

# RaritasVOX Manual

## System requirements

The RaritasVOX software, including its voice recognition function, was developed for use on Windows operating systems (Windows 7 and 8). The software will also run on Linux and Mac systems. The voice recognition component has not been tested for operating system other than Windows 7 and 8.

- Java Runtime Environment (JRE), version 6.0 or higher
- Ant 1.6.0 or higher
- Memory: more than 2 GB RAM recommended
- Voice recognition function: Sound-card, Headset or microphone and speakers

## Additional System Requirements for Developers

- Subversion (svn)
- sphinx4 binary and or source files
- Windows: cygwin
- optional IDEs: Eclipse or NetBeans

## Installation

Before installing RaritasVOX, check if Java Runtime Environment (JRE)<sup>1</sup> and Apache Ant<sup>2</sup> are already installed. This can be done by opening a command line terminal or console.

- To verify your Java installation, in the terminal window type: `java -version`
- To verify your Apache Ant version, in the terminal window type: `ant -version`

These commands will give you the version number of the installed software package. Once the required software packages are installed you can continue installing RaritasVOX.

## Installation on Windows

Download the Java archive files `TestPath.jar` and `Program.jar`.

In the terminal window type: `java -jar TestPath.jar`

This will show you the home path of your installation.

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<sup>1</sup> Download JRE version 6.0 or higher from <http://www.oracle.com/technetwork/indexes/downloads/index.html>

<sup>2</sup> Download Apache Ant 1.6.0 from <https://www.apache.org/dist/ant/binaries/>

Copy the file Program.jar into your home path and extract the archive contents into the folder TaxProgram.

## Installation on Linux or Mac

Download the Java archive file Program.jar.

To display the home path of your installation, open a terminal and enter

```
> cd ~  
> pwd
```

. Copy the file Program.jar into your home path and unzip into folder TaxProgram.

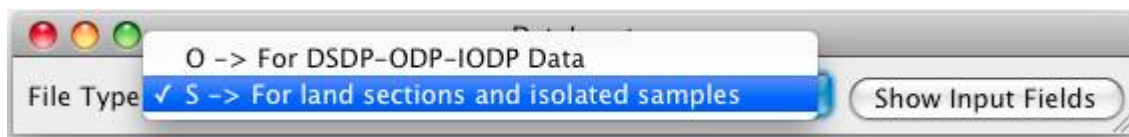
```
> unzip Program.jar -d TaxProgram
```

## Running RaritasVOX without Voice Recognition

In the terminal window navigate to your home directory and start the programme by typing:

```
> java -jar Program.jar
```

Select your data type of the drop down list: O or S, and press "Show Input Fields".



## Mandatory inputs

You need to define an input file including your sample names, font color, onButton, or listNr, and RecognitionName. To get an overview of this input file format, you can press the button "How to create Data File" at the bottom of the window. There is an input file "taxtext\_x1.txt" prepared, which you may want to use for testing purposes.

If your input file was successfully read by the program, you will see the file content on your terminal/console output.

Press "Start Counting".

Manual counting by mouse is initiated by pressing the buttons listed at the top or choose one of the names from the drop down list.

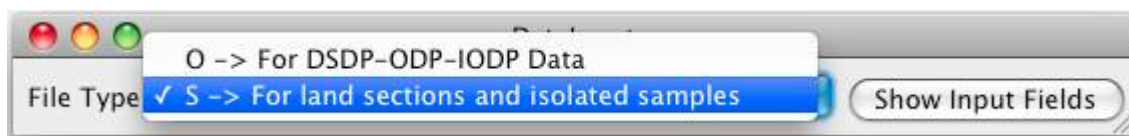
## Running Raritas with Voice Recognition

Before using the voice recognition function, check in your system settings that your soundcard and headset are properly configured.

In the terminal window navigate to your home directory and start the programme by typing:

```
> java -jar Program.jar
```

Select your data type of the drop down list: O or S, and press "Show Input Fields".



The voice recognition module comes with additional functions and buttons:

- Press **"Save data for other count mode"**
- Press "Voice Recognition"
- Press "Phoneme" to check the list of allowed phonemes (sounds), this is just as additional information

If you used the test input file "taxtext\_x1.txt", you can go on with "Ready to speak". If you want to define your own customized words, follow the instructions given in a later section of this manual.

- Press "OK" to start the voice recognition module.
- Press **"Load data from other count mode"**
- Press "Speak"
- Say "Start" to initialize the voice module, the "Speak" button will turn grey and inactive.
- The recognized word will be displayed in the window and the status will be displayed at the bottom of the window.
- Start counting by speaking out individual species names. A sound signal will confirm that the voice recognition program detected the spoken word.
- To pause or stop counting, press "Pause Counting" (or say "stop" if included in your grammar file)
- To save your results, press **"Save data for other count mode"**.
- To close the voice recognition module, press "Exit".
- To change to manual counting mode, press **"Load data from other count mode"**
- To save your counts, -press "Save Data" -> "open a File", choose a folder to store your data, and enter the chose file name after "File Name:"

## Advanced Mode with Customized Input Files

The speech recognition in RaritasVOX uses the software Sphinx which is able to use a customized dictionary. The basic speech elements (sounds) are referred to as "phones" (see <http://www.speech.cs.cmu.edu/sphinx/doc/Sphinx.html> and <http://www.speech.cs.cmu.edu/cgi-bin/cmudict>). Only phones or phonemes listed in the phoneme set of the CMU Pronouncing Dictionary should be used (expecting that English will be used as language). Only words (consisting of several phonemes) that are present in the customized dictionary file will be considered as "correct" hits. The software will search for words consisting of phonemes present in the dictionary which match best to the speech input. Successful counting will be accompanied with optical and acoustical signals. The speech recognition functionality is a mixture of dictate and command system. The spoken word will not only be recognized and visualized on screen but also serves as a count command for that item and will be considered for the visualized real-time counting plot. (If necessary I can provide more info about speech recognition in general and specifically for use with Sphinx.)

To add new words to your voice recognition:

- Press "Save data for other count mode"
- Press "Voice Recognition"
- Press "OK"
- Press "Open Files"

The "CMU Pronouncing Dictionary" documentation (will open in your browser) explains how to edit your voice recognition grammar.

Change the list of allowed words by editing the default grammar text file "hello.gram" (will open in text editor). If you want to save changes to the file say "File" followed by "Save". If you do not want to save changes, simply close the file.

Edit the default dictionary file "cmudict.0.6d" (will open in text editor) to see the dictionary definitions of the words used in the test input file. To insert new words, append these words and phonemes (sounds) at the end of the file. If you want to save changes to the file say "File" followed by "Save". If you do not want to save changes, simply close the file.

There are "system command" words, which you may want to include in your grammar file of allowed words (\*.gram file)

- "remove" to remove the very last word recognized
- "stop" to stop the voice recognition
- "pause counting" to pause voice recognition
- "exit" to return to mouse counting option and save and display current counting status
- "visualized" last recognized word written in big letters; listing of all recognized words in normal letters; total number of items counted; track number