



knowledge without boundaries

# FOSS Accessibility Tools for Libraries

## Step-By-Step Guide

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## Table of Contents

<b>Table of Contents</b> .....	<b>2</b>
<b>Introduction</b> .....	<b>3</b>
<b>Languages and Localisations</b> .....	<b>3</b>
<b>Display Enhancement Tools - to support users who need larger text, different colours, screen magnification, etc...</b> .....	<b>4</b>
DESKTOPZOOM.....	4
QUICKRES .....	8
RAPIDSET .....	9
SONAR.....	11
VIRTUAL MAGNIFYING GLASS .....	12
<b>Audio Tools – to support users who prefer to listen to the spoken word rather than (or in addition to) reading text.</b> .....	<b>14</b>
SYNTHETIC VOICES .....	15
BALABOLKA (TTS).....	16
DSPEECH (TTS) .....	19
AUDACITY .....	20
LINGOES .....	23
POWERTALK .....	25
WORDTALK.....	28
<b>ScreenReaders – for completely blind users to be able to operate a computer</b> .....	<b>30</b>
NON VISUAL DESKTOP ACCESS (NVDA).....	30
THUNDER.....	32
<b>Writing Tools – to help users with entering text or with spelling</b> .....	<b>33</b>
DASHER.....	34
LETMETYPE.....	36
<b>Planning Tools – to help users make notes or create schematics</b> .....	<b>37</b>
FREEMIND .....	38
XMIND .....	39

## Introduction

Using technology appropriately can enhance the library experience for all users, but is particularly significant for users with disabilities. Creating electronic resources as accessibly as possible is a useful starting point (see [www.jisctechdis.ac.uk/accessibilityessentials](http://www.jisctechdis.ac.uk/accessibilityessentials) for guidance on using Word, PDFs and PowerPoint accessibly), but for some users specific technologies will be needed to access those resources. FOSS (or FLOSS - Free/Libre/Open Source Software) is software distributed on licences that allow you to use and adapt the source code. Free refers to the 'freedom' to use and edit the programme, but much of it is also available free of charge.

Many FOSS tools can be of benefit to library patrons and staff, those with disabilities as well as those without. There are literally thousands of FOSS tools available, from portfolio tools and software for designing accessible learning objects to simple widgets and programmes to help you see the cursor on your screen.

There are many tools available to help your library users gain access to the resources you have available. First of all you need to identify what accessibility needs your users have that are preventing them from accessing your resources easily. Of course you may also have staff with disabilities as well, so don't forget to identify their needs too.

Once you have identified your priorities in terms of which accessibility tools you will offer to your users, you then have a choice of software options available from amongst the many FOSS tools available.

For case studies of how some FOSS tools have been used in EIFL libraries and the impact they have had on library users (students and staff) see [www.eifl.net/disability-tools](http://www.eifl.net/disability-tools)

For further information about accessibility software and tools to aid disabled users, see [www.jisctechdis.ac.uk/technologymatters](http://www.jisctechdis.ac.uk/technologymatters)

## Languages and Localisations

Many FOSS accessibility tools are available in a variety of languages. Some of the tools described here are available in languages other than English – sometimes you need to download a version in the language you prefer, and sometimes there is just one version of the software to install, but a choice of operating languages within. Here are some examples of dedicated accessibility software in other languages.

- There is an Arabic version of the **ATbar**, a browser plug-in containing tools for spell checking and changing font and background characteristics on web pages  
<http://access.ecs.soton.ac.uk/blog/atbar/>
- The United Nations launched in May 2011 the second version of **Miftaah**, a package of FOSS in Arabic. The host site has recently been hacked but if you search the internet for 'Miftaah accessibility' you should find the new home. At the time of this writing, we have not been able to test the viability and trustworthiness of any new Miftaah related sites.
- **Duali** is an Arabic spellchecking tool: <http://projects.arabeyes.org/project.php?proj=Duali>
- **Khotot** is a project producing accessible Arabic fonts:  
<http://projects.arabeyes.org/project.php?proj=Khotot>
- **Clubic.com** has a page dedicated to free accessibility software in French:  
[www.clubic.com/telecharger/windows/logiciels-d-accessibilite/](http://www.clubic.com/telecharger/windows/logiciels-d-accessibilite/)

- French article describing NVDA screen reader: <http://suite101.fr/article/comment-lire-une-page-web-quand-on-est-mal-voyant-ou-non-voyant--a12421>
- List of free accessibility tools in French: [www.lelogicielgratuit.com/telechargement/accessibilite/?systeme=185&langue=0&architecture=0&tri=classement&direction=DESC](http://www.lelogicielgratuit.com/telechargement/accessibilite/?systeme=185&langue=0&architecture=0&tri=classement&direction=DESC)

## Display Enhancement Tools - to support users who need larger text, different colours, screen magnification, etc...

Many users need help with the way text is displayed on screen. They may need to enlarge the size of the text they are reading, or even to magnify a part of the screen or the entire screen. They may even need to change the screen resolution altogether to aid their reading experience. They may need to change the colour of documents or web pages to be better able to read them. They may need assistance to locate the mouse cursor on the screen.

There are many FOSS tools that allow users to do these tasks. Here we have selected a small range of tools which are comparatively easy to use, and all of which can be operated from a portable memory stick/pen drive, so you do not even have to install them on computers – you could simply loan out to library users the portable memory stick/pen drives containing the software.

The standard support provided on most personal computer operating systems is quite flexible and often includes some similar features to the FOSS tools described below, but often the settings are not easy to find, or are locked down for security purposes. Many libraries remove public user access to the Control Panel (Windows), for example, which is where some of these functions could be found.

The tools we will highlight in this section are:

- Desktop Zoom (magnification of all or part of the screen).
- QuickRes (screen resolution change).
- RapidSet (change of font and/or background colours).
- Sonar (making the mouse cursor more visible).
- Virtual Magnifying Glass (magnification of part of the screen).

### DesktopZoom

DesktopZoom is a zoom/magnify programme with options to Zoom either an area around the mouse, a fixed window or the entire desktop. The mouse can also be used inside the zoom window, meaning the magnified window persists even when you move to new pages or documents.

The mouse icon can be re-sized or replaced with a cross-hair, for easier visibility. Colours of the entire desktop can be inverted for clarity and the original screen can be made transparent so the user can see where on the original screen the current-magnified portion is located. The zoomed area can be illustrated in a number of ways to improve navigation for visually impaired users (see Figure 1).

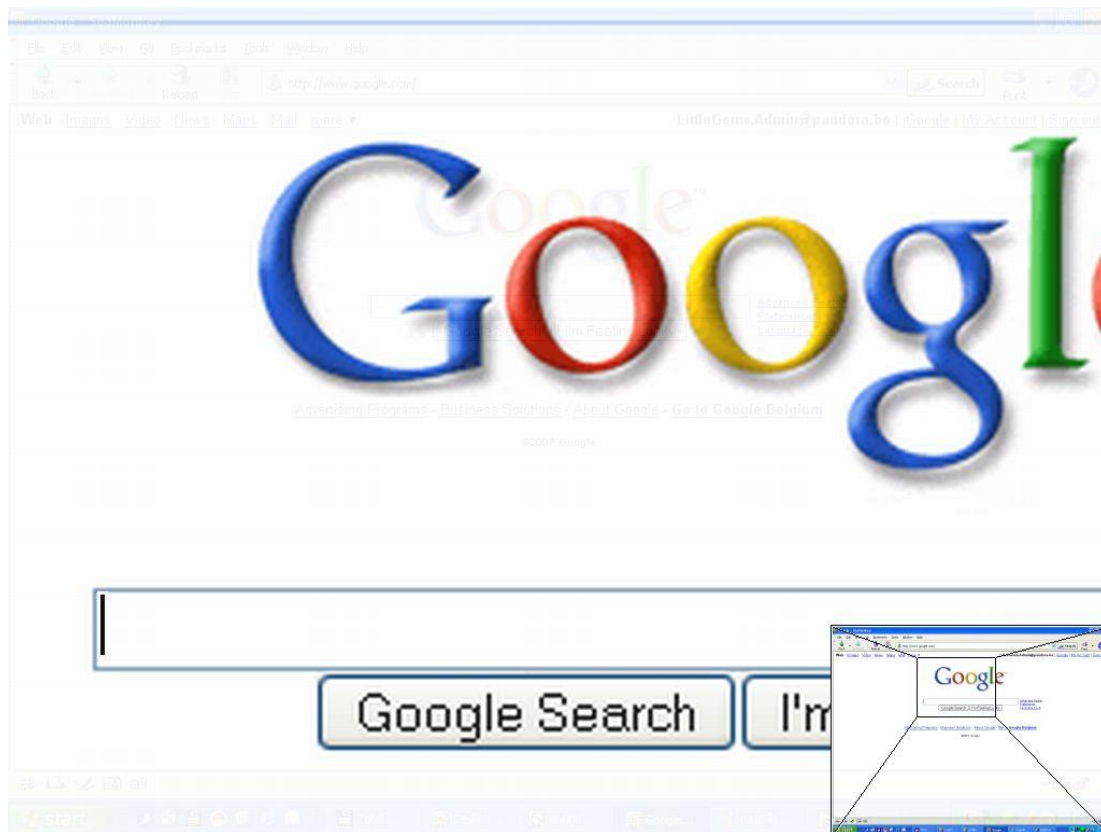


Figure 1. Desktop Zoom in action, showing the magnification of a small part of the screen.

You can download DesktopZoom from <http://users.telenet.be/littlegems/MySoft/DesktopZoom/Index.html>. The programme usually needs no administrator privileges to install – simply download the Zip file and extract the contents to a folder. Double clicking the DesktopZoom application in the folder will start the programme. Various options can be set using the DesktopZoom control panel, which can be opened at any time by clicking the DesktopZoom icon in the computer's system tray (it looks like a computer with a magnifying glass on top – see Figure 2).

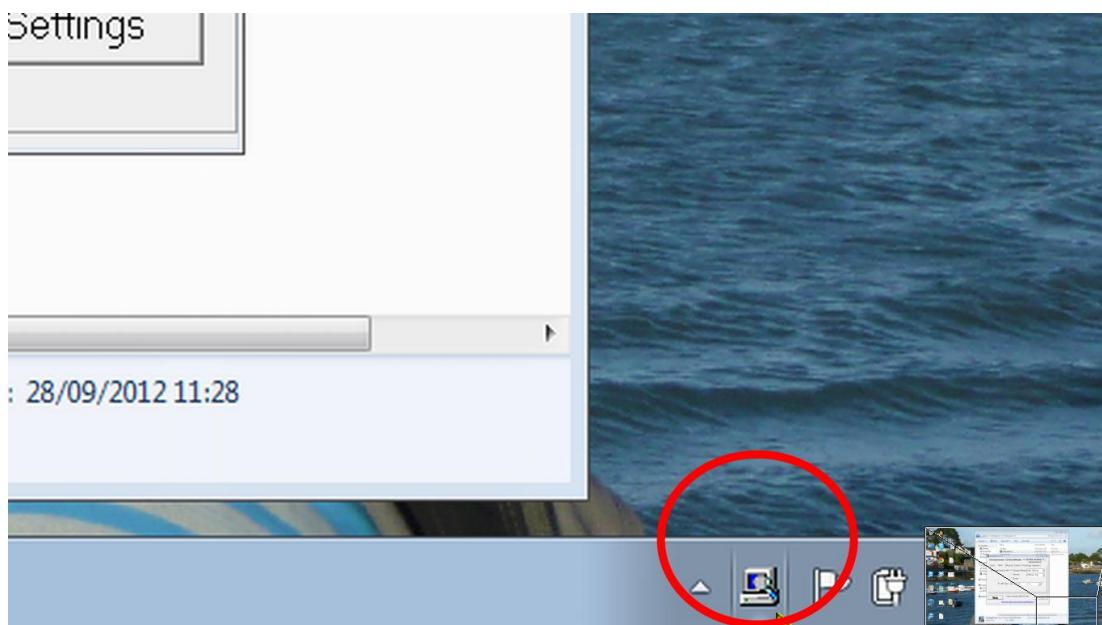


Figure 2. The Desktop Zoom control panel icon in the System Tray.

In the control panel you can select option 1 '**Around Mouse**' (see Figure 3) which enables you to:

- set the level of magnification (zoom) and how the user can adjust this (most commonly you would set it so the user can adjust the magnification by using the arrow keys);
- change the mouse cursor to something more visible like a yellow triangle (and change the size of it too);
- the **Position** tab enables you to decide whether to have a portion of the screen dedicated to showing the magnified area, or whether to move the magnified area around the screen following the cursor;
- the **Transparency** tab enables you to see a little of the original screen through the magnified portion – this may sound like it would be confusing, but actually it really helps to relate the magnified panel to its position on the full screen.

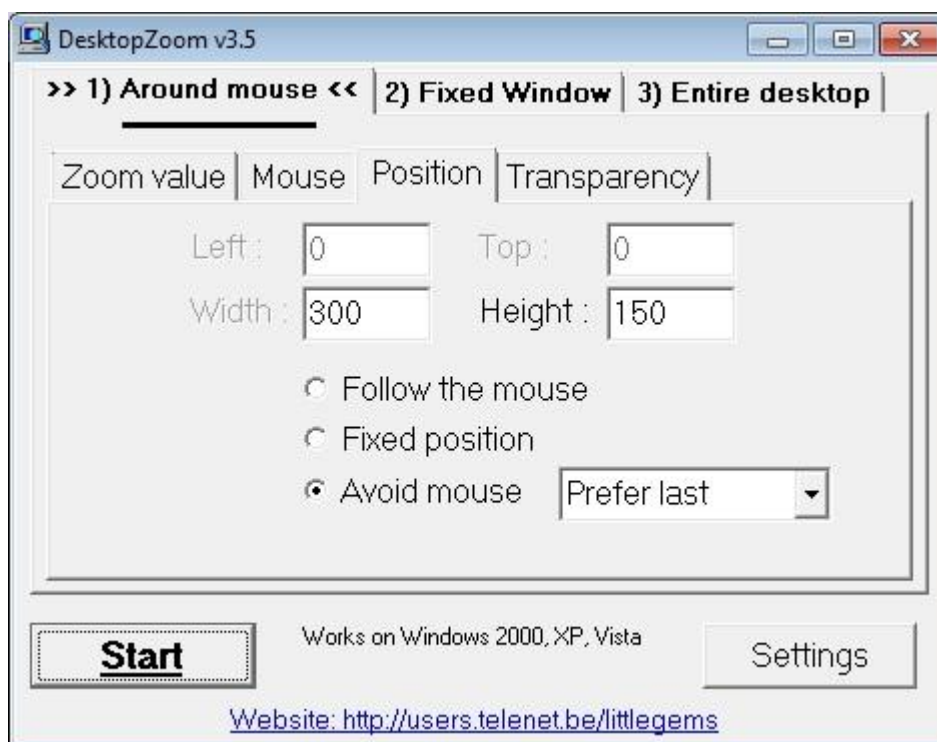


Figure 3: DesktopZoom 'Around Mouse' Options

Option 2 '**Fixed Window**' (see Figure 4) enables you to:

- enable a fixed panel on the screen displaying the magnified area;
- set the size and location of the panel;
- set the transparency level of the panel;
- size of the mouse cursor.

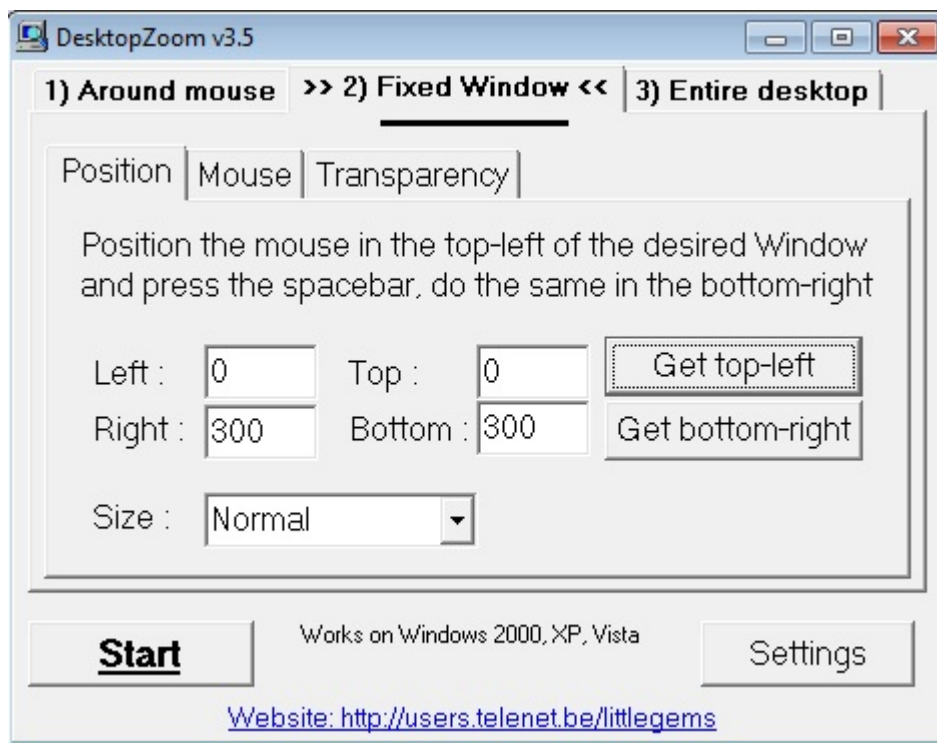


Figure 4. DesktopZoom 'Fixed Window' Options

Option 3 '**Entire Desktop**' (see Figure 5) enables you to:

- set the level of magnification (zoom);
- enable the user to adjust the magnification level using the arrow keys;
- change the mouse cursor shape and colour;
- have the programme speak to you.

