note*

*This test addresses the use of external switches, keyboards and other controls which provide dexterity-related improvements in the accessibility of the device and Application, such as joysticks, puff and sip controls, Braille keyboards and audio aid devices.*

*To the best extent possible, the external device or devices should be set up and confirmed as working correctly before launching the Application (unless such devices are only operable within the Application).*

*Testing Steps*

1. Launch the Application.
2. Explore the functionality of the Application.
3. Check that all external devices relevant to operation of the Application have been correctly detected & connected, and that they provide the expected functionality in a usable manner.

*RESULT:*

The Application should operate correctly with all relevant external devices.

*Result of Test*

☐ **PASS** ☐ **FAIL**

# 6. Usage with limited cognition

## 6.1. Navigation

### 6.1.1. Help information

| *Test ID* **6.1.1** | *Test Title* **Help information** | **Critical** |
|---|---|---|
| *Test Description* **Help information to be complete, understandable and not over-complex.** | | |
| *Required for:* **All applications.** | | |
| *Testing Note*<br><br>*Testing Steps*<br>1. Launch the Application.<br>2. Check that Help information is available for all functions of the Application.<br>3. Check that each item of information is neither too long nor too detailed to be usable.<br>4. Each item should cover a single prompt or function that the user can act upon before returning to the Help for assistance with the next step.<br><br>*RESULT:*<br>Help should be provided for all functions of the Application. Help information should always be in manageable quantities. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

### 6.1.2. Clarity of single action

| *Test ID*<br>**6.1.2** | *Test Title*<br>**Clarity of single action** | **Critical** |
|---|---|---|
| *Test Description*<br>**Application functions should be expressed as single clear actions.** | | |
| *Required for:*<br>**All applications.** | | |
| *Testing Note*<br><br>*Testing Steps*<br>1. Launch the Application.<br>2. Explore the functionality of the Application.<br>3. Check that each function within the Application is presented as a single, understandable action or concept.<br>4. Where complex ideas or actions have to be introduced, they should be broken down into single-concept elements and presented successively to prevent cognitive overload.<br>5. Check that good use of *header – sub header – paragraph* structures breaks the information down into manageable sized pieces.<br>6. Check that links have a descriptive label/text showing what the link accesses. They should not use generic phrases like “Click Here” or “More”.<br><br>*RESULT:*<br>Everything the Application does should be simply and directly presented as single actions. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

### 6.1.3. Limiting the number of options / choices presented to the user

| *Test ID*<br>**6.1.3** | *Test Title*<br>**Limiting the number of options / choices presented to the user** | **Critical** |
|---|---|---|
| *Test Description*<br>**The Application should not present long list of options / choices.** | | |
| *Required for:*<br>**All applications.** | | |
| *Testing Note*<br><br>*Testing Steps*<br>1. Launch the Application.<br>2. Explore the Settings (where present) and functionality of the Application.<br>3. Check that choices are given as a limited number of simple high level concepts:<br>a. Each entry should break down into successive layers.<br>b. Each layer should introduce only one idea or action.<br>c. At any point in the structure, only a small number of choices should be presented.<br><br>*RESULT:*<br>Only small sets of choices should be shown in a single step or screen. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

### 6.1.4. Language complexity

| *Test ID*<br>**6.1.4** | *Test Title*<br>**Language complexity** | **Critical** |
|---|---|---|
| *Test Description*<br>**Language used in the Application should be simple and direct.** | | |
| *Required for:*<br>**All applications.** | | |
| *Testing Note*<br><br>*Testing Steps*<br>1. Launch the Application.<br>2. Explore its functionality.<br>3. Check that:<br>a. Prompts, labels and informative texts are not too long or detailed to be easily understood.<br>b. Single ideas or actions are presented that the user can act upon before proceeding to the next step.<br>c. The language used throughout is consistent, simple and straightforward.<br>d. Multiple possible actions are not introduced in the same sentence.<br>e. The user should not be required to keep multiple ideas or concepts in mind at the same time to successfully use the Application.<br><br>*RESULT:*<br>Information should always be presented in simple, direct language. Complex sentence structures should not be used. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

