



Accessibility Tools in iOS 17





1 General

Since iOS 13, the iPad has its own operating system, iPadOS. It differs from iOS by an extended gesture control, as well as a partially different interface or additional functions that only make sense with a larger display, such as screen splitting when zooming.

Common to both iOS versions, however, are the extensive accessibility tools, which will be discussed in more detail below.

If you scroll to the bottom of Settings -> Accessibility, you will find the sub-item "Accessibility Shortcut". If you tick off several accessibility features, the selected accessibility features can be quickly activated or deactivated via the Home button or, for devices without Home button, via the right-side button (iPhone) or the top button (iPad). To do this, press the home button or the side/top button three times in quick succession and then activate or deactivate the desired accessibility tool in the menu that opens. Conveniently, the click speed of the button can be adjusted in three stages (Settings -> Accessibility -> Side Button/Top Button/Home Button).

On the iPhone, there is another way to quickly switch an accessibility tool on or off. Under Settings -> Accessibility -> Touch you will find the item "Back Tap". If this is switched on, you can define an action for a double tap and a triple tap on the back of the iPhone. For example, for a triple tap on the back of the iPhone you could define switching the zoom on and off, and for a triple tap on the home or side button you could define switching VoiceOver on and off.

2 Innovations in iOS 17

2.1 General innovations

Note: Only those innovations are mentioned here that might be of special interest to people with a visual impairment.

- As of iOS 17, you can now download entire areas in Apple Maps and use them without an internet connection - this is helpful for navigation. (See 4.3 for further information)
- Numbers can now be easily exchanged with NameDrop. All you have to do is hold two iPhones or an iPhone and an Apple Watch directly next to each other. Photos or music can also be exchanged via Airdrop just by holding two iPhones next to each other, without having to select the other person's device beforehand any more.
- The autocorrect function has been improved and will now remember entries that you have corrected yourself. This means that you can save your own expressions and spellings.



- The AirPods have received a new feature for phone calls: Pressing the bottom of the AirPods Pro or the Digital Crown of the AirPods Max allows one to quickly mute or unmute the microphone during a call.
- Plants, animals, landmarks, etc. can be identified with visual look-up: If you tap on a motif in a picture and hold it down, you can select "Look up" for further information.
- Under Settings there is now the item "Home Screen and App Library". Here one can specify that newly loaded apps are displayed directly on the home screen, which saves one the tedious search and placement on the home screen.
- Now one can omit the "Hey" when calling up the voice assistant.

2.2 Accessibility - Vision

2.2.1 VoiceOver

Apple has improved the quality of Siri voices under VoiceOver during high voice feedback. In addition, two Siri voices - one male and one female - have been added, both with a slightly higher pitch than the previous ones.

2.2.2 Zoom

Sometime since an update under version 16: If the zoom controller is switched on, triple taps can now be assigned in such a way that text is then read out with a tap. In this way, it may be possible to do without displaying the voice controller.

2.3 Accessibility - Speech

2.3.1 Personal voice (iPhone only)

In the new section "Speech" you will find the item "Personal voice". Here you can use your own voice as a voice output after an extensive training. Currently this function is only available for English and unfortunately the voice can only be used via the "Live Speech" item in the same section by entering text in a separate field. It is not (yet) possible to use the voice with VoiceOver. Voice recording is only possible via the iPhone. In the process, 150 English sentences must be read aloud and recorded. Afterwards, the iPhone must be connected to the power supply and locked to process the recordings for several hours. According to a tip on the internet, the "Always-On-Display" feature should be switched off if the processing does not show any progress. The personal voice is then also available on other devices with the same Apple ID.

2.4 Accessibility - General

2.4.1 Assistive access

The new function "Assistive Access" in the "General" section limits apps to important features with the idea of supporting people with cognitive, visual, auditory or motor impairments. Apps can be displayed larger via the "Rows"