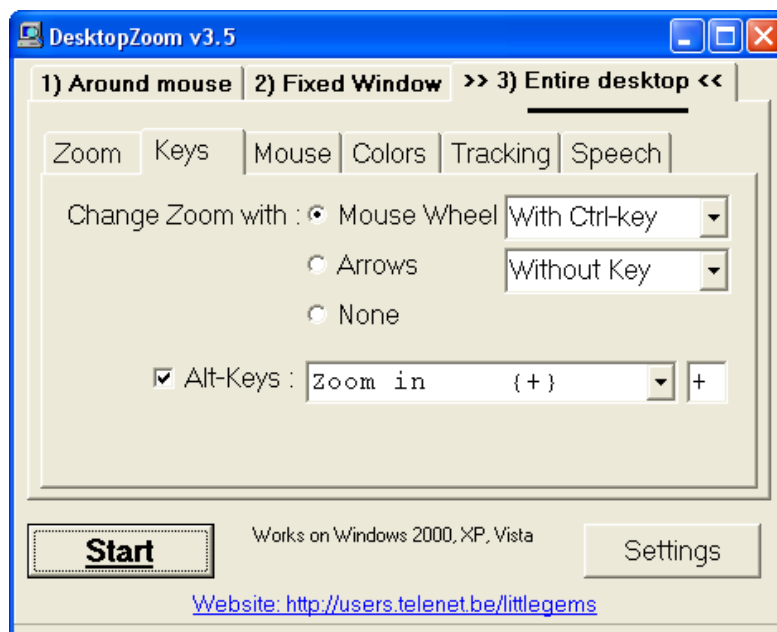


Figure 5. DesktopZoom 'Entire Desktop' Options.

You can watch a video demonstrating DesktopZoom here: [www.youtube.com/watch?v=qL\\_us70FS80](http://www.youtube.com/watch?v=qL_us70FS80).

## QuickRes

QuickRes is a simple tool with large buttons to enable the user to quickly change the resolution of the display. Text and icons on the screen can be made to appear larger by reducing the number of pixels displayed over the screen.

You can download QuickRes from [www.dougknox.com/xp/utis/xp\\_quickres.htm](http://www.dougknox.com/xp/utis/xp_quickres.htm) (click on the QuickRes.exe file to download). The programme usually needs no administrator privileges to install – simply download the Zip file and extract the contents to a folder. Double clicking the QuickRes application in the folder will start the programme and put the QuickRes icon into the computer's System Tray (see Figure 6).

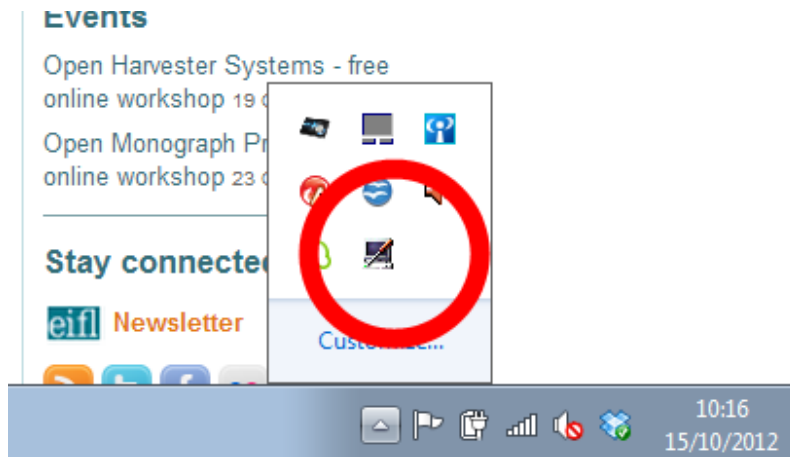


Figure 6. QuickRes control panel icon in the System Tray.

Hovering the cursor over this icon will bring up the Current Resolution (see Figure 7)

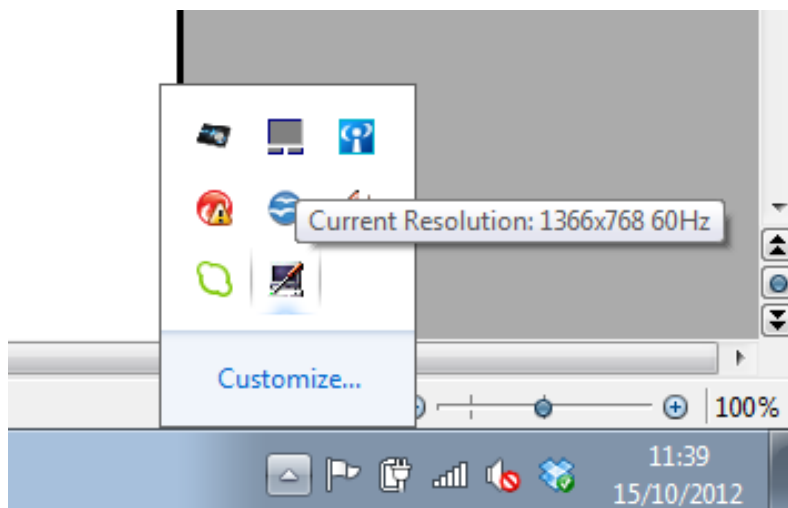


Figure 7. Current resolution displayed when cursor hovers over QuickRes icon in the System Tray

Right-clicking on the icon will bring up four different screen resolutions to choose from, plus an option to open the computer's Display Properties panel within Windows (see Figure 8).



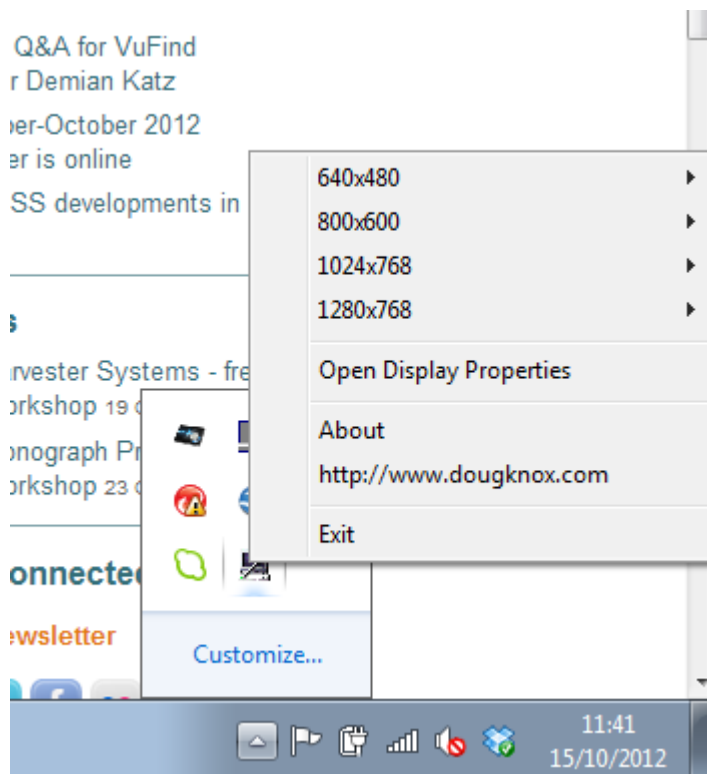


Figure 8. Screen resolution options in QuickRes

## Rapidset

Rapidset allows users to set the background and font colours to individual preferences. It previews an example of the changes before the user commits to one. It is typically used within a word processor application.

You can download Rapidset from [www.fx-software.co.uk/assistive.htm](http://www.fx-software.co.uk/assistive.htm) (Scroll down to locate Rapidset in the list, then click the Download link to obtain the exe file). Opening the exe file gives you a choice of installation languages (see Figure 9). Choose one and click OK, then proceed through the installation as directed.

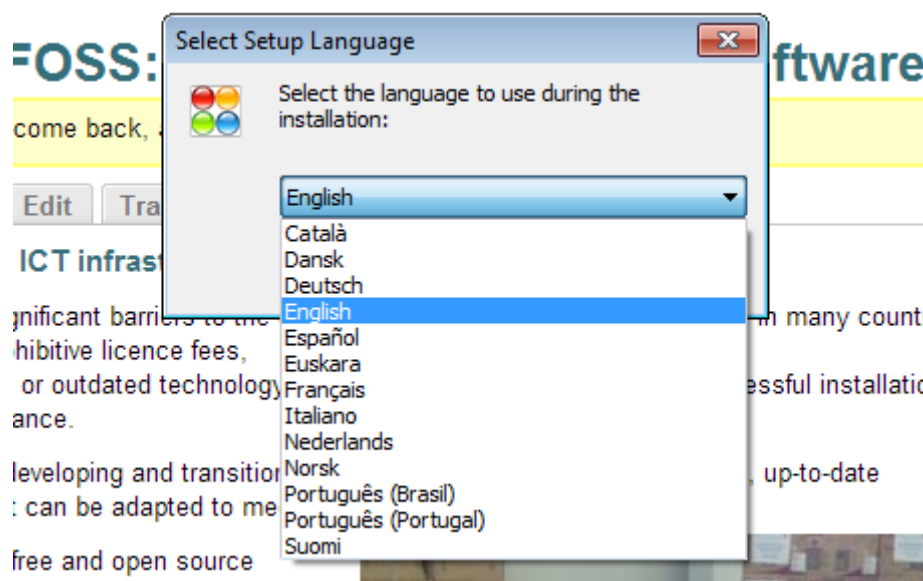


Figure 9: Choice of language in RapidSet installation instructions

Opening RapidSet produces a panel of options including **Background Colour** and **Font Colour** (see Figure 10).

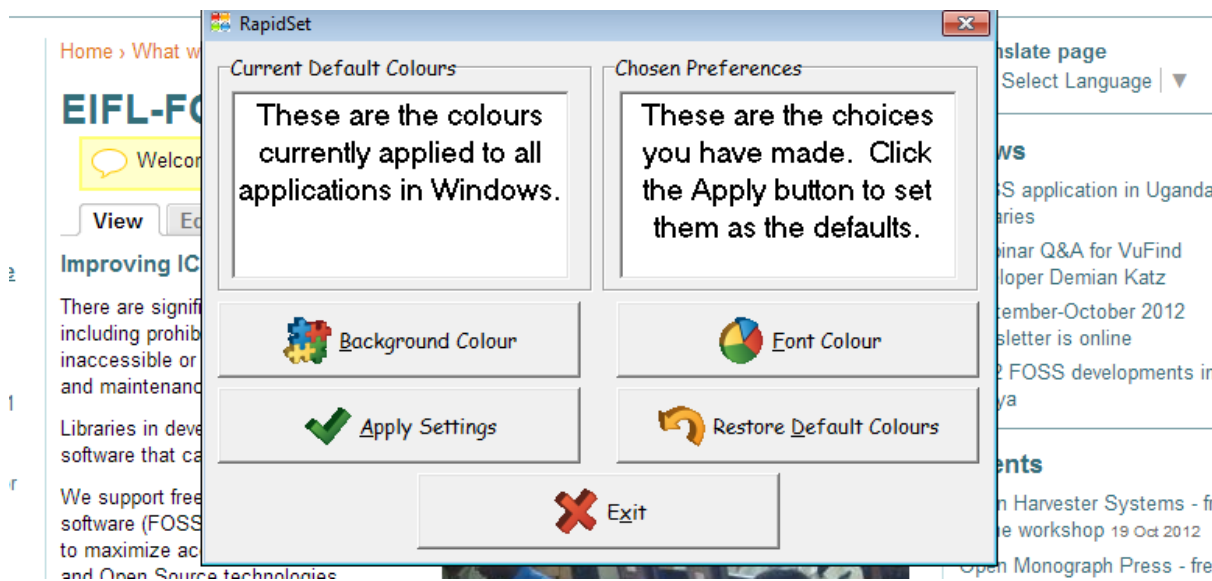


Figure 10. RapidSet configuration panel.

Click on **Background Colour**, then your preferred colour, then OK. Repeat with **Font Colour**. The Chosen Preferences pane will show you the result of your chosen combination. In Figure 11 below the user has selected a blue Background with yellow Font.

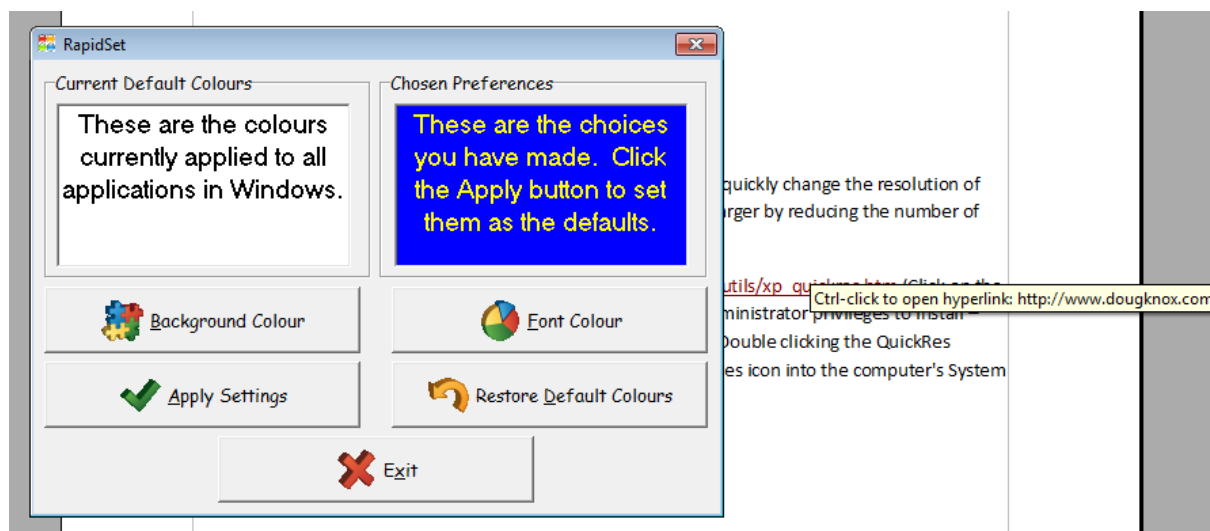


Figure 11. The user applies their preferred colours.

Clicking Apply Settings will then convert documents or web pages to this colour scheme, unless they have been designed to ignore this kind of change. Here is the same screen after clicking Apply Settings – you will see the document behind the RapidSet control panel in the example (Figure 12) has now changed colour to meet the preferences set in RapidSet. The Font of the RapidSet control panel has also changed colour.

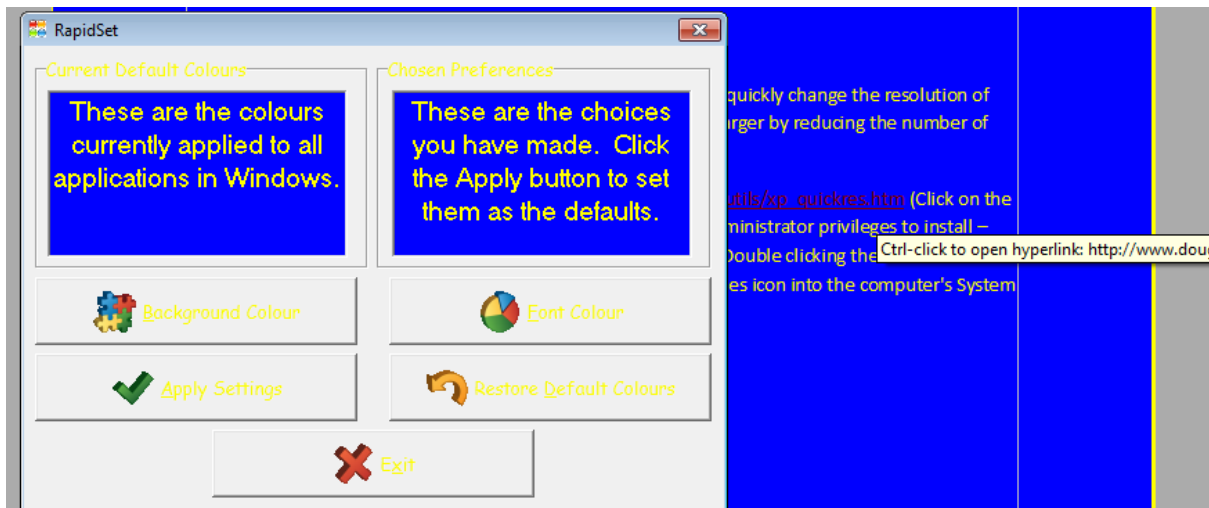


Figure 12. Illustration of the user's colour choices in action. The document behind the panel has changed colour, as has the text of the panel itself.

You can watch a video demonstration of Rapidset here: [www.youtube.com/watch?v=WUcMVm-0bcQ](http://www.youtube.com/watch?v=WUcMVm-0bcQ).

## Sonar

Sonar provides an expanded ring or square around the mouse pointer for users who have difficulty locating the pointer or cursor. Unlike the Windows built-in version, this package places a permanent ring around the pointer. User can alter the colour and size of the Sonar ring.

Through the relevant keyboard shortcut, users can access the Settings dialogue (CTRL + ALT + A) where they can change the shape to either a circle or a square, alter the diameter of the shape, alter the width of the line and change the colour.

You can download Sonar from [www.fx-software.co.uk/assistive.htm](http://www.fx-software.co.uk/assistive.htm) (Scroll down to locate Rapidset in the list, then click the Download link to obtain the exe file). Opening the exe file gives you a choice of installation languages (see Figure 13). Choose one and click OK, then proceed through the installation as directed.

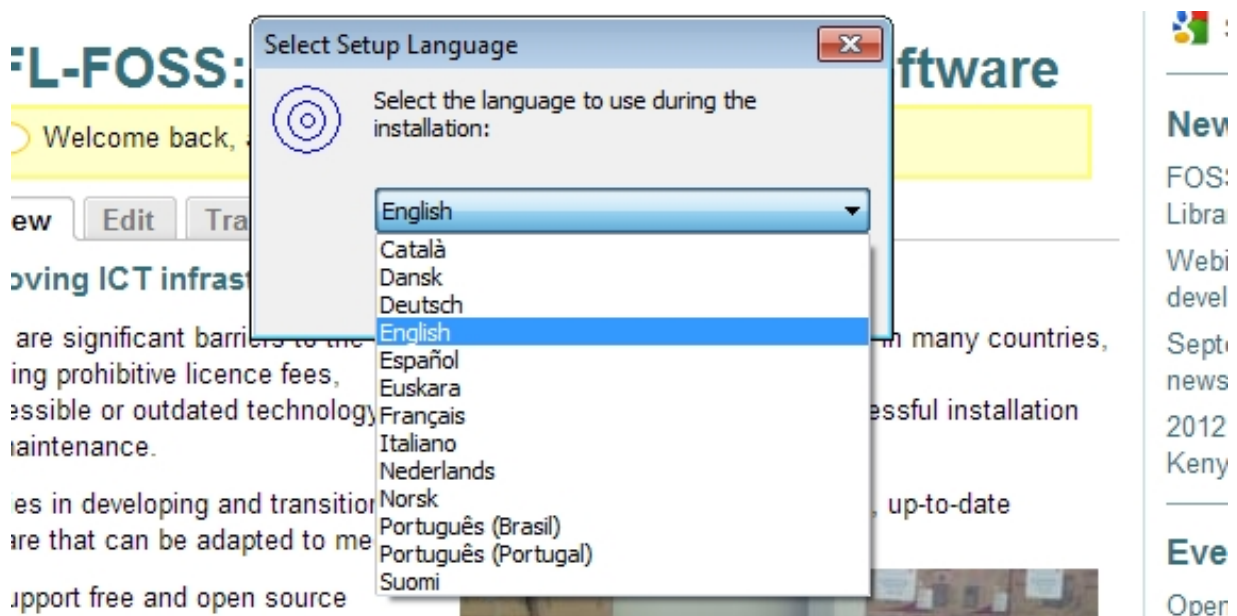


Figure 13. Choice of language for Sonar installation.

