



# **ORBITER SPEECH RECOGNITION MODULE**

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## INTRODUCTION

Orbiter Speech Recognition Module (OSRM) adds speech recognition capability to Orbiter Spaceflight Simulator by Dr. Martin Schweiger. It's composed by the following features:

### GENERIC COMMAND FEATURE

- Activate any keyboard button or group of buttons simply by speaking a word or phrase
- Buttons and phrases are user configurable through a config file

### VESSEL COMMAND FEATURE

- Activate any keyboard button or group of buttons that are specific to a certain Vessel Class, simply by speaking a word or phrase
- Define a set of commands for a vessel class that will be activated only when that vessel class is being used, through a config file

### MFD COMMAND FEATURE

- Press any MFD button simply by speaking a word or phrase
- Define a set of commands for each MFD mode that will be activated only when that MFD mode is being used, through a config file

## REQUIREMENTS

The following are the minimum requirements in order to use OSRM:

- Orbiter Spaceflight Simulator 2006 - <http://orbit.medphys.ucl.ac.uk/>
- Microsoft Speech Recognition Engine
  - This engine is included with windows Vista and Windows Seven
  - Windows XP users can get the engine through a Microsoft Office install, or by searching the internet
- Headset
  - A microphone works, but a headset will yield much better results

## INSTALLATION AND SETUP

### I. INSTALL AND SET UP THE SPEECH REGONITION ENGINE

The first step is to install the Windows Speech Recognition Engine. Windows Vista and Windows Seven come with the engine, but Windows XP does not, and users will have to get the engine by searching the internet. It should be quick and easy process to install. Use the following links for instructions.

Windows XP Users: <http://support.microsoft.com/kb/306901>

Windows Vista Users: <http://www.microsoft.com/enable/products/windowsvista/speech.aspx>

Windows Seven Users: <http://windows.microsoft.com/en-US/windows7/Set-up-Speech-Recognition>

Note that training the engine is not necessary, but it does increase the recognition rate by a few percent.

### II. INSTALL OSRM MODULE

To install the OSRM module simply unzip the package in the Orbiter root folder. Open Orbiter, go to the “Modules” tab and activate the module. Connect your headset to the computer, adjust the microphone volume, and position it one or two inches from the mouth. You are ready to start using OSRM.

## USING OSRM

Once the module has been properly installed and set up, you are ready to start using voice commands in Orbiter.

## USING GENERIC AND VESSEL COMMANDS

- To activate any generic or vessel command, simply speak the command.
- You can toggle speech recognition on and off by pressing the TAB button; a sound should confirm that it was toggled. Use this feature when you need to talk for some reason, but do not wish to trigger any command in Orbiter.
- Config files for the following vessel classes are included with the release:
  - Delta Gldier
  - Shuttle A
  - Delta Glider IV by Dansteph
  - UMMu by Dansteph
  - UCGO Azure by Dansteph
  - UCGO Arrow by Dansteph
  - XR Series by Douglas E. Beachy
- To see the commands for these vessel classes, go to the Config\OSRM\VESSEL\_Commands folder. To see the generic commands, see Config\OSRM\Generic\_Commands.cfg. See Configuring OSRM for information on how to edit these commands.

## USING MFD COMMANDS

- To activate any MFD command, you must first select the MFD you are going to use. Do this by saying "MFD one" for the left MFD and "MFD two" for the right MFD. Any MFD command said from that point onward is going to affect the selected MFD.
- To turn on or off an MFD say "MFD power", to open an MFD mode simply say the mode name followed by "MFD" (for example saying "Orbit MFD" will open Orbit MFD mode), you may go to the MFD select screen by saying "MFD Select", or open the menu screen by saying "MFD menu". The MFD one, MFD two, MFD power, MFD menu, and MFD select commands are

hardcoded into OSRM, and are the only commands that may not be reconfigured by the user.

- Config files for all the MFD's included with Orbiter are included with the OSRM release, as well as for the following MFD's:
  - AeroBrake MFD by Gregorio Piccoli
  - Base Sync MFD by Jarmo Nikkanen
  - Interplanetary MFD 5.1 by Jarmo Nikkanen
- To see the commands for these MFD modes, go to the folder. See Configuring OSRM for information on how to edit these commands.  
Config\OSRM\MFD\_Commands

#### WINDOWS VISTA AND WINDOWS SEVEN USERS

The Windows Vista and Windows Seven speech recognition engine is more powerful than that of Windows XP. If you are using these engines, there are some extra features you may use:

- You may say “press” and then say a button, or a series of buttons. This is useful for navigating target select menus, as you can even say “press” and then spell out a complete target name.
- You can install a Spanish or French engine, and create new config files to make OSRM work in these languages.