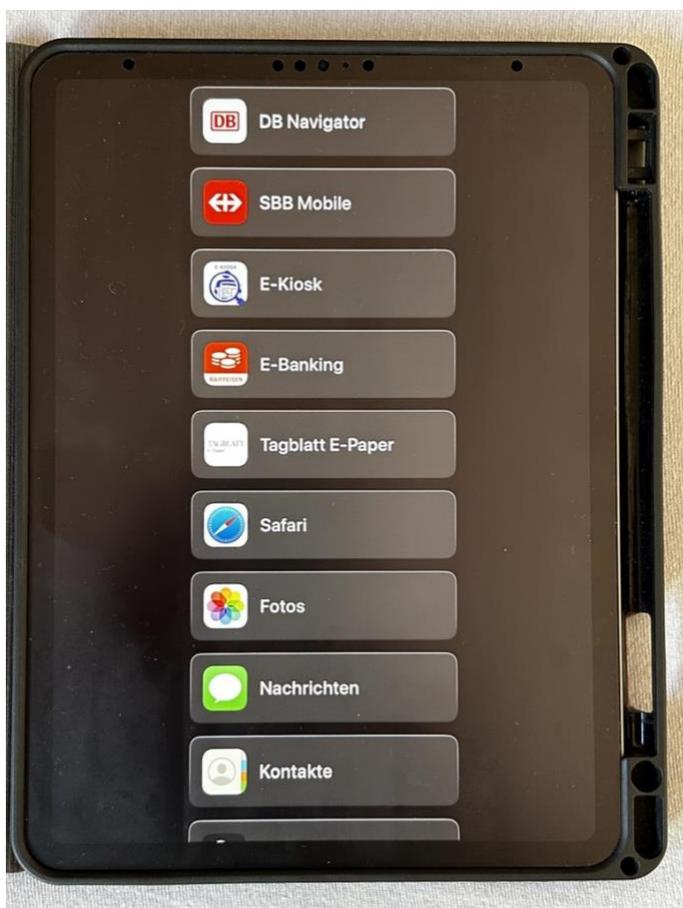


option. They are displayed in a list instead of the usual grid and with significantly higher contrast.

Apps can be added specifically via "Applications" - "Manage apps". This way one can quickly configure an iPad or iPhone with only the apps which are really needed, without having to move dozens of apps around and hide them in folders or on the second page as before.

The mode also combines applications such as "Phone" and "FaceTime" into one app, so that despite more clarity, one does not have to do without the functions one needs.

The function can be cancelled at any time and the normal screen is then visible again.



2.5 Magnifier App

The magnifier app now has an extensive detection mode that allows users to interact with physical objects by pointing at them. The mode recognises door signs, reads text, recognises people and can describe scenes. (For more details, see 12.2)



3 VoiceOver

This mode is primarily intended for blind people. If VoiceOver is switched on, the entire screen content can be read aloud. However, the operation of the iPhone changes. For example, objects under the finger are initially only read aloud and only a double tap on the object or - in the case of a marked object - a double tap anywhere on the screen surface triggers the corresponding action (open folder, start app, activate button).

3.1 Setting

Via Settings -> Accessibility -> VoiceOver

3.2 Practice Mode

A double tap with four fingers starts the VoiceOver practice mode. Here, all gestures can be tried out without stress because no actions are triggered in practice mode. A spoken explanation is given for each gesture performed in practice mode.

3.3 Gesture control

3.3.1 One-finger gestures

- **Touch the screen (and move your finger):** The object that is currently under the finger is announced. The object is highlighted.
- **Double tap:** The object selected with the VoiceOver cursor and previously announced is activated or triggered. The double tap can be performed anywhere on the screen.
- **Double tap and hold:** If you are in an input field, this gesture can be used to open a context menu that contains functions such as copy or paste. On devices with Force Touch, the context menu of an app can also be opened by double-tapping and holding (pressing) a little more firmly.
If you use a standard gesture such as a swipe directly afterwards, you can, for example, operate a slider or move a selection.
On the home screen, you can double-tap and hold followed by a light swipe to switch to edit mode and delete apps or rearrange apps or folders.
The gesture can also be used to keep a button pressed.
- **Triple tap:** This gesture on the element selected with VoiceOver corresponds to double tapping on an element without using VoiceOver. This allows you to activate continuous capitalisation on the keyboard, for example.
- **Right or left swipe:** The right swipe moves the VoiceOver cursor forward over the selectable elements of the screen and reads them out. The left swipe moves the VoiceOver cursor backwards through the selectable elements.
- **Swipe up or down:** This gesture has different functions depending on which element you are on. If you are on a setting field or on a slider, you can use this gesture to adjust the corresponding element. With lists, you can move forwards and backwards through the list elements.



If you are not on a corresponding element, this gesture executes the function selected in the rotor control, e.g. changing the speech rate.

3.3.2 One-finger gestures for iOS devices without a home button

- **Slowly swipe upwards from the bottom edge until the iOS device vibrates once:**
 - **if the device is locked:** unlock the iPhone (hold the device in front of your face)
 - **if the device is unlocked:** return to the Home screen.
- **Slowly swipe upwards from the bottom edge until the iOS device vibrates twice:** Open app switcher
- **Slowly swipe down from the top edge until the iOS device vibrates once:** Open control centre
- **Slowly swipe down from the top edge until iOS device vibrates 2x:** Open message centre