When Sonar is running it puts a ring around the cursor. You can toggle the cursor ring on or off by right-clicking on the Sonar icon in the system tray and choosing Show/Hide (see Figure 14).

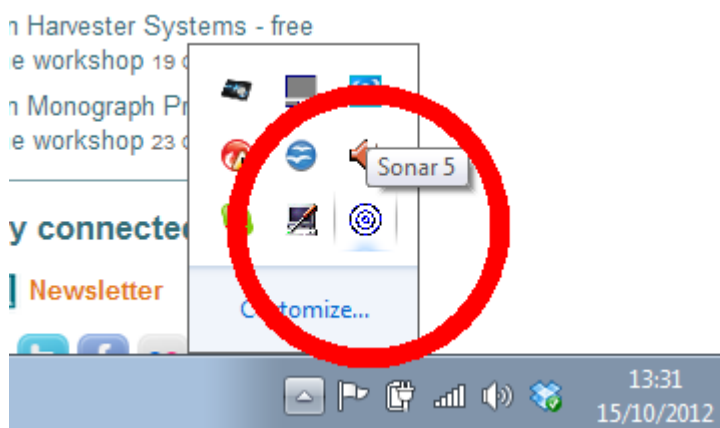


Figure 14. Sonar icon in the System Tray.

You can change the size, shape and colour of the cursor ring by **right-clicking** on the Sonar icon in the system tray (see Figure 14 above) and choosing Settings (see Figure 15).

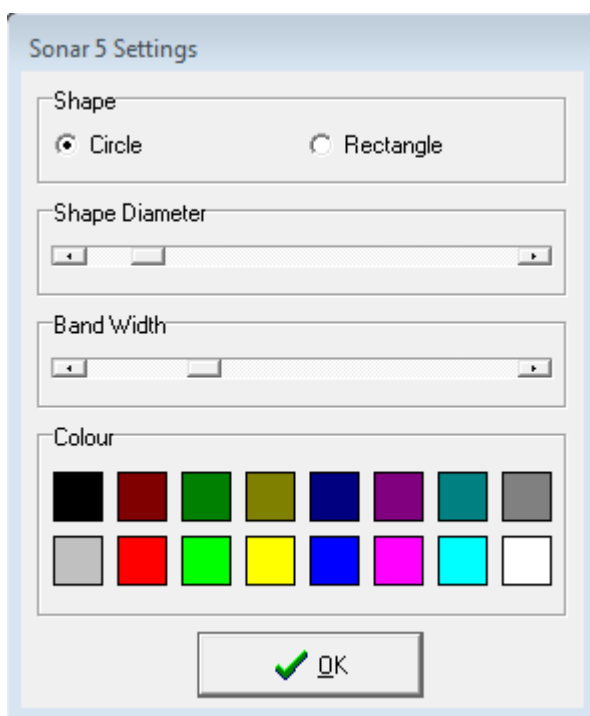


Figure 15. The characteristics of Sonar can be adjusted using the Settings panel.

## Virtual Magnifying Glass

Virtual Magnifying Glass is designed for anyone who needs to magnify a part of the screen. Unlike similar programmes it does not open a separate window for the output magnification but instead puts a movable magnifying glass on screen at the mouse position. Thus it changes as the mouse moves.

Virtual Magnifying Glass works in Windows 2000 or later, but on Vista or later requires turning Aero off (see [www.youtube.com/watch?v=F1\\_N\\_1PnAx8](http://www.youtube.com/watch?v=F1_N_1PnAx8)). Mac version also available.

You can download Virtual Magnifying Glass from <http://sourceforge.net/projects/magnifier/> Opening the exe file gives you a choice of installation languages (see Figure 16). Choose one and proceed through the remainder of the installation.

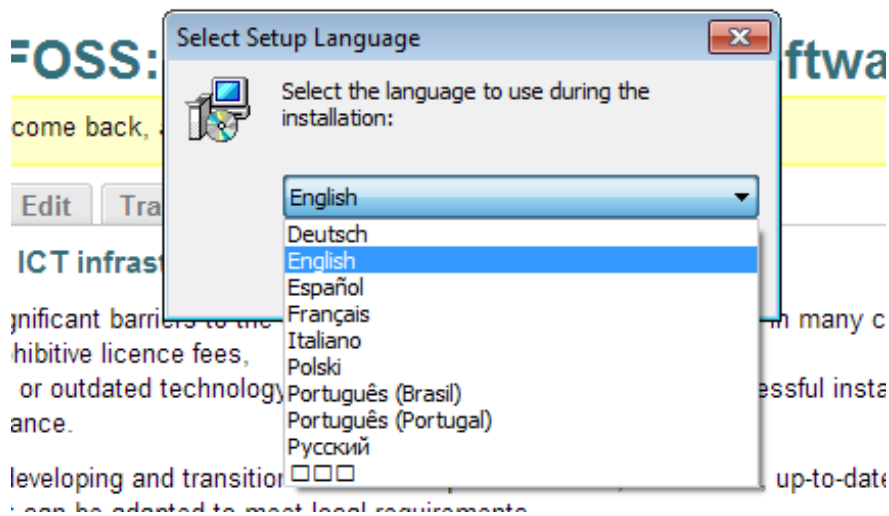


Figure 16. Selecting language during installation of Virtual Magnifying Glass

When the Virtual Magnifying Glass programme opens, it offers a choice of two operating modes. Classic Mode places a magnifying glass on screen, which can be moved around using the mouse, but which disappears upon a click of the mouse button (see Figure 17).



Figure 17. The on-screen magnifying glass in action.

Choosing Dynamic mode means that the magnifying glass can only be moved around by the arrow keys, but also that the magnifying glass persists after clicking (see Figure 18).

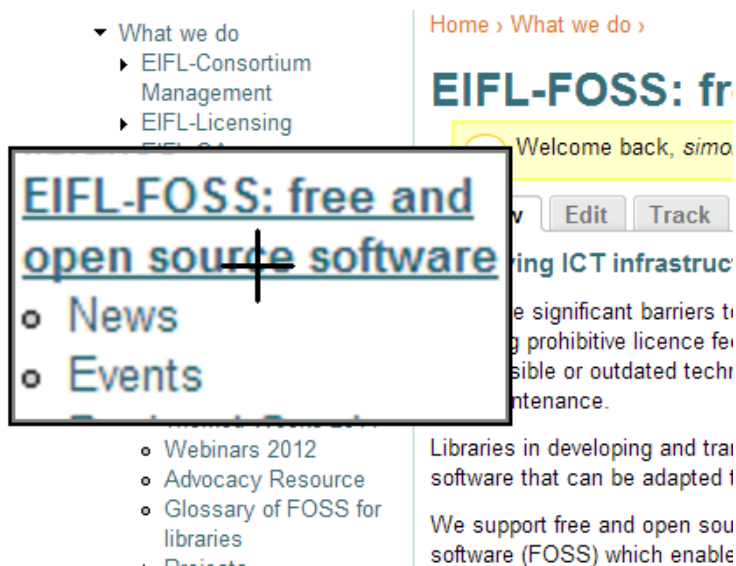


Figure 18. The 'Dynamic' mode means the on-screen magnifying glass persists through clicking (the cross-hair acting as the mouse cursor).

By right-clicking the Virtual Magnifying Glass icon in the system tray (see Figure 19), you can adjust the size and shape of the magnified area, the colour and thickness of the border, the level of magnification required, and an option to translate the list of options into a variety of languages.

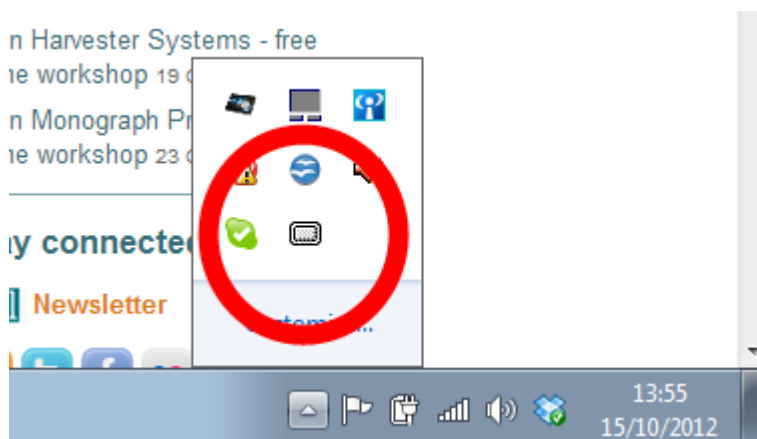


Figure 19. The Virtual Magnifying Glass icon in the System Tray.

You can watch a demonstration of how Sonar works here: [www.youtube.com/watch?v=2ypODhefL4Y](http://www.youtube.com/watch?v=2ypODhefL4Y)

**Audio Tools – to support users who prefer to listen to the spoken word rather than (or in addition to) reading text.**

Many users prefer to listen to text being read aloud than to read it from the screen. This could be simply a matter of preference, or it could be because they have difficulty reading due to poor vision, dyslexia, low literacy skills or because they are not reading in their first language. Blind users would not normally use these tools – they would use Screen Reading software (see later section). Whatever the reason, it is good practice to allow library users to listen to text if they wish to do so.

Some of the tools featured here will use Synthetic Voices (see next section) to read aloud the text. Others allow you to record human voices reading. There are many FOSS tools that allow users to do these tasks. Here we have selected a small range of tools which are comparatively easy to use, and all of which can be operated from a portable memory stick/pen drive, so you do not even have to install them on PCs – you could simply loan out to library users the portable memory stick/pen drives containing the software.

Text-to-speech (TTS) tools take written text and deliver it in a synthetic voice. It can benefit many different library users and transform their understanding and enjoyment of the text. Therefore it is vitally important that computer terminals are available which have sound cards installed. Headphones may need to be provided, or you may need to put up a sign asking users to bring headphones with them if they wish to use these tools. For an introduction to Text-To-Speech software see this short video: [www.jisctechdis.ac.uk/techdis/multinkres/detail/TTS](http://www.jisctechdis.ac.uk/techdis/multinkres/detail/TTS)

Applications vary: some require you to select text you want to read while others can read multiple common document formats, emails, web pages etc. There is even a free automated service available where you email a document to them and receive an MP3 back by return email – see [www.robobrain.org](http://www.robobrain.org) (this service is available in many languages, including English, French, Arabic, Lithuanian, Polish and Slovenian).

The tools we will highlight in this section are:

- Synthetic Voices
- Balabolka (Text-to-speech).
- DSpeech (Text-to-speech).
- Audacity (Sound recording and editing software).
- Lingoes (Speaking dictionary and translation software).
- PowerTalk (Reads aloud PowerPoint presentations).
- WordTalk (Reads aloud Word documents).

## Synthetic Voices

There are freely available synthetic voices in a variety of languages. In most cases you have to download the voice onto your machine (you could use the Windows built-in voice but the audio quality is not good) and install it using the instructions on the download website, although without also installing some Text To Speech software they will not have much functionality on their own (without additional Text To Speech software, voices are limited to only reading text in Adobe Acrobat Reader using the Read Out Loud function). To see an introductory video about Synthetic Voices click here: [www.jisctechdis.ac.uk/techdis/multinkres/detail/FOSS\\_Voice](http://www.jisctechdis.ac.uk/techdis/multinkres/detail/FOSS_Voice)

Here is a few selection of websites offering free synthetic voices, but there are far more on the web - just search on the internet for SAPI 5 and SAPI4 voices. Be aware also that some TTS tools are also available in many languages (e.g. see Balabolka below).

- [www.zero2000.com/free-text-to-speech-natural-voices.html](http://www.zero2000.com/free-text-to-speech-natural-voices.html)
- [www.bytecool.com/voices.htm](http://www.bytecool.com/voices.htm)
- [www.mediasemantics.com/bb/viewtopic.php?f=1&t=898](http://www.mediasemantics.com/bb/viewtopic.php?f=1&t=898)



## Balabolka (TTS)

Balabolka (“Chatterer” in Russian) is a free Text-To-Speech (TTS) programme for use with installed voices, but with features to improve clarity and articulation. It has a high quality feel and is easy to use. Pronunciation can be adjusted.

The on-screen text can be displayed according to the user’s preference, then read aloud and saved in most popular audio formats. Text from popular document formats (DOC, PDF, ODT, etc...) can be directly imported into audio format (MP3, WAV etc) using the software without necessarily having the text displayed on the screen. It allows users to alter a voice's rate and pitch. The user can apply a special substitution list to improve the quality of the voice's articulation – a useful feature when you want to change the spelling of words.

It is usually used to convert text from web pages and electronic documents into speech using in-built or pre-installed computer voices, usually to create an audio file for later use. Files can be split into more manageable ‘chunks’ easily.

The programme can read the clipboard content or view text from many formats - DOC, EPUB, HTML, ODT, PDF and RTF files using the internal Microsoft Speech API (SAPI). Output formats include WAV, MP3, MP4, OGG or WMA.

Languages: Balabolka has built-in voices for English, Arabic, Bulgarian, Chinese (Simplified), Chinese (Traditional), Czech, Dutch, Finnish, French, German, Hungarian, Italian, Japanese, Korean, Polish, Portuguese (Brazil), Portuguese (Portugal), Romanian, Russian, Serbian, Spanish, Turkish, Ukrainian and Vietnamese.

You can download Balabolka from [www.cross-plus-a.com/balabolka.htm](http://www.cross-plus-a.com/balabolka.htm) The programme usually needs no administrator privileges to install – simply download the Zip file and extract the contents to a folder, then run the Setup or Install file.

Opening Balabolka for the first time presents you with a blank editing window (see Figure 20).

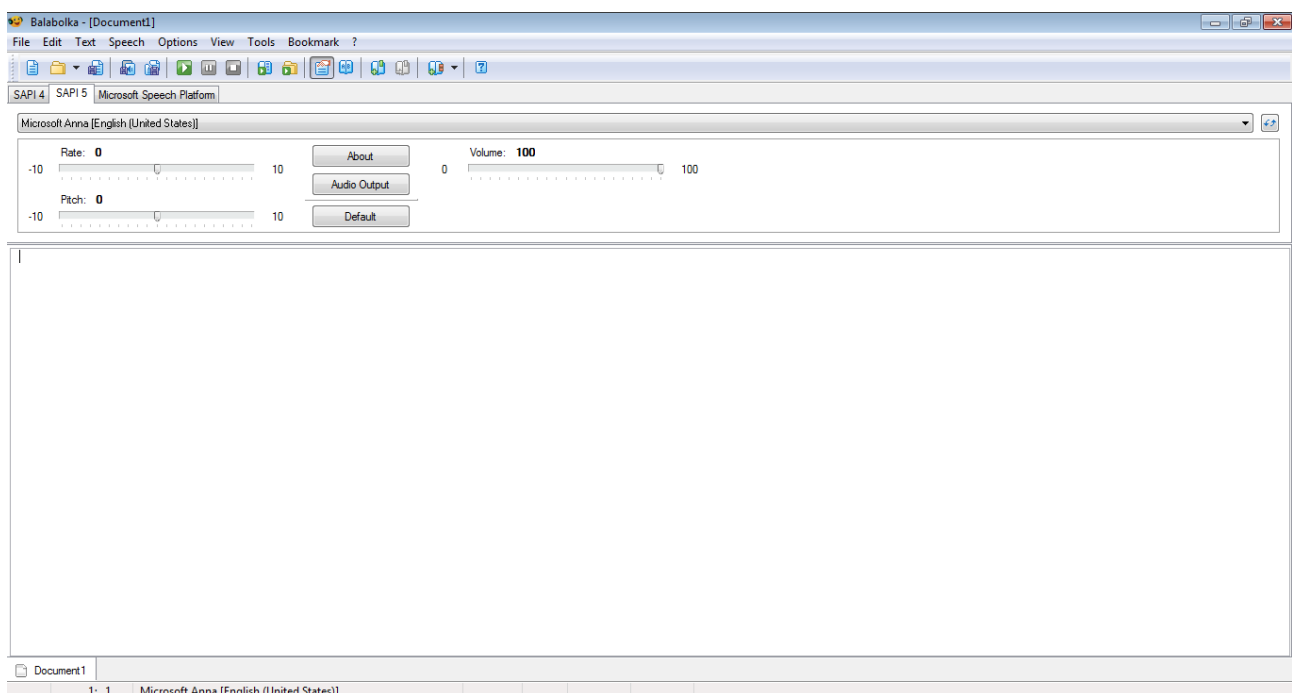


Figure 20. Balabolka editing window.



There are two principal ways to use Balabolka to read text aloud:

- a) You can copy text from a document and paste into the Balabolka main window, then use the Play and Stop buttons to read it aloud (see Figure 21).

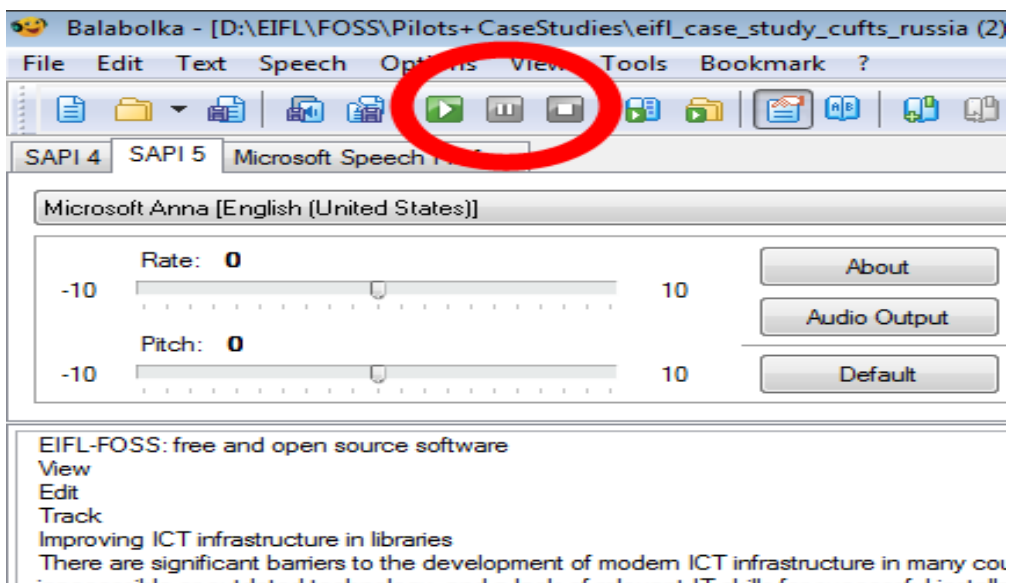


Figure 21. Balabolka editing window highlighting Play and Stop buttons.