## 6.2. Control (execution of actions)

### 6.2.1. Presentation of control elements

| *Test ID*<br>**6.2.1** | *Test Title*<br>**Presentation of control elements** | **Critical** |
|---|---|---|
| *Test Description*<br>**Control elements should be presented in a way that suggests the outcome and maximises clarity.** | | |
| *Required for:*<br>**All applications.** | | |
| *Testing Note*<br><br>*Testing Steps*<br>1. Launch the Application.<br>2. Explore the functionality of the Application.<br>3. Check that:<br>a. Controls are simply identified.<br>b. Controls with similar appearance or labeling are not presented at the same time.<br>c. Appearance and labeling of controls is easy to associate with the outcome.<br>d. Understanding the purpose or action of controls is possible without having to hold a context in mind over multiple screens.<br><br>*RESULT:*<br>Control elements should be clear and easily understood. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

## 6.3. Feedback

### 6.3.1. Clarity of feedback

| *Test ID* | *Test Title* | **Critical** |
|---|---|---|
| **6.3.1** | **Clarity of feedback** | |

*Test Description*

**All feedback produced by the Application should be expressed simply and clearly.**

*Required for:*

**All applications.**

*Testing Note*

*Testing Steps*

1. Launch the Application.
2. Explore the functionality of the Application.
3. Check that:
    a. Feedback is expressed in simple, clear terms.
    b. Feedback is not excessively lengthy or composed of multiple elements.
    c. Feedback explains its purpose well (especially if its appearance could be unexpected by the user).
    d. Notification of errors is short, unambiguous and easily understood.
    e. Error messages state the action to recover from the error.
    f. Avoid passive sentence structures (“x should be done”). Use active sentences (“do x”).

*RESULT:*

Feedback should be easily understood and acted on by the user.

*Result of Test*

☐ **PASS** ☐ **FAIL**

## 6.4. Display

### 6.4.1. Text fonts and sizes

| *Test ID* **6.4.1** | *Test Title* **Text fonts and sizes** | **Critical** |
|---|---|---|
| *Test Description* **Text should be displayed in font faces and sizes that favour clarity and logical relationships.** | | |
| *Required for:* **All applications.** | | |
| *Testing Note*<br><br>*Testing Steps*<br>1. Launch the Application.<br>2. Explore all parts of the Application – functionality, Settings, Help etc.<br>3. Check that:<br>a. Font faces and sizes used maximise readability and clarity.<br>b. Where font sizes change between blocks of text, the reason for the change is obvious and logical for the user.<br>c. Headings are logical and consistent and make good use of font sizes for clarity.<br><br>*RESULT:*<br>Font faces and sizes should be chosen for clarity and easy understanding. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

### 6.4.2. Colours for reading comprehension

| *Test ID* **6.4.2** | *Test Title* **Colours for reading comprehension** | **Warning** |
|---|---|---|

*Test Description*

**The user should be able to choose from a range of colours for text and backgrounds that may aid reading comprehension.**

*Required for:*

**All applications which address reading comprehension issues.**

*Testing Note*

1. *Research (http://www.dyslexic.org.uk/research/vision-coloured-filters) has shown that use of coloured filters can help reading comprehension. Display options which mimic this should be offered where possible.*
2. *This test is only appropriate if the Application is intended to directly aid reading comprehension issues such as dyslexia.*

*Testing Steps*

1. Launch the Application.
2. Explore the functionality and Settings of the Application.
3. Check it is possible to display text in a colour arrangement that aids reading comprehension in different light levels. Possible options would be:
    a. Black, white, grey, yellow or blue backgrounds.
    b. Black, white, grey, yellow or blue text.
4. The colour combinations offered should be clear with acceptable contrast ranges.

*RESULT:*

The Application should offer ways of presenting text for best reading comprehension.