3.3.3 Two-finger gestures

- **Split tap (select an object with one finger, tap the screen with the second finger):** This gesture replaces the double tap. On certain elements, a double tap with the second finger triggers a triple tap, e.g. on the shift key on the keyboard for continuous capitalisation.
- **Tap with two fingers:** This gesture interrupts VoiceOver reading aloud. If you tap again, VoiceOver will continue reading aloud at the same point, provided no other gesture has been performed in the meantime.
- **Double tap with two fingers:** This allows you to answer and end a call or start and pause music. You do not have to be in the corresponding app to do this. If the write cursor is in an input field, this gesture can also be used to start and end the dictation function.
- **Double tap with two fingers and hold:** This gesture can be used to label or rename elements.
- **Triple tap with two fingers:** This gesture lists all items that are on the current page. You can perform this function within any app. The item selection can be closed again by pressing the Home button or by using the one-finger gesture for iPhones without a Home button.
- **Swipe down with two fingers:** VoiceOver reads out all elements of the screen, starting at the current position of the VoiceOver cursor.
- **Swipe upwards with two fingers:** VoiceOver reads out all elements of the screen, starting from the very top.
- **Z-swipe with two fingers:** This gesture activates the back button and is also called zigzag. It does not matter in which direction the zigzag gesture is performed on the screen.
- **Rotor gesture:** The rotor can be used to quickly activate various functions. The most common way is to place the thumb and index finger on the screen as if gripping a rotary switch and simulate a short rotary movement. After each



rotary movement, you can briefly put it down. If the interruption is not too long, you can move through the individual elements in the rotor. Which elements appear in the rotor is determined under Settings -> Accessibility -> VoiceOver -> **Rotor**. Selected rotor elements may also only appear in the appropriate context.

3.3.4 Three-finger gestures

Attention! If the accessibility tool Zoom is activated in the background (the magnification itself can be off), then some of the VoiceOver gestures mentioned here change. It may be necessary to perform an additional tap to achieve the desired result. For example, a double tap with three fingers with the zoom activated and VoiceOver still starts the zoom enlargement, and to deactivate the voice output you have to tap three times with three fingers. The following description therefore assumes that Zoom has been completely deactivated.

- **Three-finger tap:** VoiceOver reads out the current position of the VoiceOver cursor on the screen and additional information about the screen elements and their total number.
- **Double tap with three fingers:** This gesture mutes or reactivates the voice output of VoiceOver.
- **Triple tap with three fingers:** This activates or deactivates the screen curtain. When the screen curtain is activated, the screen is switched off and power consumption is reduced.
- **Four-tap with three fingers:** This gesture copies the last spoken text to the clipboard.
- **Right or left swipe with three fingers:** This gesture is used to change pages horizontally, e.g. to scroll backwards and forwards on the Home screen.
- **Swiping down or up with three fingers:** This gesture allows you to scroll up and down.
If the VoiceOver cursor is in the status bar at the top of the screen, a swipe up opens the Control Centre and a swipe down opens the Message Centre.
On the Home screen, swiping down opens the search.

3.3.5 Four-finger gestures

- **Tap the top or bottom of the screen with four fingers:** Moves the VoiceOver cursor to the first or last item.
- **Tap twice with four fingers:** Starts VoiceOver practice mode.

3.3.6 Four- or five-finger gestures (iPadOS only)

- **Right or left swipe with four or five fingers:** Switches between the open apps.
- **Swipe upwards with four or five fingers:** Opens the app switcher.
- **Swipe down with four or five fingers:** Closes the app switcher.
- **Pinch four or five fingers together:** Switches to the Home screen.



3.4 Image and text recognition

With iOS 10, image recognition was introduced in VoiceOver for the first time. If the VoiceOver focus is on such a picture and you tap on it once with three fingers, VoiceOver tries to recognize the picture. In the case of photos of people, the number of people and facial expressions can be identified. With iOS 11, the function was expanded to include text recognition, and with subsequent iOS versions, image recognition and QR code recognition were continuously improved. With iOS 14, a new menu item was introduced, to be found under Settings -> Accessibility -> VoiceOver -> **VoiceOver Recognition**.

Here, using the sub-item **Image Descriptions**, you can activate VoiceOver to automatically describe images in apps and on the internet. This works often with an astonishing level of detail.

By activating the sub-item **Screen Recognition**, VoiceOver tries to improve the operability of apps that have no info for operation. In addition, related objects are grouped. The apps to which this function is to be applied must be specifically selected. How much benefit this new function brings depends on the app in question. In the Sygic navigation app that I selected for testing, it suddenly led to all the street names on the map being selected and read aloud when swiping.

By activating the sub-item **Text Recognition**, VoiceOver tries to recognize text in pictures. This works much more reliably since iOS 15.

Overall, the recognition of unlabelled objects has been improved again since iOS 14, even without activating the above-mentioned functions. For example, in a test in the navigation app Sygic, the two buttons for voice input and for favourites, which previously could only be read out by VoiceOver as "switch", were now labelled "microphone" and "heart". With a little experience, it is immediately clear what is hidden behind these buttons.

3.5 Further info

Via Settings -> Accessibility -> VoiceOver -> **Speech**, additional languages can be added to the rotor language, a different voice can be selected, automatic speech recognition can be switched on for reading aloud and own pronunciation rules can be defined for certain words

The amount of information in the spoken messages etc. can be reduced via Settings -> Accessibility tools -> VoiceOver -> **Verbosity**.



A connected Braille display can be configured for VoiceOver via Settings -> Accessibility -> VoiceOver -> **Braille**.