- b) You can use the Open File icon (see Figure 22) and directly import the entire text from a DOC, EPUB, PDF, RTF, ODT or HTML document.

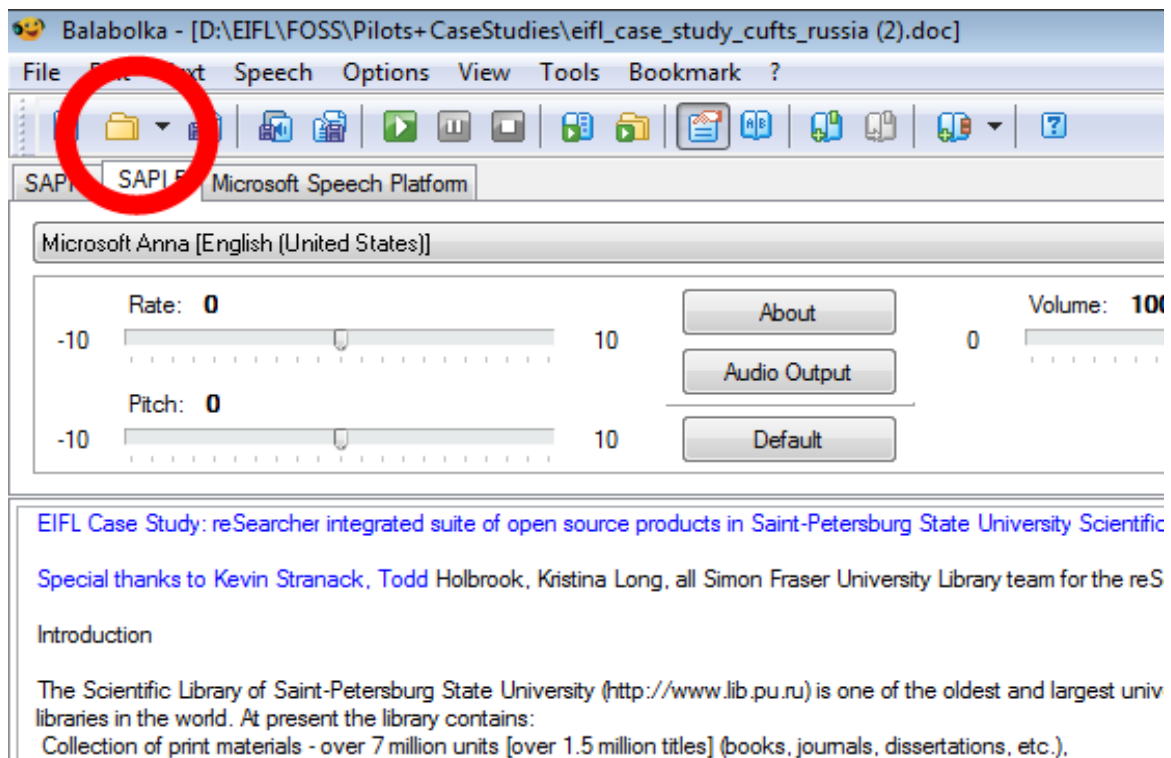


Figure 22. Balabolka with Open File button highlighted.

If you have any voices installed on your computer (see Synthetic Voices above) you can select which one is used in the audio output by using the voice selection drop-down menu (see Figure 23). This list should automatically populate with any voices installed on your machine.

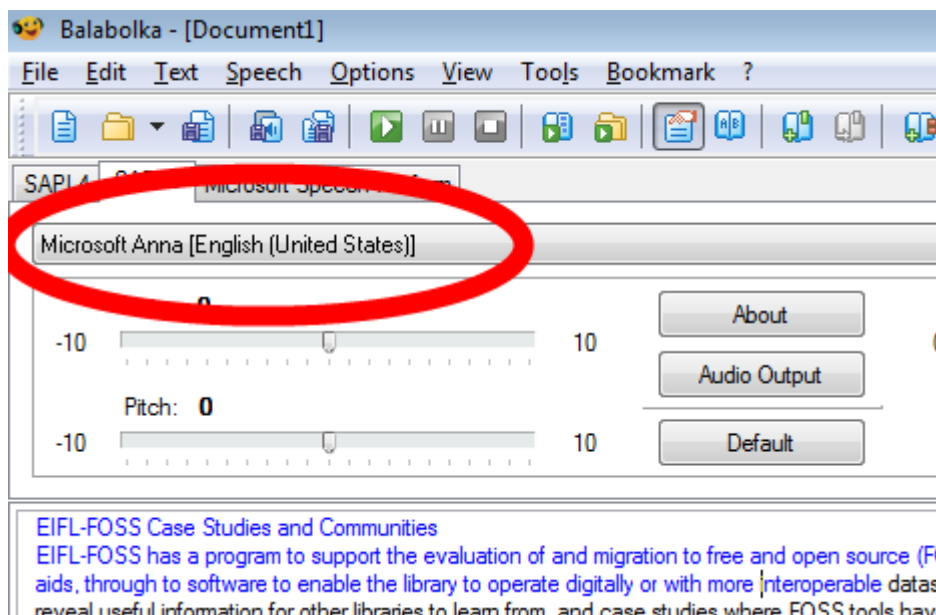


Figure 23. Balabolka showing voice selection drop-down.

You can also use Balabolka to convert printed text into an audio file for later listening. Simply use the Save Audio File button (see Figure 24) and choose which export format you prefer from the Save As Type dropdown menu – WAV, MP3, OGG, WMA, MP4, M4A.

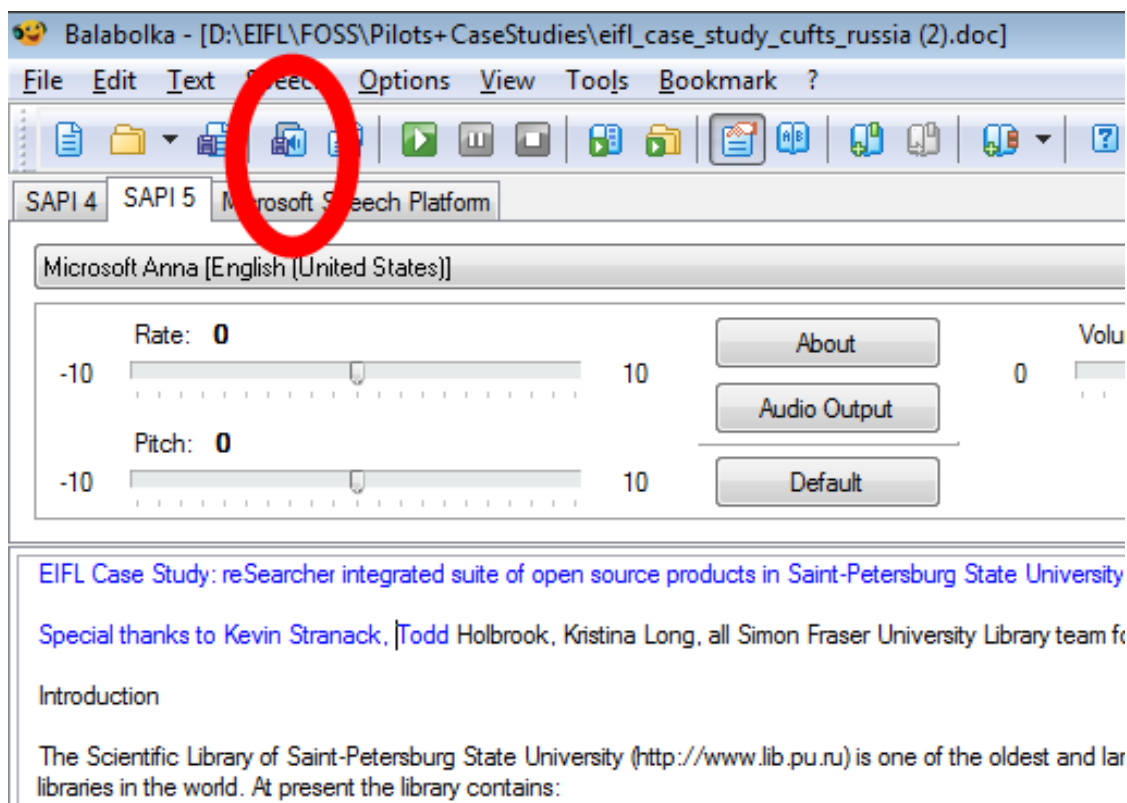


Figure 24. Balabolka highlighting the Save Audio File button.

The neighbouring button in the toolbar, the 'Split and Convert into Audio' button enables you to save one long document into several short audio clips in one easy step.

You can view a video showing how to use Balabolka here: [www.youtube.com/watch?v=Qf6lk\\_3R29o](http://www.youtube.com/watch?v=Qf6lk_3R29o)

## DSpeech (TTS)

DSpeech is a TTS (Text To Speech) programme. The application reads text aloud using any voices already installed on the computer (such as the one in Windows, or the ones listed above). Output files can be saved in many common audio formats. Text can be read back at a different pitch or speed (while speaking) for user convenience. It is usually used to convert text from web pages and electronic documents into speech using in-built or pre-installed computer voices, usually to create an audio file for later use.

Output can be saved as WAV, MP3 or OGG. Multiple voices can be applied to the same track to simulate dialogue. Text is pasted into a window or read directly from the clipboard. Pitch and speed are variable for user preference. DSpeech has integrated Automatic Speech Recognition (ASR) to recognise commands.

You can download DSpeech from <http://dimio.altervista.org/eng/> Simply download the Zip file and extract the contents to a folder, and then run the DSpeech programme. When you open DSpeech you are provided with a window into which you can paste text to be read aloud. If the text runs off the side of the window, go to Edit and choose Word Wrap. To hear the text read aloud press Speak (see Figure 25). You can highlight the words as they are spoken by checking the Show Tracking box (see Figure 25).

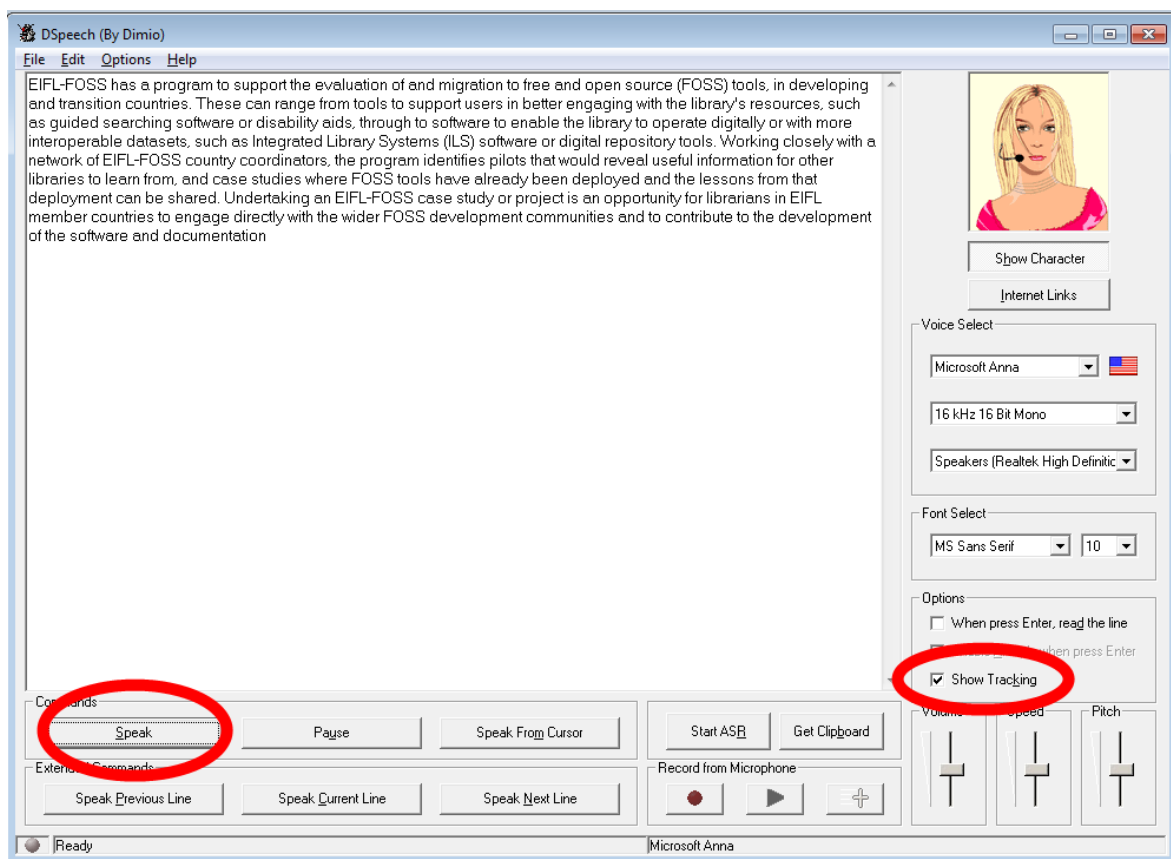


Figure 25. DSpeech highlighting the Speak and Show Tracking options.

If you have any voices installed on your computer (see Synthetic Voices above) you can select them from the Voice Select menu (see Figure 26). You can also adjust the Pitch and Speed of the voice (see Figure 26 - note you must Pause reading before you can adjust these settings).

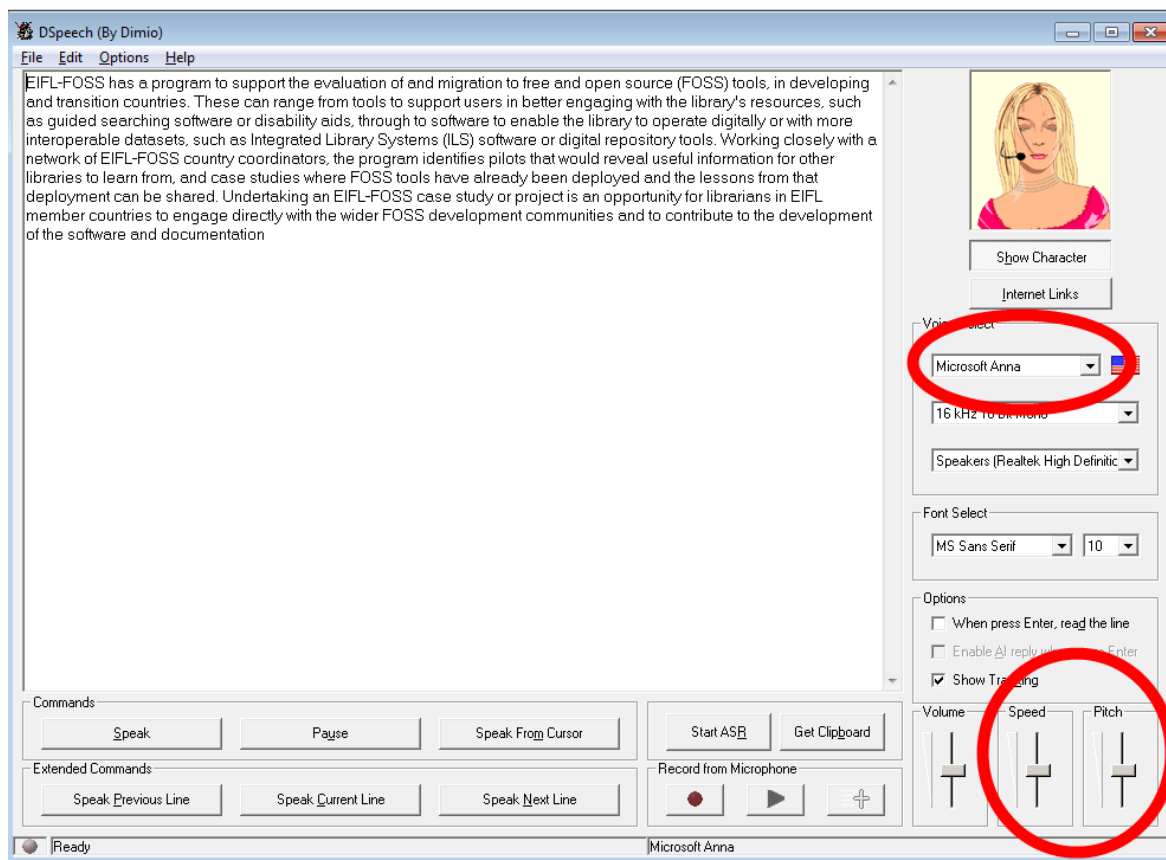


Figure 26. DSpeech highlighting the Voice Select function and the Speed and Pitch sliders.

You can also use DSpeech to convert text into audio files by going to File and Save Audio File As.... and then selecting your preference of format from the Save as Type dropdown (options include WAV, AAC, MP3, OGG, WMA).

You can view a video showing how to use DSpeech here: [www.youtube.com/watch?v=Pg6z5o4zBG8](http://www.youtube.com/watch?v=Pg6z5o4zBG8)

## Audacity

Audacity is a free tool for editing and creating audio files in many formats. It is most often used in libraries to create quickly and easily MP3 audio files using a microphone. These audio files can provide voiced assistance in navigating catalogues or online systems, or recorded versions of popular texts that use a local accent or dialect rather than the more generic accents or robotic speech of Synthetic Voices. They would be of benefit to any users who are not confident with technology and would appreciate the reassurance that a human voice brings, as well as users with visual impairments or dyslexia.

Audacity can also be used very easily to improve the quality of audio files by removing the background noises, gaps, and irrelevant content. Sound files are presented as 'wave' patterns, and you can edit them by clicking and dragging just as you would select a word in a text document. You can also use it to combine audio, so putting introductory or background music along with a voice. (You can find a lot of music freely available with Creative Commons licenses on the web).

Audacity exports WAV, MP3 and Ogg Vorbis formats.

You can download Audacity from <http://audacity.sourceforge.net/> Click the Download tab, and choose the version of Audacity that matches your operating system. Download either the installer or Zip file according to your preference. Extract the contents of the zip file. Then return to the Audacity Downloads page and scroll down to Plug-ins – click on the LAME MP3 Encoder link and download the LAME Encoder. Run the exe file to install the LAME MP3 encoder.

