Download, Setup and Operational Information for Orbiter 2010 and the Flight Simulation Process

Orbiter 2010 Software

Orbiter is a freeware space flight simulator created by Martin Schweiger, Ph. D., at University College London England. Orbiter is a physics simulator which uses Newtonian physics to simulate the behavior of spacecraft & other objects within our solar system.

Orbiter 2010 Installation

Orbiter 2010 can be installed by two methods - manually by extracting a ZIP file, or automatically by running a Windows MSI installation file. We recommend using the ZIP file process as it does not install any entries into the Windows registry. All instructions for installation are provided as part of the file.

There is a significant amount of reference material and tutorial simulations in the program, feel free to let students explore these as they practice. There are also many help sites and forums on the web for Orbiter.

Orbiter Download Web site is https://www.orbiter-forum.com/resources/orbiter-2010-p1.5428/
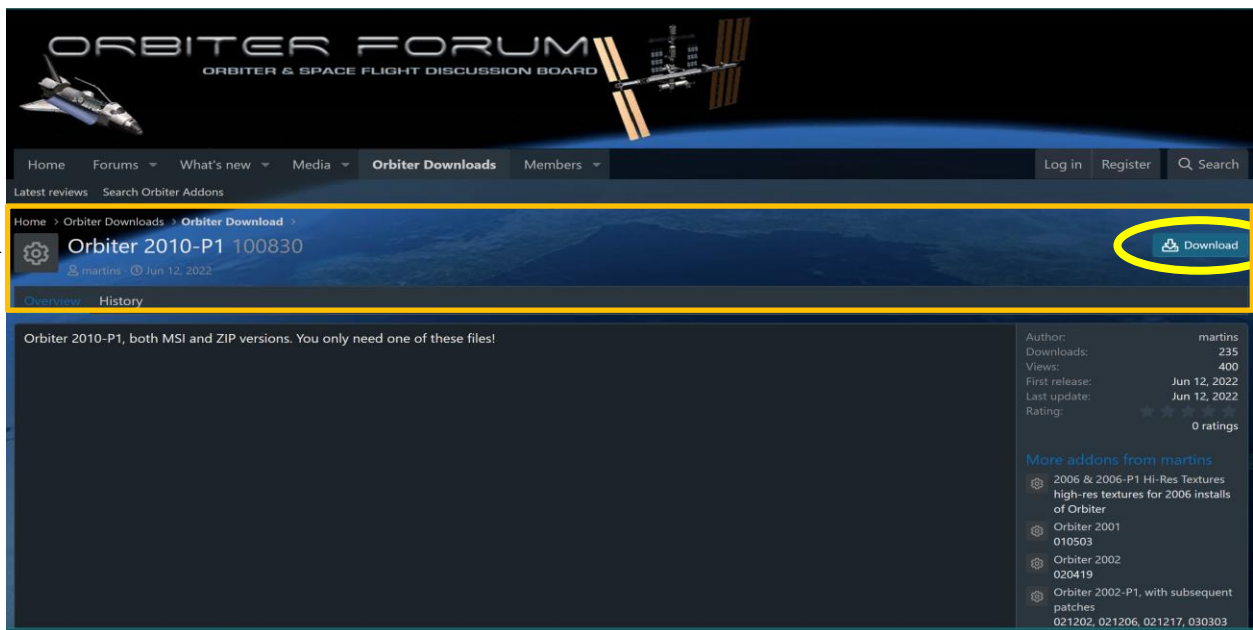
Locate the **Orbiter 2010-P1** section and click on the **Download** button to open the **Choose file** dialog.
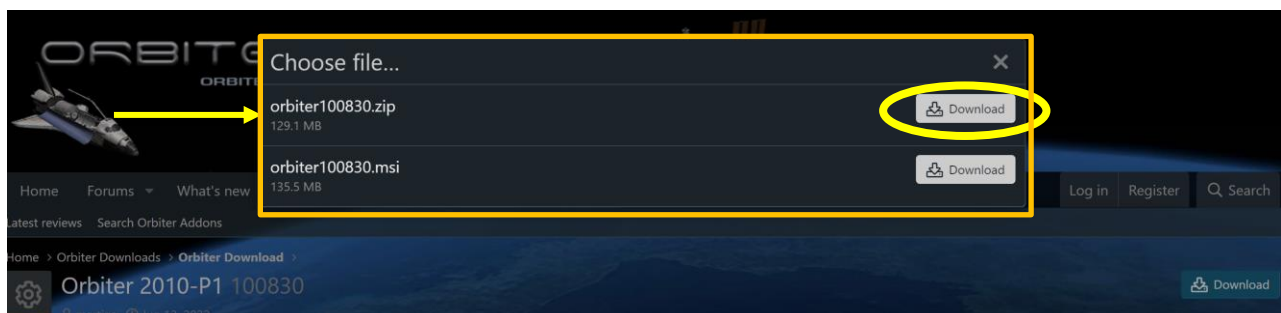
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Locate the **orbiter100830.zip** file (recommended) and click on the **Download** button to open the download (save) dialog to save the Orbiter 2010 zip file in the Download directory (default location). Depending on your system and browser setup, you might see some messages stating "www.orbiter-forum.com checking for a secure connection" the first time you perform the download. Then double-click the zip file to extract all the files. Once extracted, open the **orbiter100830** folder, scroll down to the **orbiter** application and right-click it to create a shortcut. Place the shortcut on your desktop for ease of use.