Via Settings -> Accessibility -> VoiceOver -> **Audio**, you can set VoiceOver to reduce the volume of music or similar for a short time during messages so that the information can be better understood. In addition, it is now possible to control whether the VoiceOver signal is sent via HDMI. This is exciting, for example, if the iPad is used for a lecture and only the sound of a presentation, but not the VoiceOver voice, is to be forwarded to the beamer/speaker.

Via Settings -> Accessibility -> VoiceOver -> **Commands**, you can assign touch gestures to other actions or define touch gestures for new actions. For example, the gesture tap twice on the back of the iPhone could be used as an alternative to the default gesture (swipe up slowly from below with one finger) on iPhones without a home button.

The typing mode, among other things, can be changed via Settings -> Accessibility -> VoiceOver -> **Typing**. In the "Touch Typing" input mode, characters are entered directly after the respective key is released, which is much easier than double-tapping each key.

Via Settings -> Accessibility -> VoiceOver -> **Navigate images**, you can specify whether VoiceOver should skip images in general, only those with an alternative text or all of them.

Via Settings -> Accessibility tools -> VoiceOver -> **Large cursor**, the frame around the element currently marked by VoiceOver can be displayed significantly thicker, which can be helpful for users with a visual rest.

Via Settings -> Accessibility tools -> VoiceOver -> **Caption Panel**, text can always be displayed at the bottom of the screen to indicate what information VoiceOver is currently outputting via speech or via the Braille display.



4 Zoom

When Zoom is activated, the entire screen content can be enlarged continuously.

4.1 Setting

Via Settings -> Accessibility -> Zoom

4.2 Gestures

- To switch on and off, double-tap the screen with three fingers.
- To move the screen, swipe three fingers across the screen surface.
- To change the zoom factor, double-tap with three fingers, leave your fingers on the screen after the second tap and move your fingers up (zoom in) or down (zoom out) together.
- To display the zoom control, triple-tap the screen with three fingers.

4.3 Modes and control of magnification without gestures

Since iOS 8, not only can the entire screen be enlarged, but you can also switch to "Window zoom" in the zoom control under the menu item "Choose region". This gives you a magnifying glass of variable size that you can move across the screen.

With the iPadOS, another practical function was added: Pinned Zoom. This corresponds to the screen division known from magnification programs such as ZoomText and only one part of the screen is magnified. The function is only available on the iPad.

Those who do not like to work with gestures can also use the zoom controller.

Switch on via Settings -> Accessibility -> Zoom -> Zoom controller -> Show Controller

For better visibility of the controller, it is recommended to set the "Idle Opacity" to 100%.

Single-tap the controller to show the menu.

Double-tap to switch the zoom on or off.

A triple-tap can be assigned so that text is then read aloud with a tap. If you leave your finger on the screen without lifting it, text is read out continuously. This is practical in a WhatsApp chat, for example, to have several parts of a conversation read aloud.

If you keep your finger pressed on the controller, the image is only enlarged until you release your finger again. The focus follows the finger on the screen.



4.4 Further info

In the settings, the maximum zoom level can be set and focus tracking can be activated.

If the "Intelligent Input" function is activated (iPhone only), the magnification for text input changes to the zoom window even when the full screen zoom is set and only the text area is magnified, but not the keyboard.



5 Hover Text (iPad only)

The iOS update 16.3 introduced the new **Hover Text** function.

5.1 Setting

Via Settings -> Accessibility -> Hover Text

5.2 Functions

If a keyboard with trackpad is connected to the iPad, then when the special key is pressed the text under the mouse pointer is enlarged and displayed in a text box with high contrast. The special key is the CTRL key by default, but it can be changed under the **Control** section. The position of the text box, the font and the font size can be changed in the **Text** section. The background colour and the text colour in the box, as well as the colour of the border can be changed via the section **Colours**.

The function is not only handy for quickly enlarging individual text elements, but can also be used to display text that cannot be read properly due to poor contrast, because the text under the pointer is always displayed in the specified contrast of the box, regardless of the text and background colour of the original. This is white text on a black background by default.

In the test, this tool worked well for the most part. In some (third-party) apps, however, the enlargement showed any text but the text under the mouse pointer, and in Apple's own app Notes, the entire text is always enlarged from the beginning of the note, regardless of where you point to in a note. The text moves through the box as a ticker. The speed of the ticker can be changed in the **Text** section.

6 Display adjustments for text and contrast

6.1 Setting

Via Settings -> Accessibility -> Display & Text Size

- Larger text

also via Settings -> Display & Brightness -> Larger Text

- Bold Text

also via Settings -> Display & Brightness -> Bold Text

- Increase Contrast

- On/Off Labels

- Reduce Transparency

- Increase Contrast

- Differentiate Without Colour



- **Smart Invert and Classic Invert** (colour inversion)

- **Colour Filters**

In addition, the home screen layout can be displayed larger via Settings -> Display & Brightness -> Display Zoom -> Larger

6.2 Functions

The above-mentioned accessibility tools are largely self-explanatory.