At its very simplest level you can use Audacity to record your voice. If you have a microphone connected to your PC, ensure it is showing in the Microphone dropdown (see Figure 27) and press the Record button (see Figure 27) – you can then speak or read your transcript, and when you have finished, press Stop (see Figure 27). It does not matter at this stage if you make a mistake, simply start the sentence again, as you can edit out the mistake later.

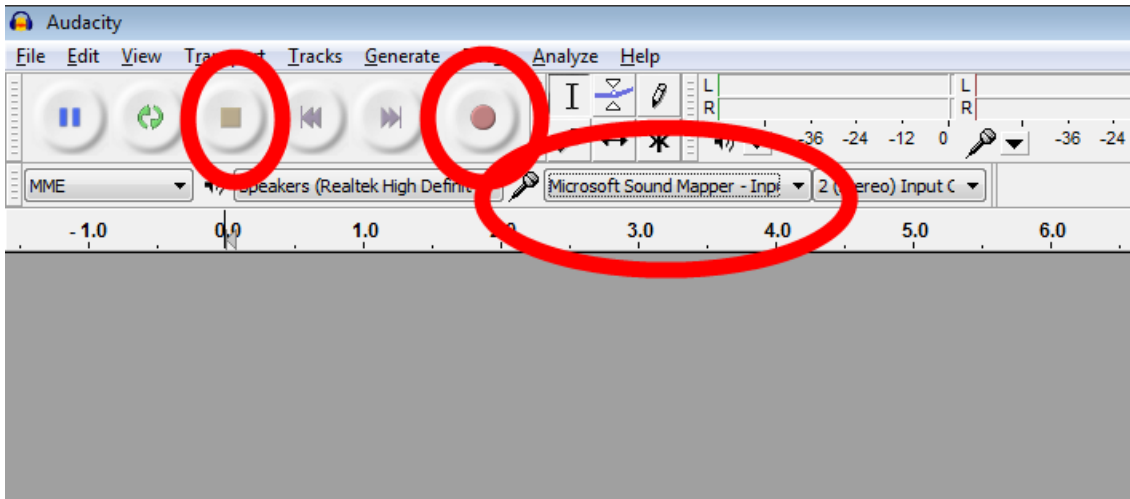


Figure 27. Audacity highlighting the Microphone dropdown, and the Record and Stop Buttons.

Your recording will now show as a wave pattern which you can shrink up or spread out by clicking the magnification buttons (see Figure 28). If there was a part you would like to cut out, perhaps a mistake, or a pause at the beginning or end, simply click and drag like you would highlight a word in a text document (see Figure 28), and hit the Backspace or Delete key on your keyboard.

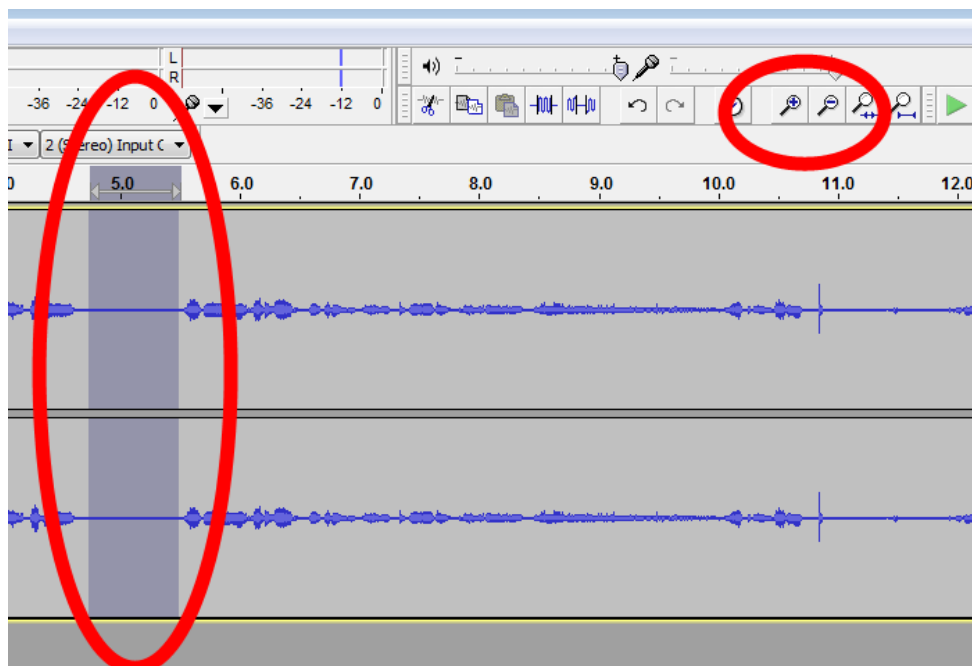
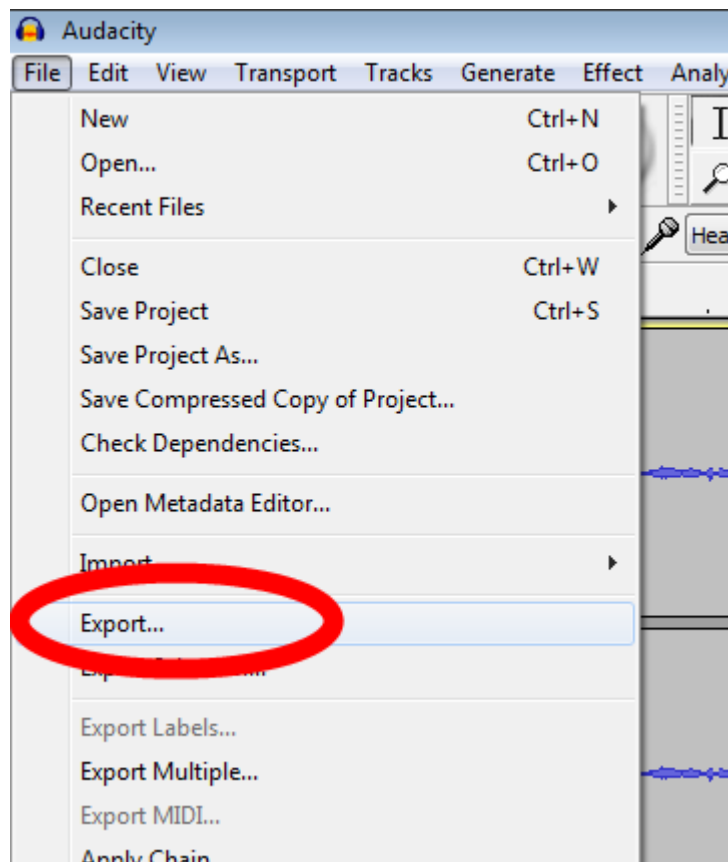


Figure 28. Audacity highlighting the magnification buttons and an area of highlighted sound ready for deletion.

You can then do all sorts of other wonderful things with your sound file as you build your confidence with Audacity (there are many videos freely available on the internet demonstrating the possibilities) but the final step you need is to Export as MP3. Be aware that the Save option in Audacity saves as an Audacity Project file – this is not a format you can use to easily distribute the audio file. So to produce an audio file be sure to choose Export from the file menu (see Figure 29).



*Figure 29. Audacity highlighting the Export option under the File menu.*

Clicking on Export enables you to select the format of audio file you prefer (such as MP3) and give the file a name (see Figure 30). A metadata window will pop up prior to the Export being carried out – simple click OK if you do not want to complete it – then your Export to an audio file will occur.

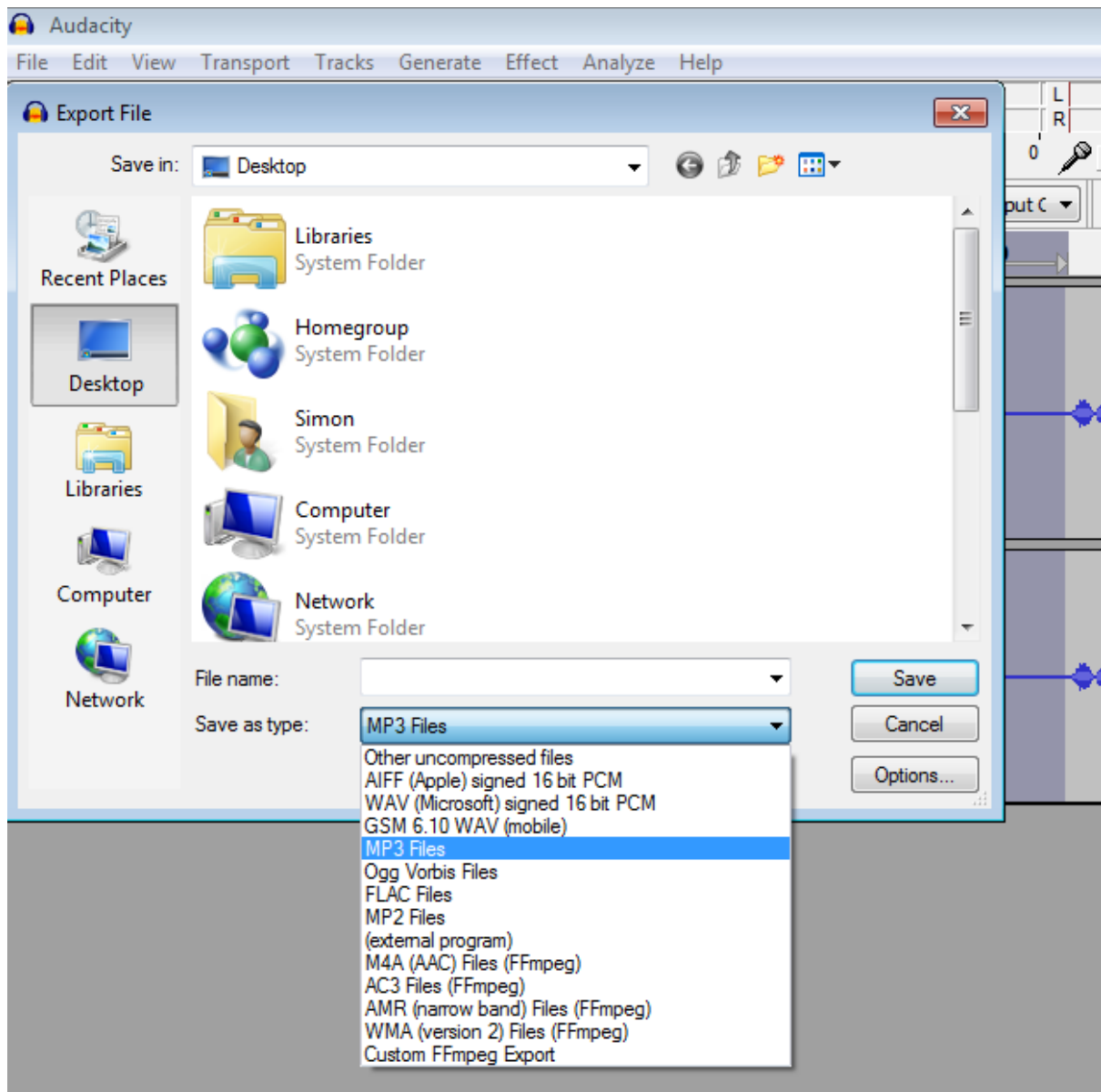


Figure 30. Audacity showing the Export window, where you can choose the filename and file type before Exporting.

You can view a video showing how to use Audacity here: [www.youtube.com/watch?v=5rQr5YVNqI0](http://www.youtube.com/watch?v=5rQr5YVNqI0)

## Lingoes

Lingoes is a speaking dictionary tool which will illustrate highlighted words and offers the option to read them aloud. It provides contextualised examples of the use of the word in a sentence. It can be configured to display the output in users preferred fonts and sizes to improve readability. If connected to the internet it can also provide translation services. It is mostly used by visually impaired and dyslexic users, but can also be useful for those with low literacy or who need help with a particular language.

Lingoes uses voices on the user's computer (see Synthetic Voices above). Search is dynamic and prompts the user for correct spelling. Over 80 languages are supported including: French, Arabic, Russian, Polish, Thai and Armenian.

You can download Lingoes from [www.lingoes.net/en/translator/download.htm](http://www.lingoes.net/en/translator/download.htm) (click the Download link alongside the latest release of Lingoes, then click the Download from Lingoes or Download from Skydrive link). Then run the exe file, choose an Install language and proceed through installation.



When you open the Lingoos programme for the first time, you may find it useful to access the How To Use Lingoos section (see Figure 31).

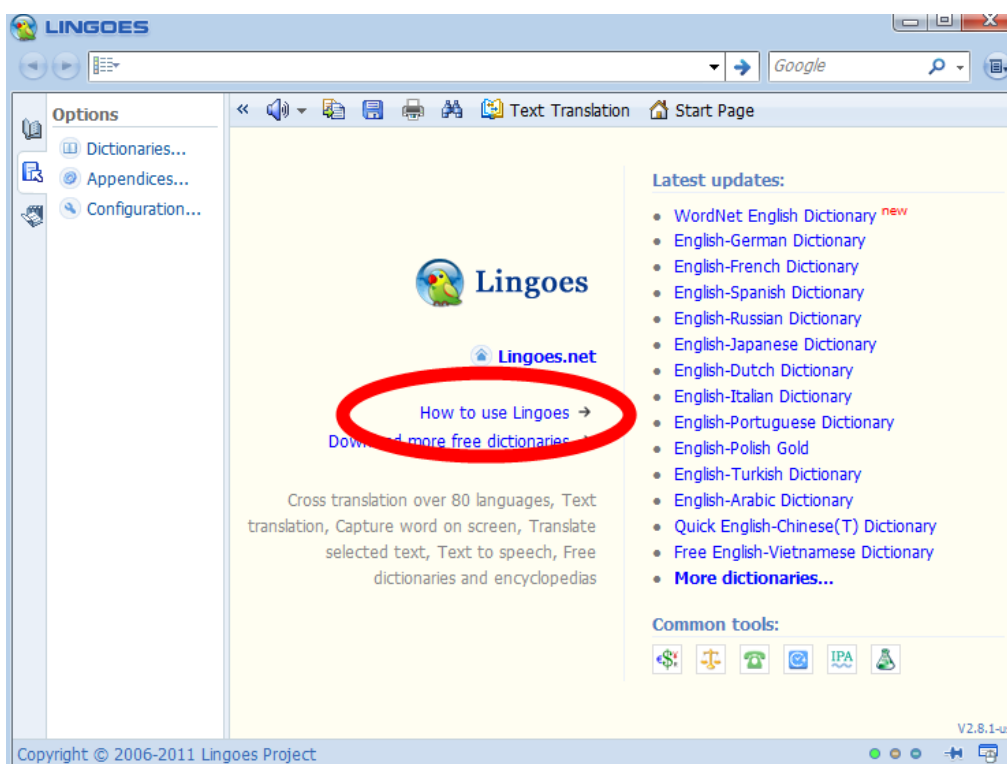


Figure 31. Lingoos highlighting the How To Use Lingoos link.

Beginning to type a word into the top bar will bring up a list of possible words at the left side, and definitions of the currently highlighted word in the centre (see Figure 32).

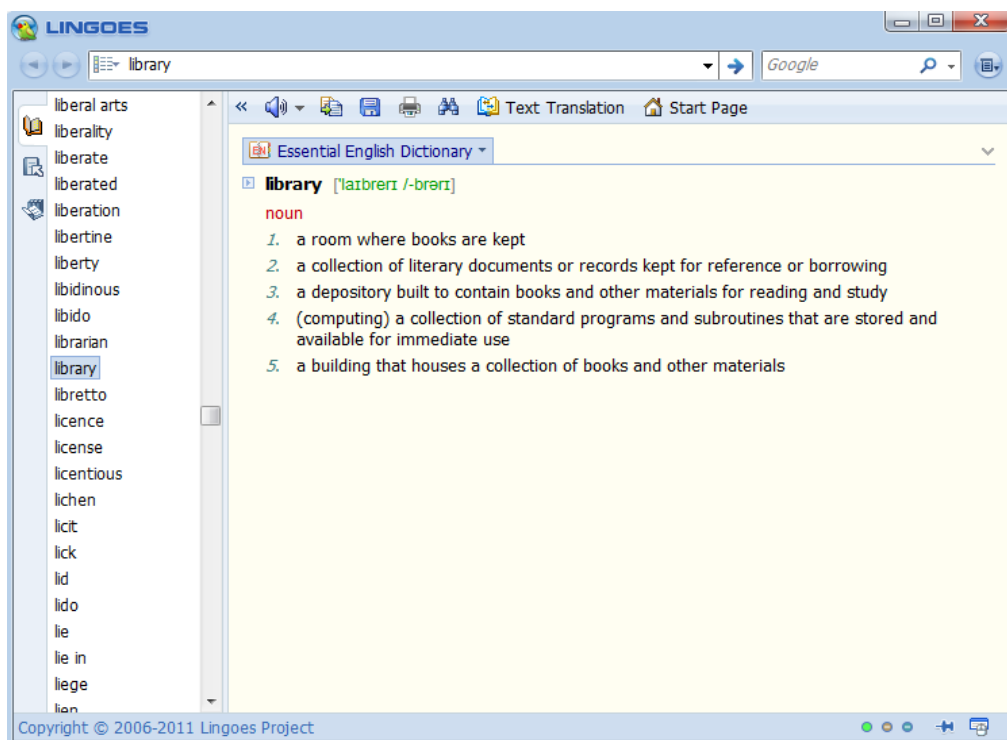


Figure 32. Lingoos showing a highlighted word and dictionary definition.



Clicking on Text Translation will provide the word in whichever language you choose from the drop-down lists(see Figure 33).