*Result of Test*

☐ **Pass** ☐ **Annoying** ☐ **Difficult** ☐ **Impossible**

**This test is not applicable where...**

☐ **The Application is not intended to aid reading comprehension issues.**

### 6.4.3. Dialogue boxes & timeouts

| *Test ID*<br>**6.4.3** | *Test Title*<br>**Dialogue boxes & timeouts** | **Critical** |
|---|---|---|
| *Test Description*<br>**Interactive elements should not pressure users to respond quickly.** | | |
| *Required for:*<br>**All applications.** | | |
| *Testing Note*<br><br>*Testing Steps*<br>1. Launch the Application.<br>2. Explore the functionality of the Application.<br>3. Check that all dialogue boxes & controls allow the user unlimited time to read information, provide responses or operate controls.<br>4. Where auto-scrolling or auto-refreshing text is used, it must be possible for the user to cancel or pause these actions without restriction, to allow unlimited time for information to be understood and responded to if required.<br>5. Where timeouts are in use by default, the user should be provided with adequate warning of an imminent timeout, and the ability to prevent that timeout from acting.<br><br>*RESULT:*<br>The Application should always wait for as long as the user needs to interact with it and should not dismiss informative displays or move to another function if the user cannot respond in a set time. | | |
| *Result of Test*<br><br>☐ **PASS** ☐ **FAIL** | | |

## 6.5. Adjustments / Settings

### 6.5.1. Reading level options

| *Test ID* | *Test Title* | **Critical** |
|---|---|---|
| **6.5.1** | **Reading level options** | |

*Test Description*

**Applications presenting complex information should have an option to simplify what is presented to the user.**

*Required for:*

**All applications.**

*Testing Note*

*This test is only intended to apply to an Application whose purpose is to present complex information to the user. The intention behind the test is to establish whether the Application offers display options that reduce the amount of information on a single screen to be easier to understand (for example "Simple" versus "Advanced" display options).*

*Testing Steps*

1. Launch the Application.
2. Explore the Settings of the Application.
3. Check:
    a. Whether the Application defaults to a complex information display.
    b. Whether controls or their labels are complex.
    c. Whether an option is offered to simplify this presentation to easily-understood basics.
    d. Whether the simplified presentation maximises clarity and understanding.

*RESULT:*

If an Application normally shows complex information or controls, it should offer a simpler, clearer presentation that is restricted to key elements only.

*Result of Test*

☐ **PASS** ☐ **FAIL**

## 6.6. External Devices

Not Applicable

# Attributions and References



Accessibility Testing Checklist - Android Developers - http://developer.android.com/tools/testing/testing_accessibility.html

W3C WCAG 2.0 : Mobile Accessibility: How WCAG 2.0 and other W3C/WAI Guidelines apply to mobile – Feb 2015 - http://www.w3.org/TR/mobile-accessibility-mapping/

Understanding WCAG 2.0 - A guide to understanding and implementing Web Content Accessibility Guidelines 2.0 - http://www.w3.org/TR/2015/NOTE-UNDERSTANDING-WCAG20-20150226/Overview.html

Understanding Techniques for WCAG Success Criteria - http://www.w3.org/TR/2015/NOTE-UNDERSTANDING-WCAG20-20150226/understanding-techniques.html

Index of Color Contrast Samples - http://trace.wisc.edu/contrast-ratio-examples/

ETSI EN 301 549 v1.1.2 (2015-04): Accessibility requirements suitable for public procurement of ICT products and services in Europe - http://www.etsi.org/deliver/etsi_en/301500_301599/301549/01.01.02_60/en_301549v010102p.pdf

**Version control**

| Version | Date | Changes made |
|---|---|---|
| v0.8 | Apr 2015 | Draft version for circulation & discussion. |
| v1.0 | May 2015 | Updated after detailed comments & feedback. |
| v1.1 | Jun 2015 | Updated after wider consultation. |
| v1.2 | Jul 2015 | First release version after further feedback. |
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