When "On/Off labelling" is activated, the status of a switch is not only indicated via the colour (green for on, grey for off), but also receives an additional character (I for on and 0 for off).

6.3 Larger text

The settings made here via the slider have a system-wide effect on all apps, but unfortunately not on all elements with text.

A new feature of iOS 15 is that you can now change the text size for individual apps. However, it is not exactly self-explanatory how this can be done. The following procedure is the easiest way to change the size individually:

Settings -> Control Centre -> tap the green plus symbol in front of "Text Size" to enable quick access to it via the Control Centre. Now open any app, tap the newly added button "Text size" (AA) in the Control Centre, move the slider at the bottom from the right "All apps" to the left "Only xy app" (!!) and only then change the text size.

6.4 Dark Mode

Since iOS 13, there has been a "Dark Mode". As soon as this is switched on, the formerly white surface elements of iOS change to black or dark grey) and the text changes to a lighter colour for better readability. This is not only easier on the eyes and improves the contrast, but with the OLED displays of the newer iPhones, Dark Mode also extends the battery life. The option can be found under "Display & Brightness".

6.5 Plain black background image

Since iOS 13, there is finally also a simple, black wallpaper.

iPhone: Settings -> Wallpaper -> Customise -> Colour -> Select black at the very bottom, right corner

iPad: Settings -> Wallpaper -> Choose a New Wallpaper -> Stills -> Select black at the very bottom, right corner



7 Reduce motion

7.1 Setting

Via Settings -> Accessibility -> Motion -> **Reduce Motion**

7.2 Function

This can be used to turn off animated backgrounds and the effect of icons moving slightly when the iPhone is panned (parallax effect). This feature, introduced with iOS 7, has sometimes caused headaches even for users who are not visually impaired.

8 Voice output

The voice output can also be used without VoiceOver switched on.

8.1 Setting

Via Settings -> Accessibility -> **Spoken Content**

8.2 Functions

- **Speak Selection:** Read aloud selected text in apps.
- **Speak Screen:** Once activated, it is sufficient to swipe down from the top of the screen with two fingers and the screen content is read out. Unfortunately, the gesture often also activates the message centre. For safe operation, the voice controller can be permanently displayed (see below). If a text is read aloud, the device can also be sent to standby without the voice output being interrupted. Further navigation is possible without interrupting the read aloud function. In contrast to using VoiceOver, the operation does not change, which also makes it interesting for visually impaired people.
- **Voice controller:** Activate via Settings -> Accessibility -> Spoken Content - Voice controller. If necessary, increase the opacity under the controller actions so that it is always clearly visible. Afterwards, there is always a small black arrow on the screen. The position on the screen can be changed as desired by dragging it. Depending on the setting under the controller actions, a long press or a double tap on the black arrow triggers the respective predefined function. You can choose between "Read all contents" and "Read out on touch". As long as you do not lift your finger again when using the latter function, you can move to any other place on the screen and have more text read aloud.
- **Highlight Content:** spoken content is additionally highlighted visually
- **Typing Feedback:** This allows you to activate acoustic feedback when entering text. For example, the keys pressed can be spoken along.
- **Voices:** Other voices can be set for the respective language, e.g. the much more natural sounding male or female Siri voice.



- **Pronunciations:** Here you can define pronunciation rules for certain voices or for all voices, e.g. if your own name is pronounced incorrectly.

9 Voice input

9.1 Voice Control

With iOS 13, a voice control was introduced that works without an internet connection. It can be activated with "Hey Siri, turn on voice control" or via Settings -> Accessibility -> Voice Control. Approximately 350 MB of data must be downloaded before using it for the first time. Some useful things can be done with the voice control. For example, you can open an app directly with "Open <App Name>", get to the home screen quickly with "Go to Home" even without the home button or lock the screen with "Lock Screen". Practical commands are also available for text processing, e.g. "Go to end" or "Go to beginning", "Select all text" or "Undo" (undo last change). Text can also be dictated.

A detailed list of commands is available under Accessibility tools -> Voice control -> "Customise commands". Unfortunately, one has to know the predefined order of the commands, so you have to say the name of the app first and then "open", for example, otherwise nothing happens.

Attention: The switched-on voice control reacts in text input fields to voice outputs such as VoiceOver and creates a new text with the spoken words of the voice output.

9.2 Siri and speech recognition

The iOS devices have a voice assistant in the form of Siri, with the help of which many functions of the iPhone can also be controlled via voice commands, as well as a very sophisticated voice recognition system with which texts can be written quickly and easily.

Siri requires an internet connection, but voice recognition for text input does not. Phone calls and FaceTime calls can be ended with the Siri command "Hey Siri, hang up" since iOS 16 (iPhone XS, iPhone XS Max, iPhone XR and newer).

10 Assistive Access

The function "Assistive Access" in the "General" section limits apps to important features with the idea of supporting people with cognitive, visual, auditory or motor impairments. Apps can be displayed larger via the "Rows" option. They are displayed in a list instead of the usual grid and with significantly higher contrast.