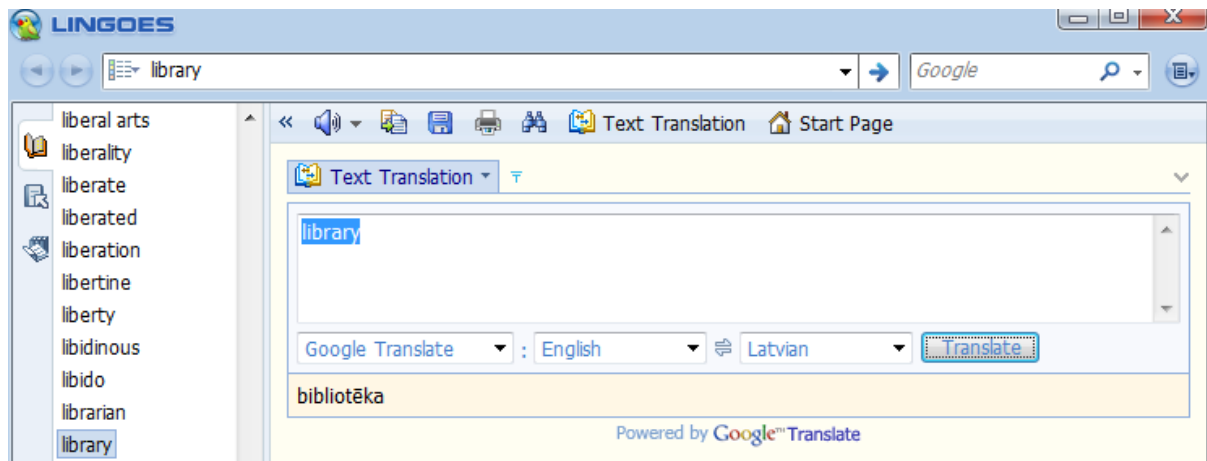


Figure 33. Lingoies showing translation (in this case the English word 'library' is being translated into Latvian).

Clicking on the sound icon will read aloud the highlighted word, whatever language is being used (see Figure 34).

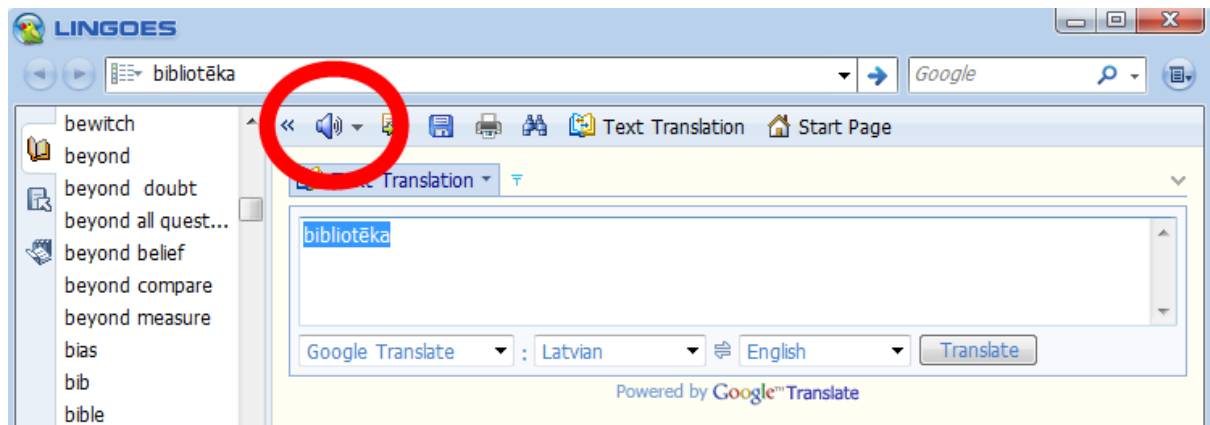


Figure 34. Lingoies highlighting the sound icon that will speak the selected word in any chosen language.

You can view a video showing how to use Lingoies here (ignore the references to MyStudyBar): [www.youtube.com/watch?v=mZEOGe0zVh8](http://www.youtube.com/watch?v=mZEOGe0zVh8)

## PowerTalk

PowerTalk automatically speaks any presentation or slide show running in Microsoft PowerPoint for Windows. PowerTalk is able to speak text as it appears in the presentation and can also speak hidden text attached to images.

The voice is provided by voices already installed with the operating system (see Synthetic Voices above).

You can download PowerTalk from <http://fullmeasure.co.uk/powertalk/#downloads> – just follow the instructions provided to download the software and install it (recommend that you tick the boxes to allow it to support both PPS and PPT files).

Running the programme brings up a window for you to select and open the PowerPoint file you wish to be read aloud (see Figure 35).

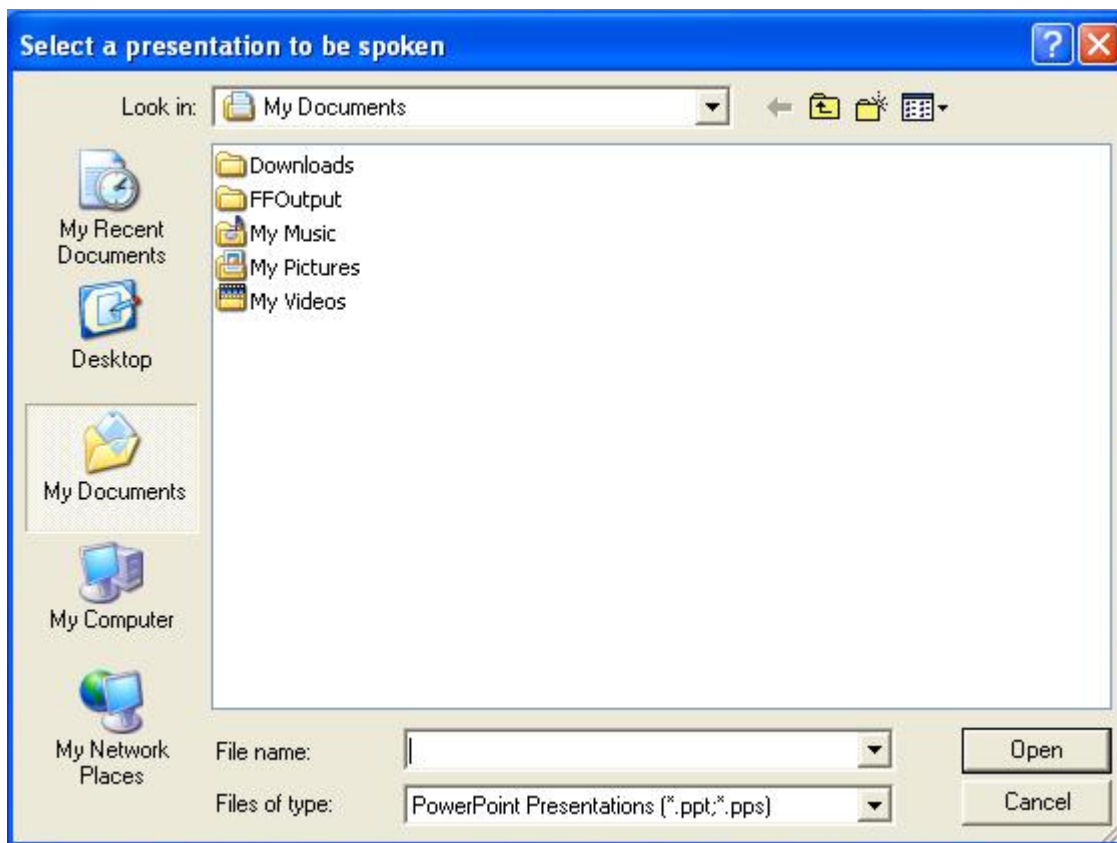


Figure 35. PowerTalk showing the window in which you can select a PowerPoint file to be spoken.

Opening the file then opens PowerPoint in slideshow mode and reads aloud the first slide. Moving through the slides will result in each one being read aloud.

PowerTalk selects automatically the default voice on your operating system, so if you have downloaded a different synthetic voice (see Synthetic Voices above) you will have to change the default voice. This can be done by locating PowerTalk through the Programmes menu and opening the Speech Settings dialog (see Figure 36).



Figure 36. PowerTalk showing the Speech Settings and Speech Properties window.

Select the Text To Speech tab and locate your preferred voice from the list (see Figure 37).

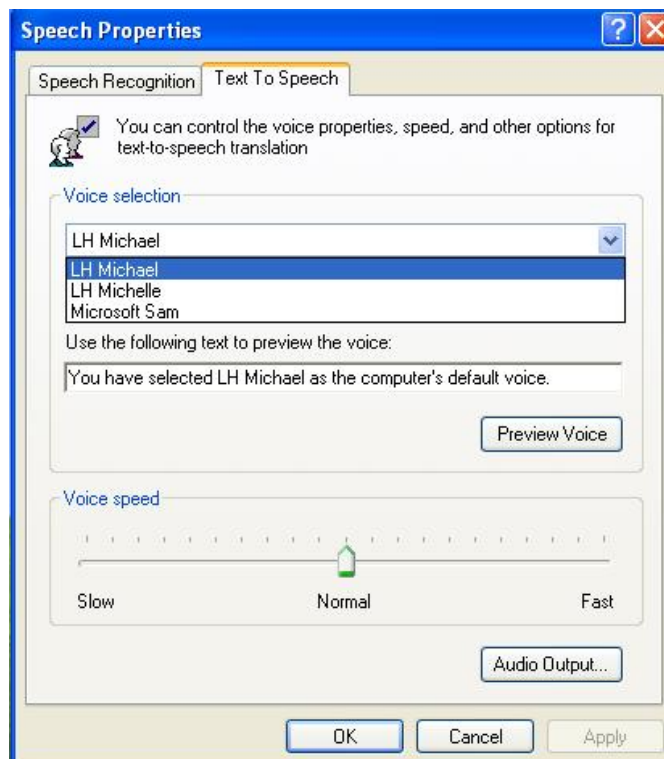


Figure 37. PowerTalk showing the Text-To-Speech options from where you can select any Synthetic Voice installed on your computer.

You can use the Preview function to check if it sounds good before using it with PowerTalk.

## WordTalk

This application enhances Microsoft® Word by adding a text-to-speech reading element to the toolbar. It is a free plug-in developed for use with Microsoft Word (from Word 97 up to Word 2010). It will speak the text of the document and highlight words as it reads, assisting those with reading difficulties. It benefits any user with difficulties reading, whatever the reason for the difficulty.

WordTalk works on 32-bit versions of Windows systems only – XP, Vista and Windows 7. Output can be exported as an audio file for use on other devices.

You can download WordTalk from [www.wordtalk.org.uk](http://www.wordtalk.org.uk) – just click on the Download tab, complete the short form and the download should begin. Simply run the exe file and progress through the installation process.

Upon the first running of the programme you will be asked to add the Talk Toolbar to Word (see Figure 38).



*Figure 38. Add WordTalk Toolbar to Word window that appears during first use of the software.*

Once this is complete you can open Microsoft Word and you will find under the Add-Ins area the WordTalk Toolbar (see Figure 39).



*Figure 39. The WordTalk Toolbar located under the Add-Ins tab in Windows 7.*

Open a Word document you would like to hear read aloud, then open the WordTalk toolbar. You can choose whether you want it to speak only the word the cursor is currently located on, the whole sentence, the whole paragraph, or simply to speak continuously from the cursor (see Figure 40).



Figure 40. WordTalk Toolbar highlighting, from left to right, the icons for: Enable Speaking, Speak Paragraph, Speak Sentence, Speak Word, Speak Whole Document, and Disable Speaking.

Accessing the Configure button (see Figure 41) gives you the option to select a different Synthetic Voice if you have one (see Figure 42).

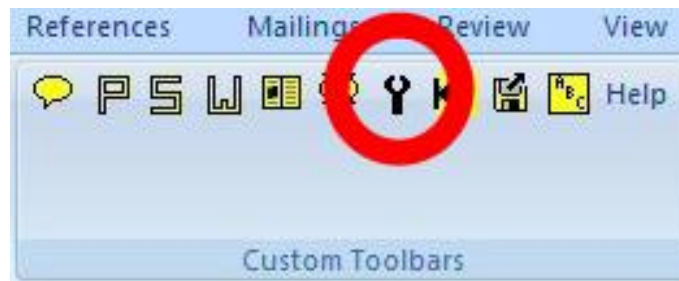


Figure 41. WordTalk Toolbar highlighting the Configure button.

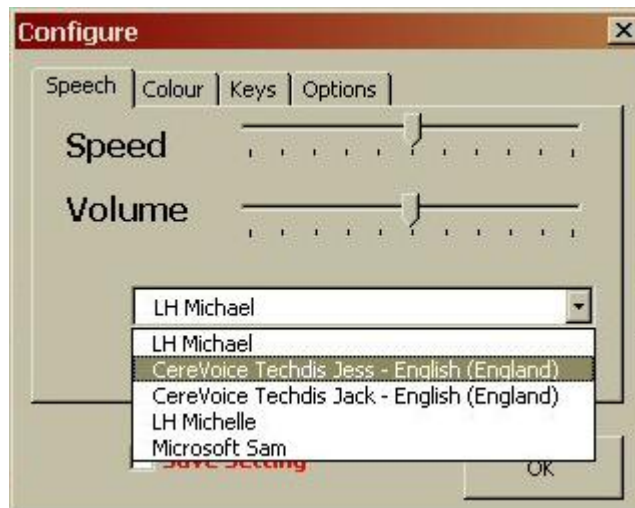


Figure 42. Upon clicking the Configure button, you can choose a different voice under the Speech tab.

There is also an option to Save to MP3 or WAV (see Figure 43), which will be done using the voice currently selected under the Configure settings (see Figure 42 above).



Figure 43. WordTalk Save Sound File options.

You can see a demonstration video here: [www.youtube.com/watch?v=ufk1r7ZPeAo](http://www.youtube.com/watch?v=ufk1r7ZPeAo)

## ScreenReaders – for completely blind users to be able to operate a computer

A screenreader provides computer operation and navigation commands as well as content in audio format to help identify and interpret it for the benefit of visually impaired users. Screenreaders are distinct from Text-To-Speech tools as they are aimed primarily at users with little or no vision, and are focussed as much on operating the computer as on reading text aloud. They will also read aloud any text descriptions of images that have been built into documents or web pages (known as 'alternative text'). Screenreaders are often highly featured and are operated using an array of keyboard commands and shortcuts (unsighted users do not use pointing devices such as mice). Screenreaders usually will also output to a Braille display as well as delivering output by sound.

There are some extremely good quality screen readers available, but they are quite expensive. Each user will have different needs and preferences. There are FOSS options now available, and one in particular, NVDA, seems to have become quite popular.

Microsoft Windows operating systems have included the Microsoft Narrator light-duty screen reader since Windows 2000. Mac OS X includes VoiceOver, a feature-rich screen reader. The console-based Oralux Linux distribution ships with three screen-reading environments: Emacspeak, Yasr and Speakup. The open source GNOME desktop environment long included Gnopernicus and now includes Orca.

The tools we will highlight in this section are:

- NVDA (screen-reading software)
- Thunder (screen-reading software)

## Non Visual Desktop Access (NVDA)

NVDA allows blind and vision impaired people to access and interact with their computers by providing feedback via synthetic speech and Braille. NVDA supports web browsers, email clients, internet chat programmes and office suites. The built in speech synthesizer supports over 20 languages, including Albanian, Arabic, French, Georgian, Polish, Romanian, Russian, Serbian, Thai and Ukrainian. If necessary, NVDA will run entirely from a portable memory stick/pen drive without needing installation onto a computer. It has support for Windows 32 and 64 bit.



You can download NVDA from <http://nvda.en.softonic.com/> (click the Free Download button to download the 'Downloader' exe file, then run this to download the actual NVDA programme). During installation, choose **Custom Install** and uncheck all of the boxes for optional add-ins, including the Recommended ones. You can choose whether to have the installation process supported by speech or not.

When you run the programme for the first time a text window appears providing information about the shortcut key commands that can be used to operate the programme (see Figure 44).

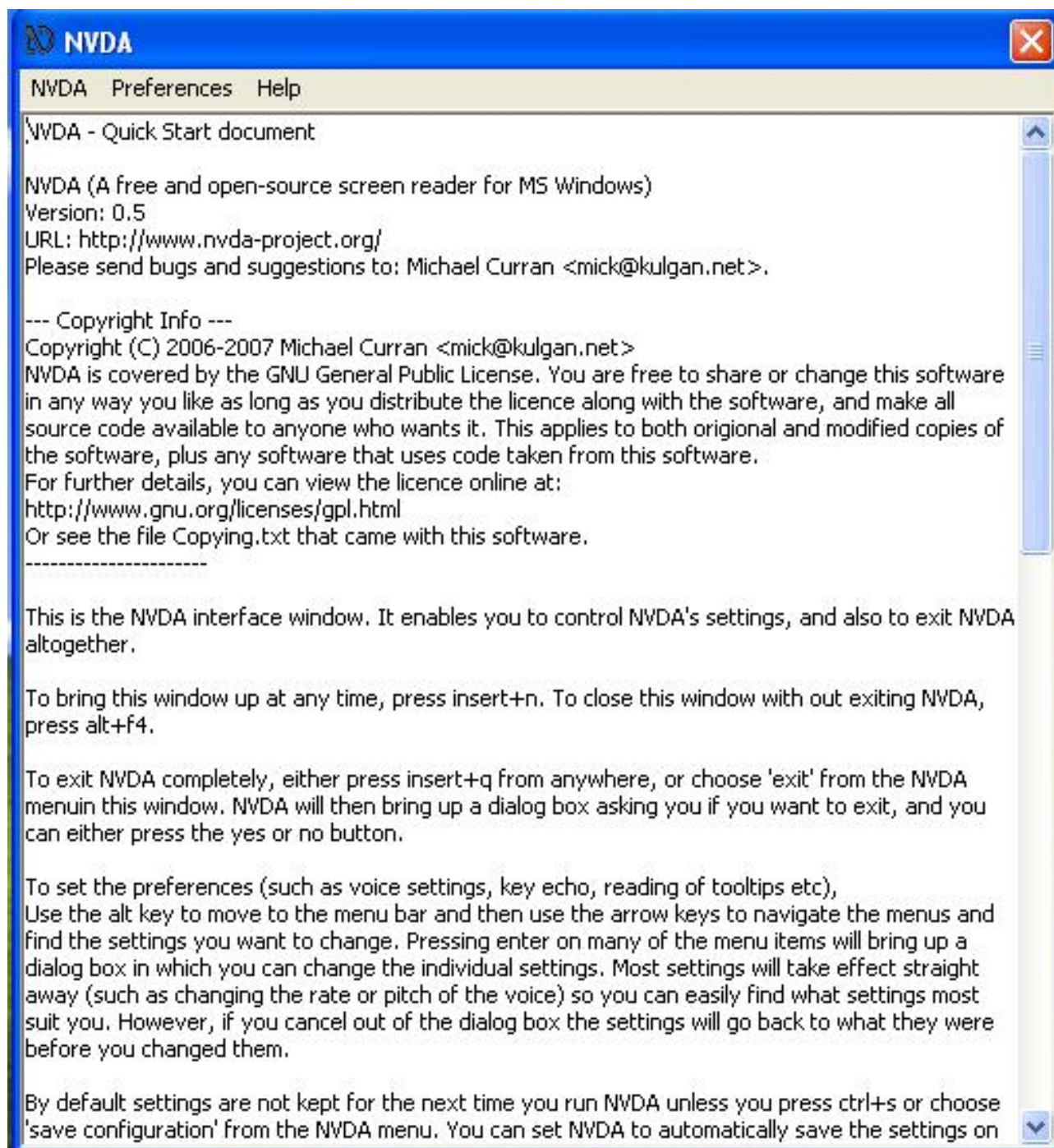


Figure 44. NVDA window containing list of shortcut keys, that appears on first use of the software.

