

Screen reader

Device that uses text-to-speech technology to convert the text into speech and convey the information to people with blindness or low vision, through speakers. They can also work with output devices like refreshable braille display to convert the text on screen to braille. Screen readers are available both in the form of hardware devices that can be connected to computer systems to read or create speech through their own built-in sound systems, and in the form of software applications within the computer system whereby they use the sound system of the same computer. The screen readers can also be connected with another device such as a refreshable braille display (RBD) to display the on-screen text as braille output.

Various types of screen readers are available on the market. Nowadays, most screen readers come in the form of software applications that are either pre-installed/built-in, or can be installed in almost all computers, smart phones and tablets. There are screen readers that have been designed for various operating systems in computers and smart phones, including Windows, MAC, Android, or iOS. However, there may be some screen readers that are more suitable for a specific operating system or a software application. So, a user may at times be restricted to use only a specific brand or type of screen reader depending upon what smart phone, tablet, or computer operating system they have. Almost all the modern-day devices including computers, tablets and mobile phones already have built-in screen reading applications but only a very few are good enough to serve the needs of users. For users who like to use both speech and braille for learning, the screen readers can also produce braille to be displayed on RBD device or printed by embossers.

- **Product Classification**

- APL (WHO Assistive Product Priority List): 35 (Screen readers)
- ISO 9999:2022: 223912 (Software for output devices)

- **Possible configuration variants**

- Headphones or earphones.
- Braille display.

- **Possible accessories or optional components**

None specified.

- **Product goals**

Activities or functions the product is mainly intended to support, according to WHO ICF Classification:

- Using communication devices and techniques [\[d360\]](#).

- **Indicated impairments**

Difficulties the product is mainly intended to address, according to the WHO ICF Classification:

- Seeing [\[b210\]](#) (blindness or severe vision loss).

- **Contraindicated impairments**

Difficulties for which the product may be inappropriate:

- Deafblindness. *Unless used with variants: Braille display*

- **Indicated environments**

Specific environments in which the product should be used:

- Compatible computer operating systems (like any software application, it only works with the devices and related operating system versions indicated by the manufacturer for each product item).

- **Contraindicated environments**

Environments in which the product may be inappropriate:

- Noisy places (a quiet and noiseless environment is needed for a user to fully understand what they learn from screen readers; any amount of noise, especially in busy workplaces, can negatively affect their understanding). *Unless used with variants: Headphones or earphones*
- Places with other people around who should not be disturbed. *Unless used with variants: Headphones or earphones*

- **Other indicated factors**

Other factors or situations the product is intended to address:

- Conveying the contents displayed on the computer screen through braille. *Only if used with variants: Braille display*
- Conveying the contents displayed on the computer screen through speech. *Only if used with variants: Headphones or earphones*

- **Other contraindicated factors**

Other factors or situations in which the product may be inappropriate:

None specified.

- **Points to be considered in product selection**

- The choice of the screen reader product model depends on the needs of the user and the purpose for which the product is intended.
- The screen readers are good to read almost all the text displayed on screen, but they are limited when there is some graphical information, diagram, or picture on the screen.
- When reading text from webpages, screen readers do not consider the colors or layout of the webpage. This may cause some users to be confused as they try to understand the information received, if the colors are important for any particular piece of information.
- The voice emitted from the screen reader may not be close to human voice, which may also cause comprehension issue for some users.
- Some of the well-known and most user-friendly screen reading applications are expensive. It is not easy or affordable for most users with limited financial resources or users in poor countries to get it. There are some screen readers that are available as freeware which users can freely get but then their usability may depend on the type of users' hardware devices.
- There are several technological issues involved when using screen readers, including product price – which is very high for good quality screen readers, price and availability of other applications and operating systems that are required for screen readers to work, price and quality of computer or mobile security application i.e. antiviruses.
- Users need to be technologically literate to be able to understand and effectively use the software and hardware components of the screen readers. Users need to be trained for the use of technology.

- **Points to be considered in product fitting**

- As the screen readers are electronic battery or electricity powered devices, users must be trained to properly manage them and replace or charge batteries when required.
- Different people have different preferences and feel comfortable in using a particular type of screen reader depending upon the voice type, level of volume, language, speed of speech, and ease of using the software and hardware.
- Training can help in making a user understand and operate the device effectively

- **Points to be considered in product use**

- If used in an environment where there are other people, headphones would probably be required in order to avoid disturbing others.
- Other issues include whether a user needs a RBD or audio output.

- **Points to be considered in product maintenance / follow-up**

- Software updates must be installed regularly.

- **Examples of products available on the market**

- Live product search in the EASTIN website <https://www.eastin.eu/en/searches/products/list?iso=223912>

Source

This Fact Sheet was compiled in 2021 by an international team of experts, to provide the initial knowledge base for a project ("An online system to assist the selection of assistive product") supported by the World Health Organization in 2020-2021 within the GATE Initiative (Global collaboration on Assistive Product). Fact Sheets were compiled for each of the 50 types of products included in the WHO APL (Assistive Product Priority List).

The team was composed of Renzo Andrich (Italy, group leader), Natasha Layton (Australia), Stefan von Prondzinski (Italy), Jerry Weisman (USA), Silvana Contepomi (Argentina) and Hasan Minto (Pakistan).

The project led to a prototype online tool called ASPREX (ASsistive PProduct EXplorer). At the end of the project, it was transferred to a WHO collaborating center (the Global Disability Hub in the UK), in view of possible future developments.