Apps can be added specifically via "Applications" - "Manage apps". This way one can quickly configure an iPad or iPhone with only the apps which are really needed, without having to move dozens of apps around and hide them in folders or on the second page as before.

The mode also combines applications such as "Phone" and "FaceTime" into one app, so that despite more clarity, one does not have to do without the functions one needs.

The function can be cancelled at any time and the normal screen is then visible again.

11 Further accessibility tools

There is a whole range of other accessibility tools, e.g. for people with hearing impairments or for people with physical impairments.

The option of activating audio descriptions should also be mentioned at this point. It is located in the upper section of the accessibility tools under the menu item "Audio Descriptions".

iOS 14 also introduced the new Sound Recognition function, which can be found under Settings -> Accessibility in the "Hearing" section.

After activation, the iOS device constantly watches for previously defined sounds (e.g. siren, doorbell, running water) and notifies the user when such a sound has been detected. People with a hearing impairment can therefore be warned of an approaching ambulance, for example. In the test, my doorbell was reliably detected in all rooms of my apartment. Knocking on the door was also recognized, but only if the distance was not too great. An individual sound can be taught.

iPads only: There is now a Pointer Control entry in the Physical and Motor section of the Accessibility tools. Here, when a mouse or a keyboard with trackpad is connected, the colour of the mouse pointer can be changed and the size adjusted, among other things.

12 Magnifier

With the pre-installed magnifier app, the device camera becomes an electronic magnifier. A portable stand to place the device on is recommended for use.



12.1 General Functions

When the magnifying glass is activated, it is possible to switch between the front and rear camera from left to right, adjust the brightness (sun symbol), adjust the contrast (circle, half black half white), set various false colours (symbol with three circles) and switch on the LED light (symbol with torch). In addition, you can define which false colours are to appear in the selection list via the settings (left-hand cogwheel symbol) under "Filter". The large button in the middle can be used to freeze the image.

Unfortunately, the colour inversion does not produce a rich black on white surfaces as usual.

12.2. Detection Mode

The magnifier has a detection mode that allows users to interact with physical objects by pointing at them.

This mode must first be activated.

Start the magnifier, then tap on the small cogwheel, Settings..., Add "Detection Mode" via the green plus symbol and, if necessary, slide it further up.

The detection mode offers the following functions:

Point and Speak

To use Point and Speak, point to a specific section of text or move your index finger around in the camera view. Your iPhone will detect the text near your finger and read this text to you.

Text Detection

Use your iPhone's camera to hear and read the text detected nearby.

People Detection

Your iPhone can let you know when it detects people nearby with sound, speech and haptic feedback. Feedback will be more frequent when the person is closer to you.

Door Detection

Your iPhone can let you know when it detects doors nearby with sound, speech and haptic feedback. Feedback will be more frequent when the door is closer to you.

Image Descriptions

Image descriptions provide a live description of the scenes detected in the camera view.

All Detection Modes

Double-tap the screen with two fingers to pause or resume detection.



13 Text and picture recognition via the camera

13.1 Text recognition

The new Livetext function uses on-device intelligence to recognize text in a photo and enable users to perform certain actions. For example, you can take a photo of the telephone number of a defective ticket machine and dial it directly, recognize and copy the WLAN password in a café, convert currencies or have text translated. When you start the camera, there is a new, small symbol at the bottom right of the live image that looks like a piece of paper with writing on it. If you tap on it, the text is recognized in the live image. At the same time, a context menu opens from which you can select, among other things, "Copy" or "Read aloud". For the latter item, the corresponding function must have been activated beforehand (see 8.2).

Another option, which is very interesting in its approach, is to open the Notes app, create a new note and then tap on the camera icon:

- Under the menu item "Scan document", the camera automatically takes a photo as soon as the corners of a whole page are in the camera section. You can then tap the photo created in this way at the bottom left and select "All" via the context menu (hold your finger down on the screen a little longer). Now the entire text of the document is marked and can be read out or copied and pasted elsewhere.
- Under the menu item "Recognise Text", the text of a document is inserted directly into the notes without having to take a photo first. However, paragraphs followed by blank lines are recognised and usually only the text between two blank lines is automatically selected for recognition. So far, this makes it impossible to capture an entire document at once.
- With the "Camera" tab in the Translate app, you can take a photo of text that will be translated directly. You must first ensure that the correct language pair is set, e.g. German - English. If English text is then recognised in the picture, it is translated into German and vice versa.

Livetext is only available on iOS devices with an A12 Bionic chip or newer, i.e. devices launched in 2018 or later.

13.2 Picture recognition

Plants, animals, landmarks, etc. can be identified with visual look-up: If you tap on a motif in a picture and hold it down, you can select "Look up" for further information.



