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# Arabic Screen Reading

# Solutions

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A screen reader is a software application that enables people with severe visual impairments to use a computer. In addition to providing information about textual content a screen readers are also capable of providing information about icons, menus, dialogue boxes, files and folders enabling the user to also navigate through and use the computer more effectively.

A screen reader uses a Text-To-Speech (TTS) engine (also known as Speech Synthesizer) to convert on-screen information into speech, which can then be heard through earphones or speakers in various voices (e.g. male, female, high-pitch, low-pitch, etc) using a "TTS voice bundle" software. In addition to speech feedback, some screen readers are also capable of providing information in Braille. An external hardware device, known as a refreshable Braille display is needed for this. A refreshable Braille display contains one or more rows of cells. Each cell can be formed into the shape of a Braille character, a series of dots that are similar to domino dots in their layout. As the information on the computer screen changes, so does the Braille characters on the display change, providing refreshable information directly from the computer.

Majority of the functions of a screen reader (reading part or whole of a document, navigating web pages, opening and closing files, editing and listening to music) can be accessed via keyboard shortcuts (i.e. a combination of specific keyboard strokes that would execute a specific action on the computer (e.g. pressing the CTRL+ESC keys together on a computer with the Windows Operating System will result in opening the "Windows Start Menu")). Visually impaired computer users operate the computer using a variety of keyboard shortcut commands instead of using a mouse. So, screen readers also have to be compatible to be operated using keyboard shortcuts.

Screen reading technology is relatively new in the Arabic language as TTS engines capable of supporting Arabic have been development in recent times. The following is a summary of various Arabic screen readers available in the market along with details of the speech synthesizers & voices used by them.

## Ibsar:

Ibsar is an Arabic- and English-language voice output optical character recognition and screen reader program and web browser designed for use by individuals who are blind or have low vision. This integrated program is based on Sakhr Arabic/English text to speech (TTS) and optical character recognition (OCR) engines. The program reads printed books and documents aloud as well as electronic files. Screen content is read with a high quality human voice. The screen reader function works with most software programs in Arabic and English. Arabic- and English-language web sites are read aloud. The program also provides voice output to help the user to write electronic text in Arabic or English. Files can be saved and printed in Braille. The program also provides voice output for sending, receiving, writing, reading, and managing e-mail messages. A tutorial system trains the user to manage the program using a standard keyboard.

The software can read out both Arabic and English language text. Ibsar supports complex tasks such as reading/operating MS Excel documents via text-to-speech output and keyboard strokes and also supports electronic Braille input/output yet using Braille displays and perkins-style keyboards.

Ibsar is designed as quite a "closed" system with limited consideration towards expandability and portability. Ibsar supports very limited form of scripting abilities compared to its counterparts like Arabic JAWS. However, despite its limitations Ibsar is highly used among the Arabic blind community due the high quality and clarity of its speech synthesis and voices. Recent tests conducted by MADA of the OCR feature of Ibsar demonstrated only 5% - 10% accuracy for hand written Arabic text. The challenges to having accurate Arabic OCR are compounded by the stylized nature of Arabic scripts.

*Operating Systems:* Windows XP, Vista, 7 (32 bit and 64 bit machines)

*Price:* US $ 3,000 (Approx) for Single user license

Further information about Ibsar screen reading software can be found by visiting the following link: http://www.facebook.com/note.php?note_id=10150089544751566

## Hal:

Hal is the screen-reading solution from Dolphin. Hal Arabic Screen Reader is a voice output screen reader program designed for use by individuals who are blind or have low vision. It reads the full screen, including text, dialog boxes, icons, buttons, menus, and controls, with voice and electronic Braille input/output in Arabic.

Hal Arabic uses Babel speech synthesizer and comes bundled with Arabic Acapela voices. Compatibility with MS Office applications is available. The Arabic version of Hal also comes with dual language support for English text too. There are only Windows versions available for this software. Overall Hal (Arabic) contains all the features of a "fully loaded" mainstream screen reader designed for people with Visual Impairments. But unfortunately the Arabic speech quality of its synthesizer is nowhere close to some of its counterparts.

*Operating Systems:* Windows XP, Vista, 7 (32 bit and 64 bit machines)

*Price:* US $ 1,300 (Approx) for Single user license

Further information about Arabic HAL screen reading software can be found by visiting the following link: http://www.nattiq.com/en/http%3A/%252Fwww.nattiq.com/en/node/hal

## JAWS:

JAWS (Job Access With Speech) is perhaps the most versatile and stable Arabic screen reading solution out there. JAWS for Windows installs its own speech synthesizer software, Eloquence, and Nuance RealSpeak Solo. Two Acapela Arabic voices come bundled with JAWS Arabic. It is also compatible with the native Windows speech synthesizer (SAPI 4 & SAPI 5). This allows JAWS to automatically switch the speech between Arabic/English and other supported languages on the same page.

All standard Windows applications, including Microsoft Office Suite, are supported. Microsoft Internet Explorer is supported, including special features such as links lists, frames lists, forms mode, HTML tables, and graphic labels, Windows notification balloons. A unique scripting language allows customization of nonstandard Windows applications and proprietary software, while other tools allow customization without the need to write scripts. Output is provided to most refreshable Braille displays in computer or Grade 2 Braille.

Extensive Arabic language training materials in audio, Braille, and DAISY formats are also provided with JAWS Arabic.

*Operating Systems:* Windows XP, Vista, 7 (32 bit and 64 bit machines)

*Price:* US $ 1,800 (Approx) for Single user license

Further information about Arabic JAWS screen reading software can be found by visiting the following link: http://www.medialogarabia.com/en/node/213


## Cobra:

Cobra (previously known as Virgo) is a screen-reader from BAUM. It uses its own proprietary speech synthesizer along with Arabic Acapela voices. In terms of features it is very similar to Ibsar as it too includes an OCR feature. Additionally, Cobra has a mobile phone screen-reader which works through the computer via Bluetooth.

Cobra is widely popular here primarily due to its usage within organizations like Al-Noor Institute for the Blind.

*Operating Systems:* Windows XP, Vista, 7 (32 bit and 64 bit machines)

*Price:* US $ 2,850 (Approx) for Single user license

Further information about Arabic Cobra screen reading software can be found by visiting the following link: http://visiotechnology.com/?page_id=38


## NVDA Arabic:

NVDA (Non Visual Desktop Access) Arabic is the only open source Arabic screen reader. Initially NVDA Arabic was designed to work with the Babel speech synthesizer but in recent times newer versions of NVDA Arabic are SAPI 4 and SAPI 5 compatible. It uses the Acapela Arabic voices. The overall solution is often complex to setup as NVDA Arabic does not come bundled with any TTS or Arabic voices making the installation process a cumbersome three part procedure (i.e. NVDA Arabic + TTS + Acapela voice).

Feature wise NVDA Arabic supports Grade 2 Braille output and also the default MS Windows browser (Internet Explorer) and basic features of Outlook are supported. NVDA has drivers available to work with majority of the popular Braille displays. Major open source applications like Mozilla Firefox, Thunderbird, and Open Office Suite are compatible with NVDA.

NVDA Arabic tends to have a moderately active development and support community. Currently the NVDA Arabic development team is working on developing the first Arabic open source TTS engine.

*Operating Systems:* Windows XP, Vista, 7 (32 bit and 64 bit machines), Linux

*Price:* N/A. The screen-reader itself is free (open-source). However, costs are incurred towards acquiring an Arabic TTS and Acapela voice licenses.

Further information about NVDA Arabic screen reading software can be found by visiting the following link: http://arabic-nvda.org/

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