The programme will then read aloud whatever is beneath the cursor. You can bring up the command window at any time (to change the speed of the voice, for example) by double-clicking the NVDA logo in the system tray (see Figure 45).

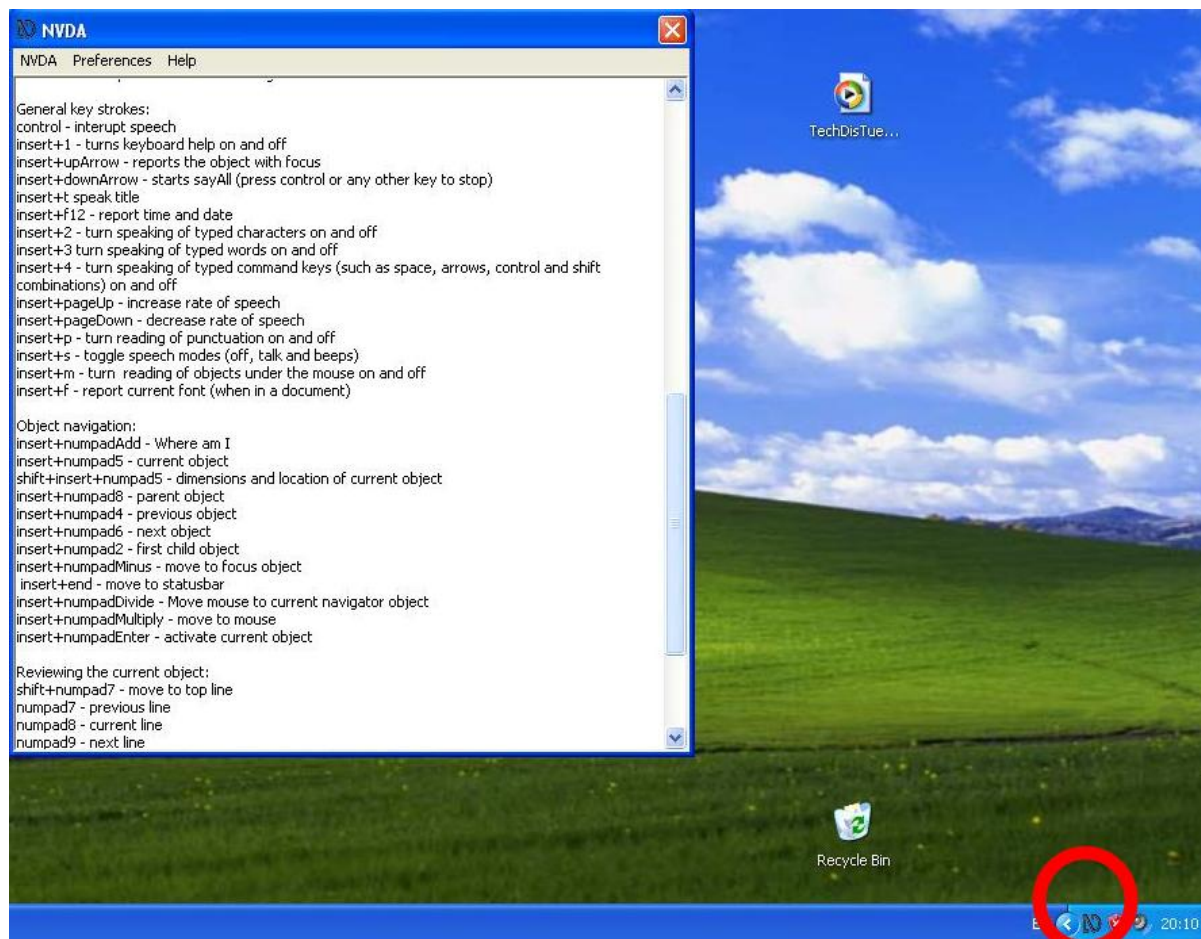


Figure 45. NVDA command window with NVDA System Tray icon highlighted.

You can find more information from the project website [www.nvda-project.org/](http://www.nvda-project.org/)

Two videos that explain more about NVDA can be found here:

[www.youtube.com/watch?v=qjCQ30gBEsU](http://www.youtube.com/watch?v=qjCQ30gBEsU) and here: [www.youtube.com/watch?v=TIMsUZYKOZE](http://www.youtube.com/watch?v=TIMsUZYKOZE)

## Thunder

Thunder is a screenreader available in eight different languages including French, Arabic, Estonian and Polish. Thunder can navigate through lines and individual words with the keyboard cursor keys. It works well with Windows 7, Vista or XP and integrates with Microsoft® Word for word processing. Thunder can run from a portable memory stick/pen drive and uses built-in SAPI5 voices (see Synthetic Voices above).

You can download Thunder from [www.screenreader.net/](http://www.screenreader.net/), finding the Free Thunder Screenreader option, clicking Download Thunder, and then clicking the Download link should start the exe file downloading. Be aware that the installation will also install a variety of shortcuts to bundled software onto the Desktop, so these must be removed after installation is complete.



When Thunder is running, a small window pops up to allow you to adjust settings (see Figure 46).



Figure 46. Thunder Settings window.

This can be used to select a different voice (see Synthetic Voices above) and various other options (see Figure 47).

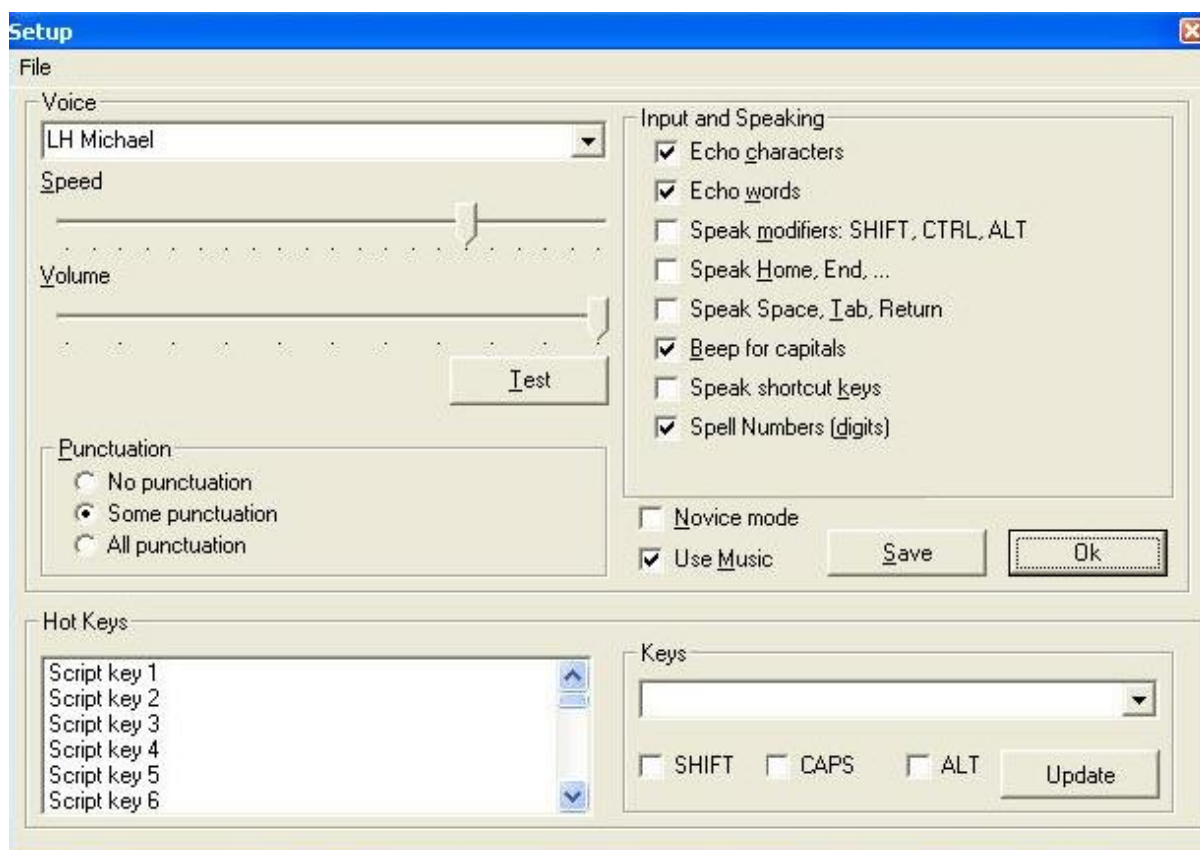


Figure 47. Thunder Settings window, showing options to change the Voice.

The programme will then read aloud commands and text beneath the cursor.

You can see more explanation of Thunder and how it works here:

[www.youtube.com/watch?v=NCs48NjhHRg](http://www.youtube.com/watch?v=NCs48NjhHRg)

## Writing Tools – to help users with entering text or with spelling

Some users may have difficulty in inputting text using a keyboard. They may have physical impairments affecting their hands, they may have poor motor control, or they may have a condition such as repetitive strain injury which makes typing painful. There are many potential solutions, depending upon the precise nature of the problem.

Some users still physically type using a piece of apparatus such as a 'head wand' – essentially a long probe worn on a headband and used to press keys on the keyboard individually by moving the head and neck. Some users prefer to use an on-screen keyboard – one is built into Windows (see [www.youtube.com/watch?v=dp3hfO1L\\_VU](http://www.youtube.com/watch?v=dp3hfO1L_VU)) and Mac OS (see [www.jisctechdis.ac.uk/techdis/multlinkres/detail/OSX\\_OnScrKey](http://www.jisctechdis.ac.uk/techdis/multlinkres/detail/OSX_OnScrKey)). Voice recognition technology is also used by people who wish to operate their computer by means of voice commands. This technology can be quite effective, but also expensive – no adequate FOSS equivalents yet exist.

Each of the following tools may help users interact with the computer to overcome a difficulty using a mouse or keyboard, or present the written content in a more suitable way.

The tools we will highlight in this section are:

- Dasher (text input without using the keyboard)
- LetMeType (word prediction software)

## Dasher

Dasher is writing tool for users with limited dexterity who cannot use a keyboard but can move a mouse or joystick. Dasher displays letters moving from right to left and the user targets oncoming surrounding spaces to select them by nudging the mouse up or down. The size of the surrounding letter space is relative to the probability of its use, making it quick to 'dash' through the letter stream to assemble sentences. Reasonable typing speeds can be achieved and project work is underway to develop interfaces with text-to-speech to read the text as it is assembled. Dasher is available for Windows, Mac and Linux. Dasher operates in a huge number of languages and scripts from Europe, Asia and Africa, including Kyrgyz, Uzbek, Thai, Nepali, Swahili, Ewe, Igbo and many many more – utilising over 60 different alphabets.

You can download Dasher from [www.inference.phy.cam.ac.uk/dasher/Download.html](http://www.inference.phy.cam.ac.uk/dasher/Download.html). You should select the checkbox for the version you require (Windows, Mac etc) and then scroll down to the Additional Files section to also check any boxes for Training documents in languages you may require (Dasher itself has all of the language options built into the software download). Click the 'Proceed to Download' button, then click on the links next to the packages you request to begin the download.

When you open the Dasher software you will see the principal text entry screen which comprises three main elements:

- 1) The language/alphabet selection option at the bottom of the window (see Figure 48)

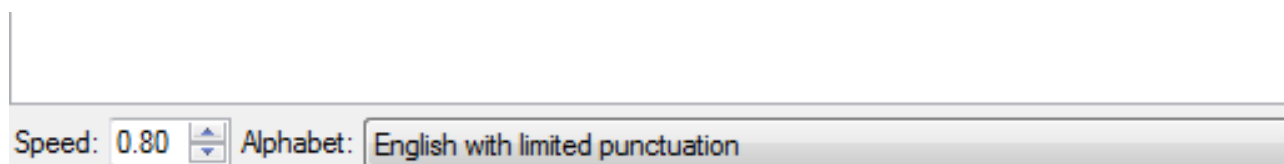


Figure 48. The bottom menu in Dasher, where you can select Language and speed of movement.

- 2) The menu options at the top, beneath which is the area where text will be typed (highlighted in Figure 49)

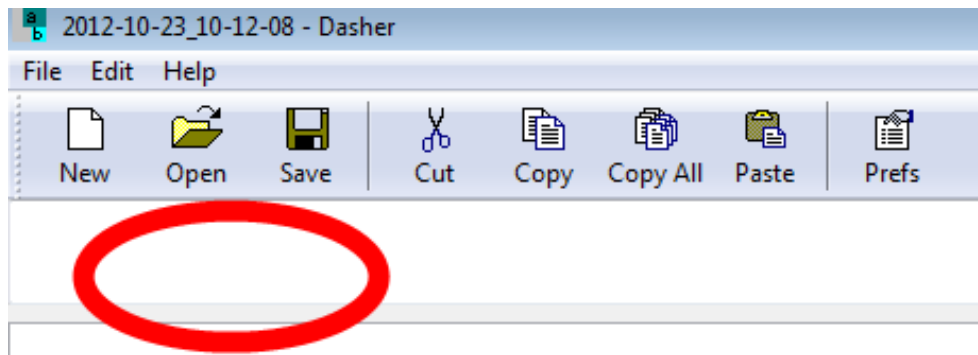


Figure 49. Dasher highlighting the text input pane.

3) The main text selection tool (see Figure 50)

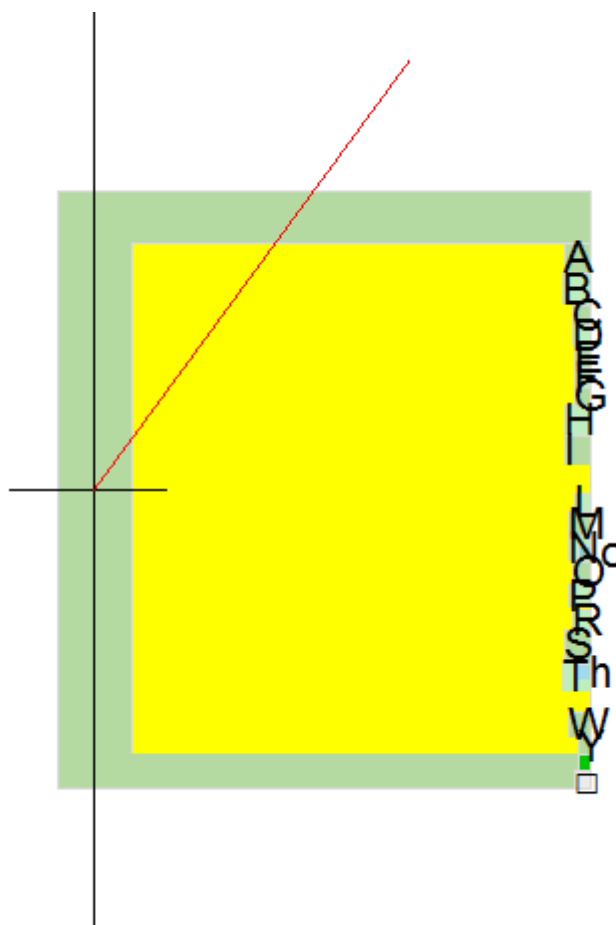


Figure 50. The main Dasher input pane, showing the alphabet on the right hand side. When text entry mode is selected, the letters move slowly to the left.

To use Dasher, move the crosshair into the yellow zone and click the left mouse button once. The letters on the right hand side of the screen will begin to move leftwards towards the centre of the screen. If they are moving too fast, click again to stop, and decrease the speed setting in the bottom left of the window (see Figure 48). To enter text, move the cross up or down using the mouse and 'aim' for the letter you want. The software is intelligent and knows which letters are more likely to follow this first selected letter, and makes them larger. Keep moving the cross up and down to 'aim' for the letters you want. Your typing will appear in the top left of the screen (in the area signified in Figure 49). If you

select a letter incorrectly, move the crosshair to the left of the centre line and everything will shift into reverse, allowing you to 'Undo' the incorrect letter and then choose the correct one. Here is a screenshot of a user typing “Dear Maya, Thank you for attending yesterday's meeting of the committee.....” - you can see that the word 'committee' is anticipated by the software before it has been typed:

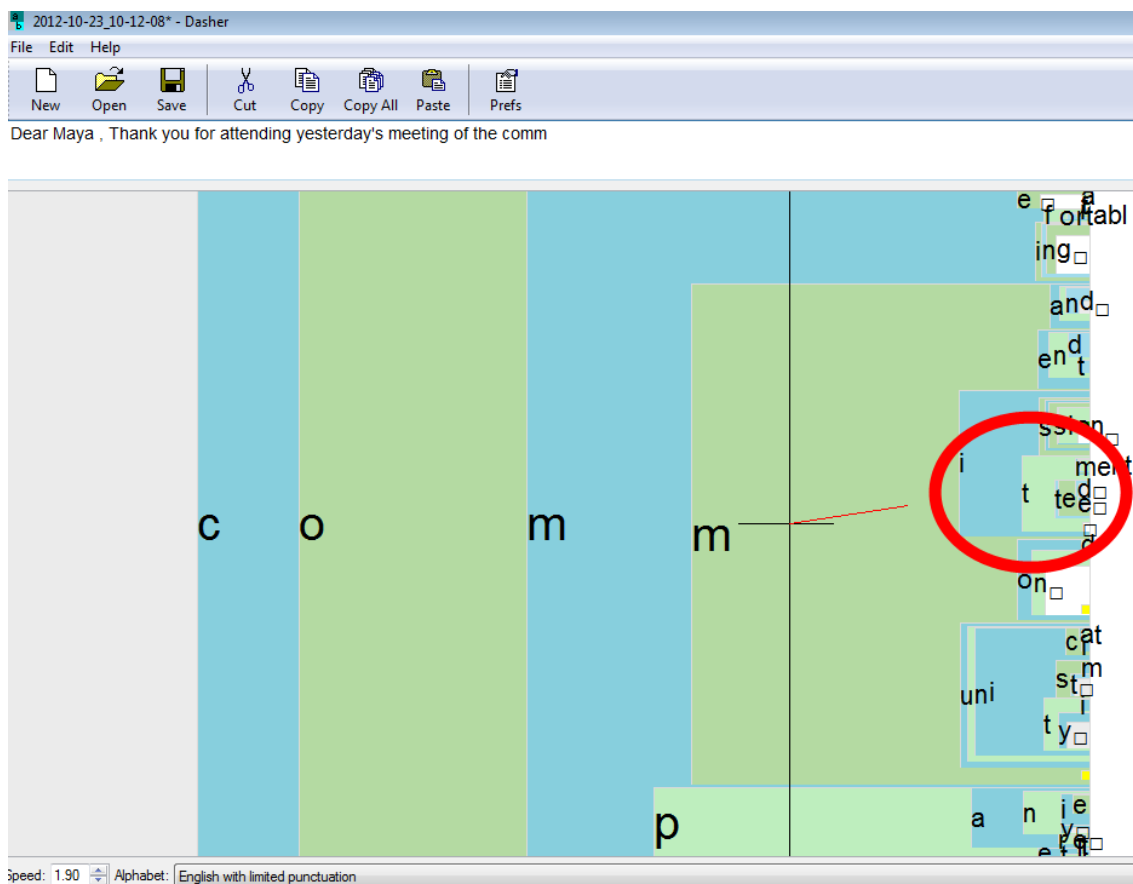


Figure 51. An example of Dasher in use. Note that the user has entered the letters c.o.m.m. and Dasher is predicting that the word will be command, commend, committee (highlighted) or communicate. Dasher learns from your usage and offers more prominently the words you use most commonly.