14 Tips for rehabilitation specialists

14.1 Support for USB sticks

For devices with USB-C connection a USB stick can be used (recommendation see 16.7). Via the in iOS integrated "Files" app (blue folder symbol), files can be opened directly from the stick or files can be saved directly to the stick via other apps such as "Pages" using the corresponding menu command (e.g. "Export").

14.2 Audio Sharing

According to Apple, two pairs of AirPods can be paired with an iPhone. This makes it possible, for example, to listen in on the trainee during training sessions with navigation apps.



15 Selection of apps

This section presents some useful apps for people with visual impairments and for blind people in Germany and Switzerland, which in some cases can partially or even completely replace an expensive additional device.

15.1 Auxiliary tools

Cash Reader, free for small notes, otherwise chargeable: This app recognises euro notes and many other foreign currencies, such as Swiss francs, pounds and dollars, reliably and in a flash via the iPhone's camera. All you have to do is hold the iPhone's camera close to the note and it will tell you the value and currency.

OneStep Reader (formerly knfb Reader), for a fee: This app converts a photographed document, a leaflet, a street sign, etc. into editable text in seconds, which can then of course be read aloud.

Cheap and good alternative: **Voice Dream Scanner**

Free alternative: **TextGrabber, Seeing AI, Envision**

ColorVisor, for a fee: In good lighting conditions, this app can recognise and announce colours. Of course, the app does not come close to a colour recognition device, but you only pay a fraction of the price and always have colour recognition in your pocket.

free alternatives: **Seeing AI, Envision, Seeing Assistant Home**

Tile: This app comes together with small trackers for keys, wallets or items such as remote controls. The trackers themselves are available in online shops. The iPhone connects to the tracker via Bluetooth. Using the app on the iPhone, the object connected to the tracker can then be located acoustically at the touch of a button. Conversely, depending on the model, the iPhone can also be located by pressing the tracker.

Alternative: **Apple AirTag** (only works with iOS devices and attachment option must be purchased separately; but extended search options via Apple Community).

Seeing Assistant Magnifier: With this app you have an electronic magnifier in your pocket. However, you need a very steady hand or a stand to be able to read a menu in a restaurant, for example. To use the app, you can place the iPhone in a small, foldable magnifier stand.

Alternative: **Magnifier from iOS**

Seeing AI: The free app combines text recognition in signs, text recognition of entire documents, barcode scanning with subsequent product announcement, face recognition (after training also with names), banknote reader (6 currencies, including Euro, no CHF), scene recognition, colour recognition, handwriting recognition and light source recognition under one interface. However, unlike other apps, all images are not processed on the user's own device, but online on Microsoft servers in the USA.



Envision: The free app combines text recognition of short texts, text recognition of entire documents, barcode scanning with subsequent product announcement, person recognition (after training also with names), scene recognition and colour recognition under one interface. The "Find object" function is very useful. There you can store favourites and then use the iPhone camera to search specifically for an object, e.g. the washbasin in a unfamiliar toilet. The information recorded via the camera is primarily processed on European server locations of the Dutch company.

TapTapSee: object recognition

Be My Eyes: The app connects blind or visually impaired users with sighted volunteers who can then provide them with assistance via a real-time video or audio connection.

Wasserwaage Pocket (Bubble Level): The spirit level can be calibrated quickly, is easy to use and the basic function is VoiceOver-compatible. A sound informs whether an object is properly aligned.

Light Detector: Shows via pitch change whether a light source is switched on in the vicinity and with what intensity it shines. VoiceOver can be used to read out the displayed percentage.

Alternative: **Seeing Assistant Light**

Lux Light Meter Pro (in the App Store Belichtungsmesser Pro), for a fee: Easy-to-use light intensity meter (lux) to objectively measure light conditions in the environment.

Zuzanka, for a fee, trial version free of charge: Detect and announce the expiry date of a product via the smartphone camera.

15.2 Reading/Listening/Recording

Feedler Pro 2, for a fee: RSS reader with which you can get news on your iOS device. The app can thus be used like a daily newspaper, is simply structured and fully VoiceOver compatible.

free alternative: **Newsify**

Voice Dream Reader, for a fee: (pre-)read documents including pdfs; the text wrap function and versatile configurable view settings make it easy to read files in large print. In addition, by double-tapping on any text passage, it is possible to read it aloud from there.

Downcast, for a fee: With this app, podcasts can be subscribed to and conveniently listened to on the iPhone. This app is also fully VoiceOver compatible.

Greta: Audio description in the cinema

Just Press Record, chargeable: Record and save in mp3 format directly in the iCloud. In addition, voice memos can be converted into editable text!



Speechy, for a fee: Record and convert to text at the same time. The app uses Apple's speech recognition, but in contrast to iOS's own function, the recognition does not simply stop when longer texts are spoken. Texts can be easily inserted into an email via copy and paste, for example.