#### TIPS FOR USING OSRM

- For best results when using OSRM, follow these tips:
  - Eliminate all background noise.
  - Do not position the microphone too close or too far from mouth.
  - Adjust the microphone volume to a proper level.
  - A headset is highly recommended, since it prevents the sound being created by Orbiter from creating background noise for the microphone. It is also able to hold the microphone at the correct distance from the mouth.
  - Speak clearly and calmly
  - If multiple commands are to be said, separate them with a short pause

## CONFIGURING OSRM

### A. CONFIGURING GENERIC COMMANDS

Generic commands are those commands and features that will always be active, regardless of the current vessel class or MFD mode being used. In order to configure this type of commands, you must populate the Config\OSRM\Generic\_Commands.cfg file, using the following format:

```
%% COMMANDS FROM KEYMAP FILE

FEATURE 1
PHRASE 1

FEATURE 2
PHRASE 2
.
.
.

%% CUSTOM COMMANDS

BUTTON1
PHRASE1

BUTTON2
PHRASE2
.
.
.
```

As you can see, the first part of this file contains all those commands that activate features that can be found inside Orbiter's keymap.cfg file. Here, "FEATURE" means the exact words used in the keymap.cfg file (for example KillMainRetroThrust or NMHLevel ), and "phrase" means the word or group of words that will activate that feature when spoken.



The second part of this file contains commands that are not present in the keymap file, but you wish to activate regardless of the current vessel or MFD being used. Here, "BUTTONS" refers to the button or group of buttons that must be pressed in Orbiter. Buttons must be written in reverse order, separated by spaces; to activate the CTRL-D combination, you must write "D CTRL". For a list of the nomenclature used to name the buttons, see the appendix.

The OSRM release includes a standard Generic\_Commands.cfg file, but it may be modified as desired by the user.

## B. CONFIGURING VESSEL COMMANDS

Vessel commands are those commands or features that are specific to a certain vessel class. You may add voice recognition to those features that are activated by keyboard buttons. In order to do this, create a notepad file inside the ROOT/Config/OSRM/VESSEL\_COMMANDS folder, with any name (preferably one that indicates the vessel class it configures), and the extension .cfg. Inside this file you first need to write the name of the class (as would be written on an Orbiter scenario file), followed by a list of the buttons to press, and their corresponding phrases in the following format:

```
VESEL CLASS NAME

BUTTONS 1
PHRASE 1

BUTTONS 2
PHRASE 2

.
.
.
```

This list uses the same format as the Custom Commands list inside the Generic Commands file.

### C. CONFIGURING MFD COMMANDS

MFD commands are those commands which control MFD modes. A config file can be created for any MFD mode, and will be activated once that MFD mode is opened in Orbiter. In order to do this, create a config file with any name (preferably one that indicates which MFD mode is being configured) in the Config\OSRM\MFD\_Commands folder, with the following format:

```
MFD MODE NAME
MFD MODE ACTIVATION PHRASE

BUTTON1
PHRASE 1

BUTTONS 2
PHRASE 2
.
.
.
```

Where “MFD MODE NAME” is the name of the MFD mode (as would be written in a scenario file), and “MFD MODE ACTIVATION PHRASE” is the phrase that, when said, will open this MFD mode. The button and phrase list is similar to that of Custom and VESSEL commands, only that the SHIFT button must always be omitted. You may place a list of all the buttons on an MFD mode, regardless of the page they are on. For the activating phrase, it is preferable to use that phrase or word which comes to mind when reading the three letters that identify each MFD button, since this makes it more intuitive and user friendly.

## KNOWN ISSUES

- OSRM is not able to send commands to Orbiter menus, such as the target select menus
  - If using Windows Vista or Windows Seven, you may say “press” and then say the button you wish to press, in order to navigate these menus. You may also say “press” and spell a complete word.
- Sometimes there is a delay when pressing the TAB button to activate and deactivate speech recognition
- Some MFD modes use different keys to press the same button. For example, one MFD mode may use the key T to press the Target button, and on another page use the button P to press the Target button. If you configure OSRM to press P when saying “target” and also to press T when you say “target”, it will choose one of the two arbitrarily, but won’t press both. For this reason, some keys in Interplanetary MFD will not work.
- For some unknown reason, OSRM is not able to press some buttons in Orbiter, such as CTRL Q to quit, or CTRL P to pause.

## CREDITS

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## APPENDIX

### KEY NOMENCLATURE

The following is a list of the names of the keys that can be used in all OSRM config files. They are placed roughly in the configuration of a keyboard. It is the same nomenclature used by Orbiter's keymap.cfg file.

ESC F1 F2 F3 F4 F5 F6 F7 F8 F9 F10 F11 F12 SCROLL  
GRAVE 1 2 3 4 5 6 7 8 9 0 MINUS EQUALS BACK  
TAB Q W E R T Y U I O P LBRACKET RBRACKET BACKSLASH  
CAPITAL A S D F G H J K L SEMICOLON APOSTROPHE RETURN  
SHIFT Z X C V B N M COMMA PERIOD SLASH RSHIFT  
CTRL ALT SPACE RALT RCTRL

INSERT HOME PGUP  
DELETE END PGDOWN  
  
UP  
LEFT DOWN RIGHT

NUMLOCK DIVIDE MULTIPLY MINUS  
NUMPAD7 NUMPAD8 NUMPAD9 ADD  
NUMPAD4 NUMPAD5 NUMPAD6  
NUMPAD1 NUMPAD2 NUMPAD3 NUMPADENTER  
NUMPAD0 DECIMAL

## OSRM HARDCODED COMMANDS

This is a list of all the commands that are hardcoded in OSRM, and may not be modified by the user. All other commands are modifiable, and are found in the Config\OSRM folder.

Activating Prhase	Purpose
MFD one	Selects the left MFD for voice command
MFD two	Selects the right MFD for voice command
MFD select	Opens the MFD mode selection screen
MFD power	Turns the MFD on or off
MFD menu	Opens the MFD menu screen