You can usually find upper case letters and punctuation marks at the end of (i.e. beneath) the lower case alphabet. Using the Copy All function copies the typed text to the clipboard, from where it can be pasted into any programme.

You can find out more about Dasher here: [www.inference.phy.cam.ac.uk/dasher/](http://www.inference.phy.cam.ac.uk/dasher/)

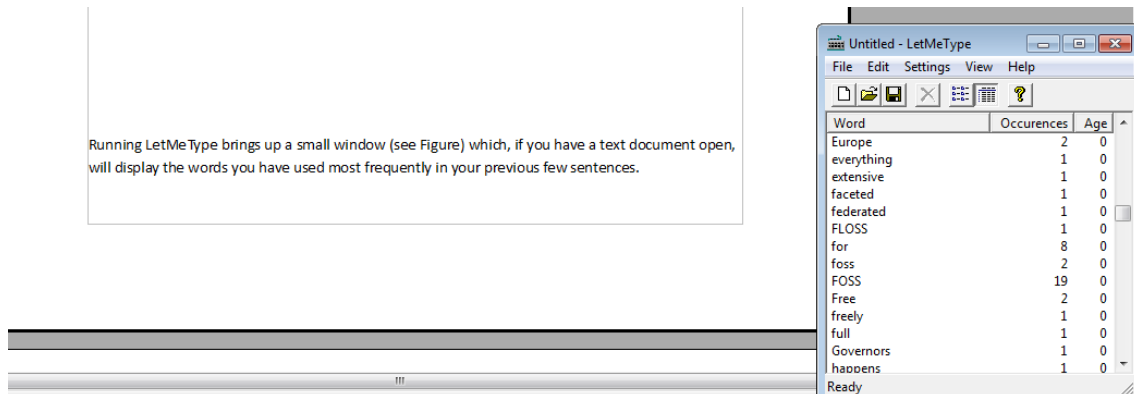
This animation shows Dasher in action: [www.inference.phy.cam.ac.uk/dasher/images/newdasher.gif](http://www.inference.phy.cam.ac.uk/dasher/images/newdasher.gif)

## LetMeType

LetMeType helps a user to enter text and autocompletes the words, by running in the background while the user is working in a browser or word processing programme. It analyses what you type then offers suggestions by guessing a word after you have typed the first two or three letters. A list of the most probable words is displayed, and you can select one with a single keystroke or just continue typing. Words can be added to the dictionary.

You can download LetMeType from [www.clasohm.com/lmt/en/](http://www.clasohm.com/lmt/en/) by clicking on the latest Version and downloading the exe file. Running the exe file takes you through a regular install wizard.

Running LetMeType brings up a small window (see Figure 52) which, if you have a text document open, will display the words you have used most frequently in your previous few sentences (see Figure 52).



*Figure 52. LetMeType window listing words most commonly used by the user. When you begin to type a word, LetMeType will suggest the most common candidates according to your previous usage, and so you can easily type full words by pressing the key associated with that word in the list, often after entering only 2 or 3 characters.*

There are several settings that you can change (see video link below) but once the software has learned your preferred vocabulary, it will make suggestions (in a small window, usually top left of the screen) as to which word you are typing, and if it makes the correct guess, you can enter the word simply by entering the number associated with it, saving you from typing the whole word.

You can see a demonstration of LetMeType here: [www.youtube.com/watch?v=bb09k7d5P\\_U](http://www.youtube.com/watch?v=bb09k7d5P_U)

## Planning Tools – to help users make notes or create schematics

Mind-mapping tools can help to create a visual representation of concepts to help plan, organise and present ideas, illustrating how they are connected. Using a hierarchical 2D page layout, elements can be represented as text within various shapes and colours, and linked together. This can be a clear way of introducing the structure of a catalogue, database or website. Users with dyslexia or autistic spectrum disorders may find the mind mapping tools helpful for making notes as they use your databases or e-resources. It can be helpful for these user groups if information relating to the library is sometimes offered in mind-map format. If materials are designed as text documents, and Heading Styles are used to structure the text, then most mind-mapping tools will convert those documents to a mind map effectively, giving the users a choice of which format they prefer.

The tools we will highlight in this section are:

- FreeMind (mind mapping software)
- XMind (mind mapping software)

## FreeMind

This is a graphical mind-mapping tool which provides a simple interface into creating diagrams to connect concepts and ideas – a useful 'brainstorming tool'. This tool is Java-based and can therefore run on multiple platforms in an almost identical layout. Content can be displayed through a web browser, making the output highly portable as the recipient does not need to have the application installed.

You can download FreeMind from <http://freemind.sourceforge.net/wiki/index.php/Download> Scroll down the page to the Download section and click on the link relevant to your operating system. The exe file download should begin automatically. Run the exe file to install the software – if you do not already have Java installed you will be prompted to do this prior to completing the FreeMind installation.

When you open the FreeMind programme, you will see the beginning of a new mindmap (see Figure 53).

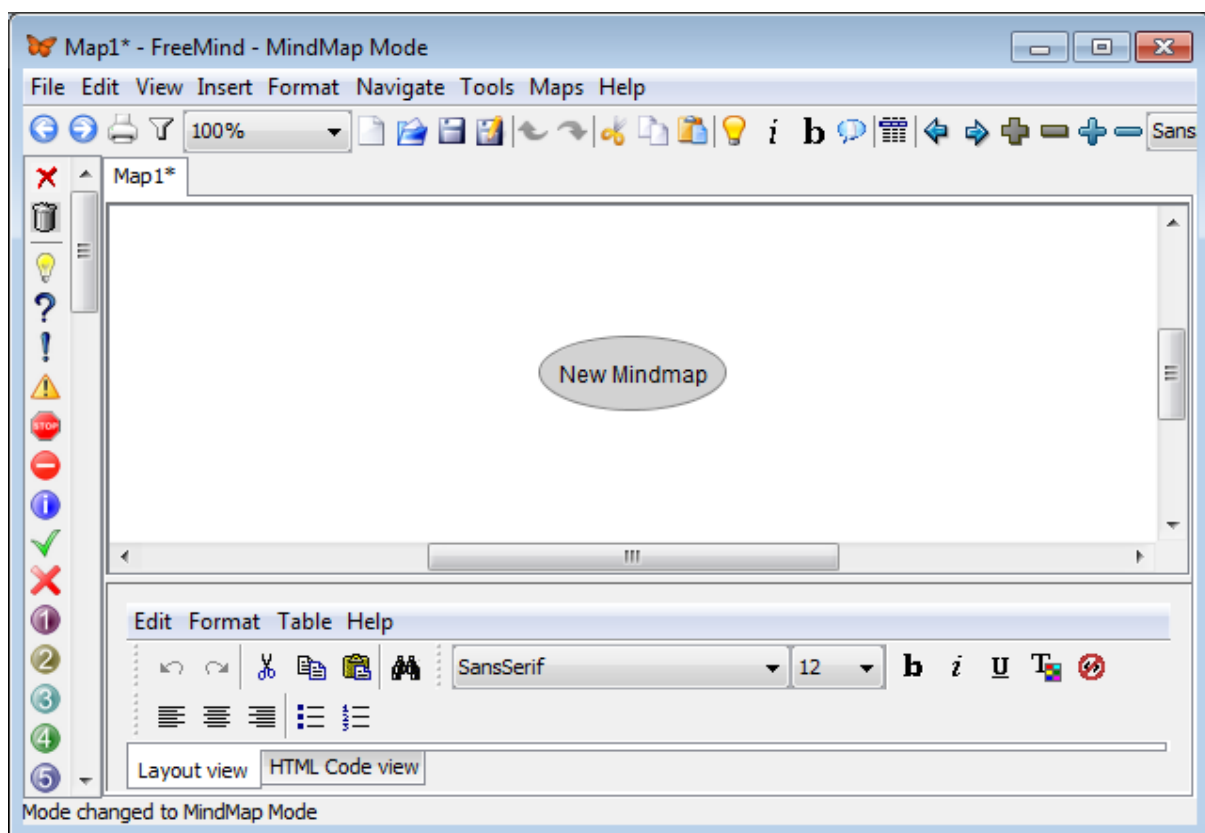


Figure 53. FreeMind showing a new mindmap ready to be developed.

To develop this mindmap, click on the 'New Mindmap' node and enter a title. Then right click on the title node, and select Child Node, entering a sublevel. You can repeat this as many times as you wish, and can give Child Nodes their own Child Nodes to advance multiple levels of information (see Figure 54).

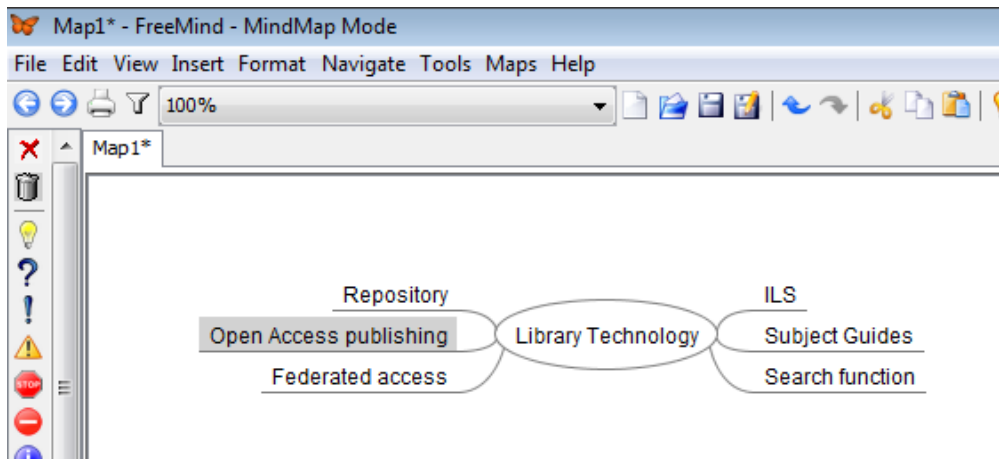


Figure 54. An example mind map in FreeMind, showing several levels of hierarchy.

There are many, many functions to utilise within FreeMind - you can watch a demonstration of FreeMind here: [www.youtube.com/watch?v=kG20sh-jjbl](http://www.youtube.com/watch?v=kG20sh-jjbl)

## XMind

XMind is a mind-mapping tool for organisational needs. XMind offers alternative appearance templates to Freemind which might suit some users. Sharing maps (private and public) works through website options. Available for Windows, Mac and Linux in 32 and 64bit versions. Portable version for portable memory stick/pen drive.

You can download XMind from [www.xmind.net/downloads/](http://www.xmind.net/downloads/) Running the exe file brings up an installation wizard through which you should proceed.

Opening XMind you are offered a selection of templates – for the first use, select the Blank Template (see Figure 55).

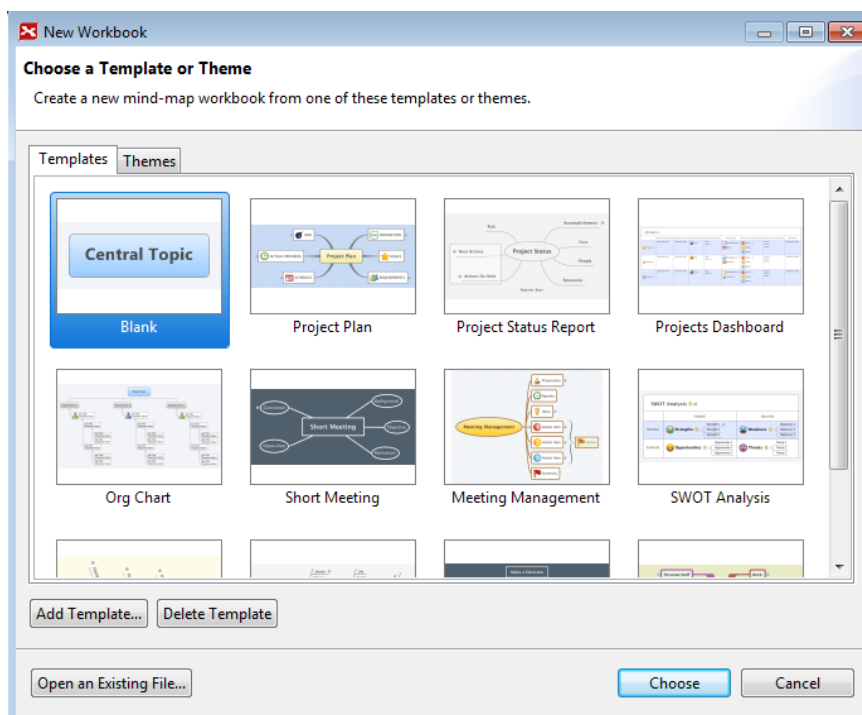


Figure 55. XMind offering the user a range of mindmap templates to begin a new mind map.

Right click on the Central Topic, select Edit, and add your own text (see Figure 56).

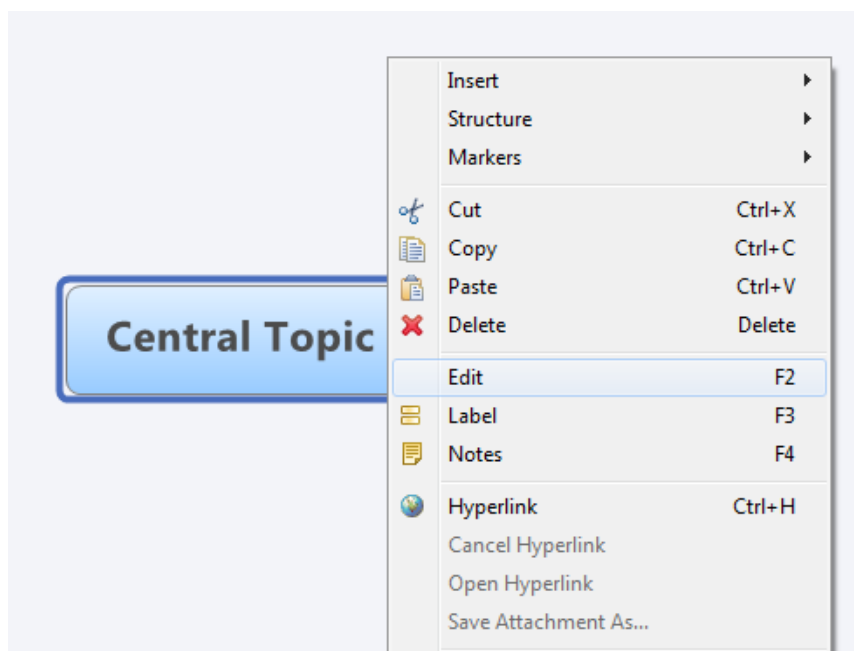


Figure 56. A new mind map in XMind. Right-clicking on the central node brings up a list of options.

You can then right-click on any Topic or Sub-Topic and select Insert to add further Sub-Topics or levels of Sub-Topics, building your mind map (see Figure 57).

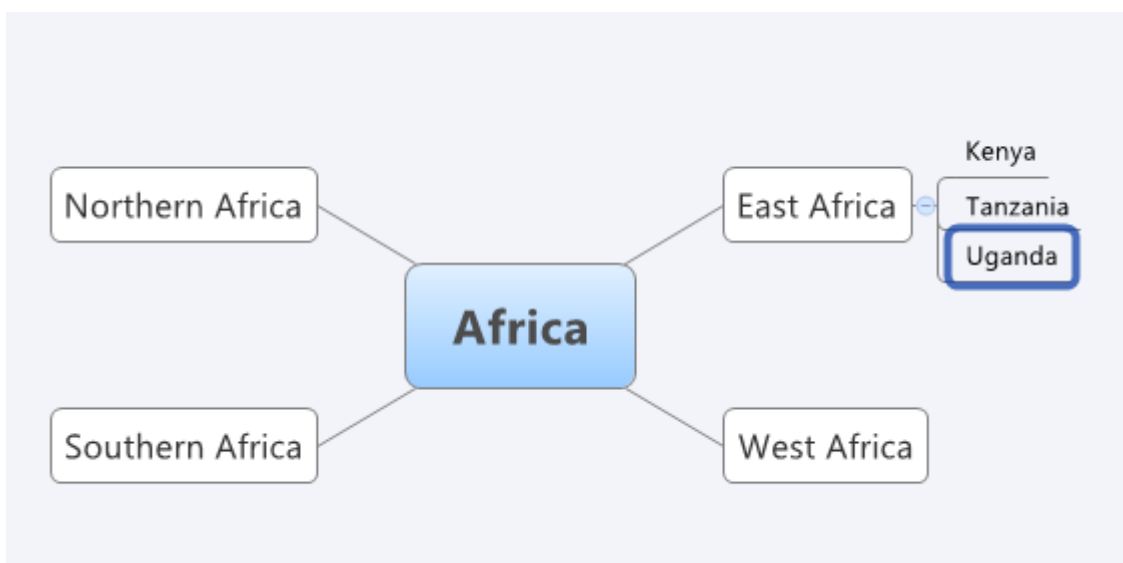


Figure 57. An example mind map developed with several levels of hierarchy.

You can watch a video giving further information about XMind here:

<http://mits.cenmi.org/Resources/MITSFreedomStick/VideoTutorials/TabId/2018/VideoId/401/XMind.aspx>