SayHi, for a fee: Translator app with voice input. Translates individual words, but also entire sentences via a previously defined language pair. The finished translation is read out immediately afterwards with the correct voice output.
free alternative: **Apple Translator**

15.3 Navigation/Mobility

MyWay Pro, for a fee: An app developed for blind users that allows, among other things, the recording of routes. In recording mode, waypoints can be generated manually or automatically when changing direction. The route created in this way can be saved under any name and later retrieved for both directions.

Free alternative: **Seeing Assistant Move**

BlindSquare, for a fee: The app offers numerous navigation and orientation tools for blind and visually impaired people. For example, it provides information about so-called points of interest (POI) that are located in the immediate vicinity. In combination with a navigation app such as GoogleMaps, you get a navigation solution suitable for everyday use.

Moovit: App for navigation in public transport. A special feature: the current stops of the means of transport the user is on can be announced in real time. The app works in many countries, but unfortunately only in selected, mostly large cities.

AroundMe: Shows what is nearby, sorted by category, such as "ATM" or "supermarket", including exact address and distance information. Navigation must be done via a separate app.

Compass: The app is pre-installed on the iPhone and becomes a talking compass in combination with VoiceOver.

Alternative: Compass^o

Ampel-Pilot: recognises the switching of the pedestrian lights via the camera

Katwarn: current hazard, storm and disaster warnings directly to your mobile device

15.4 Country-specific apps

15.4.1 Germany

ÖPNV Navigator: Among other things, the app shows all stops in the vicinity with exact distances. By tapping on a stop, you get more detailed information about lines and departure times. Tapping on a line provides information about all the stops that are served. The app works everywhere in Germany and - since it also



works without problems in Switzerland - probably also in other European countries.

Bahnhof (Station) live: The DB app supports rail travellers with restrictions. For example, train delays or the carriage order are displayed directly in the app and do not have to be laboriously deciphered or asked for on the display board at the station.

dzb lesen: DZB e-book and audio book app

15.4.2 Switzerland

Time for Coffee and **Stations:** Both apps provide clear information about the departures of trains, buses and trams in the vicinity, including delays.

Wemlin: Timetables for the cantons of St. Gallen, Appenzell, Glarus, Thurgau and Schaffhausen (OSTWIND), for Zurich, Schaffhausen and Winterthur (ZVV), for Basel Land (BLT), for Freiburg (TPF) and for Liechtenstein (LIEmobil).

SBB Inclusive: The app supports rail passengers with restrictions.

Recunia: This app uses the iPhone's camera to reliably recognise Swiss franc notes at lightning speed.

E-Kiosk: Various (chargeable) newspapers can be subscribed to and read conveniently via the SBC app.

SBS Reader Plus: e-book and audiobook app of the SBS

Apfelschule: Information and tips from the Swiss Association for the Blind about the iPhone.

15.5 Games especially for blind people

A Blind Legend, A Dark Room, Blindscape, Blindfold ** (a whole series of more than 20 audiogame apps), Audio Game Hub, Lords & Knights, Sound Of Magic (audiogame), Alt-Frequencies (audiogame), Frequency Missing (audiogame), Blowback (audiogame), Feer - Running Blind (audiogame), Subwords, Quizduell, Schredder Chess



16 Selection of accessories and additional equipment

16.1 Headphones

In road traffic, headphones are often disturbing or even dangerous. Therefore, when using the iPhone with VoiceOver or with apps that output information via speech, it is recommended to use so-called **bone conduction headphones**. These are available, for example, from the company **Shoks** or from the company **Grundig**. A relatively expensive variant, but with excellent sound quality, is the **Bose Frames** sunglasses with integrated bone conduction headphones and the **Dusk Elektrochrome Smart sunglasses**, where the tint of the lenses can also be changed via an app.

16.2 Protective cover

The **LifeProof Case** is a shockproof and waterproof protective case for the iPhone, which is suitable for use in the rain, for example. A loop can also be attached to the **Redpepper** protective case, which is also waterproof and somewhat cheaper, so that the iPhone can be hung around the neck, for example.

16.3 Anti-reflective protective film

I can recommend the **Dipos** brand as durable screen protectors that do not impair the operation of the touchscreen. The **matt** finish prevents annoying reflections on the display and also protects against scratches.

16.4 Navigation belt

The vibrating **naviBelt** from **feelSpace** can be worn inconspicuously under clothing and reliably indicates changes in direction. The vibration travels along the body according to the change in direction. Navigation is also possible via the associated app.

16.5 Smartphone and tablet stand

TabiMax offers a flexible solution for using a smartphone or tablet PC in a **stand**. This makes it easy to use the magnifying glass function or a text recognition app. Less expensive alternatives are the **Belkin Portable Tablet Stage** and the **NWW Scandi**, which is only suitable for smartphones.

16.6 Keyboard with XXL lettering

From **Logic-Keyboard** there are **Bluetooth large character keyboards** with high-contrast XXL lettering in black, white or yellow.

16.7 Storage device for iPads with USB-C connector

USB stick **Sandisk Ultra Dual Drive Luxe** with conventional USB connection and new USB-C connection; works directly connected to the iPad as a storage medium.