The **orbiter sound add on files** is highly recommended and can be found at:
http://orbiter.dansteph.com/forum/index.php?page=download

In the **My addons for Orbiter 2010+P1** section, locate the **Orbiter Sound 4.0** box and click on the **download** button to download (save) the **OrbiterSound40_20121120_setup.exe** file. Then double-click on the file and follow the install instructions.

This instructional system only uses a small amount of the capabilities of the Orbiter program. There are other simulated space craft available to fly as well as digital reproductions of the planets and solar systems which can be used in the classroom.

Setup Hints for PowerPoints

Go to the Student Astronaut Challenge website (http://www.studentastronautchallenge.com) and in the header, click on Reference Material. If Reference Material does not appear in the header, click on More v then click on Reference Material in the drop-down list. On the Reference Material page, scroll down to the Finals Competition Software area and click on the **Links** button. Scroll down to the file list. The two PowerPoints that need to be downloaded are the Basic Control Data Panels and Flight Engineer Data Panels. Click on the **download** label after each selection. The files will be automatically downloaded to the Download directory using the website index name. Rename each PowerPoint file to the proper

name - **Basic Control Data Panels** and **Flight Engineer Data Panels.** The **Basic Control Data Panels** will need to be placed on the Pilot PC Desktop and the **Flight Engineer Data Panels** will need to be placed on the Flight Engineer PC Desktop. Once placed to the desktop, each PowerPoint can be executed by a double-click.

Setup hints for Orbiter

Once Orbiter is downloaded and installed (either ZIP or MSI), start the program by double-clicking the Orbiter icon.

The first time the program is started it will run a check on your PC and when successfully completed, click Launch Orbiter.
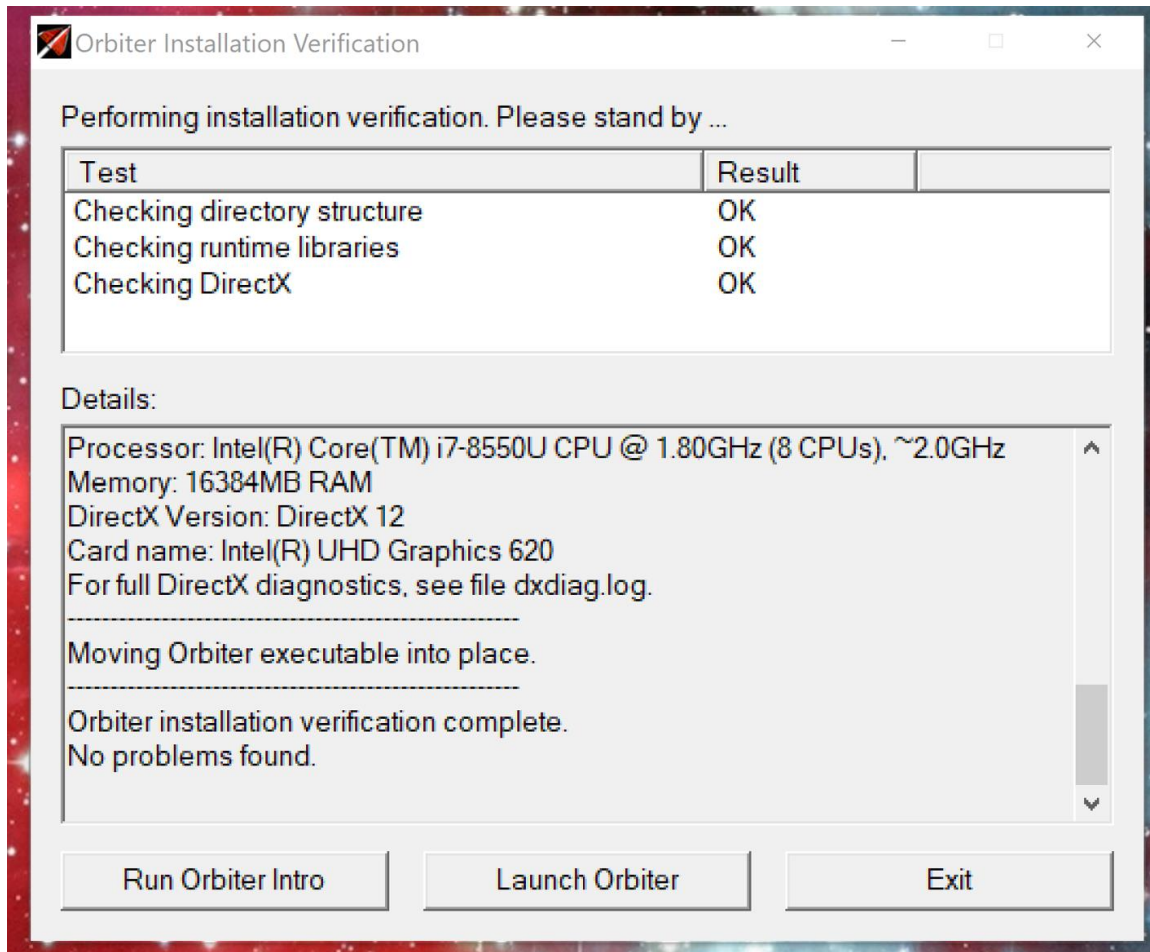
If any of the three checks fail, consult your IT staff. The corrections are pretty simple and should not be a problem.

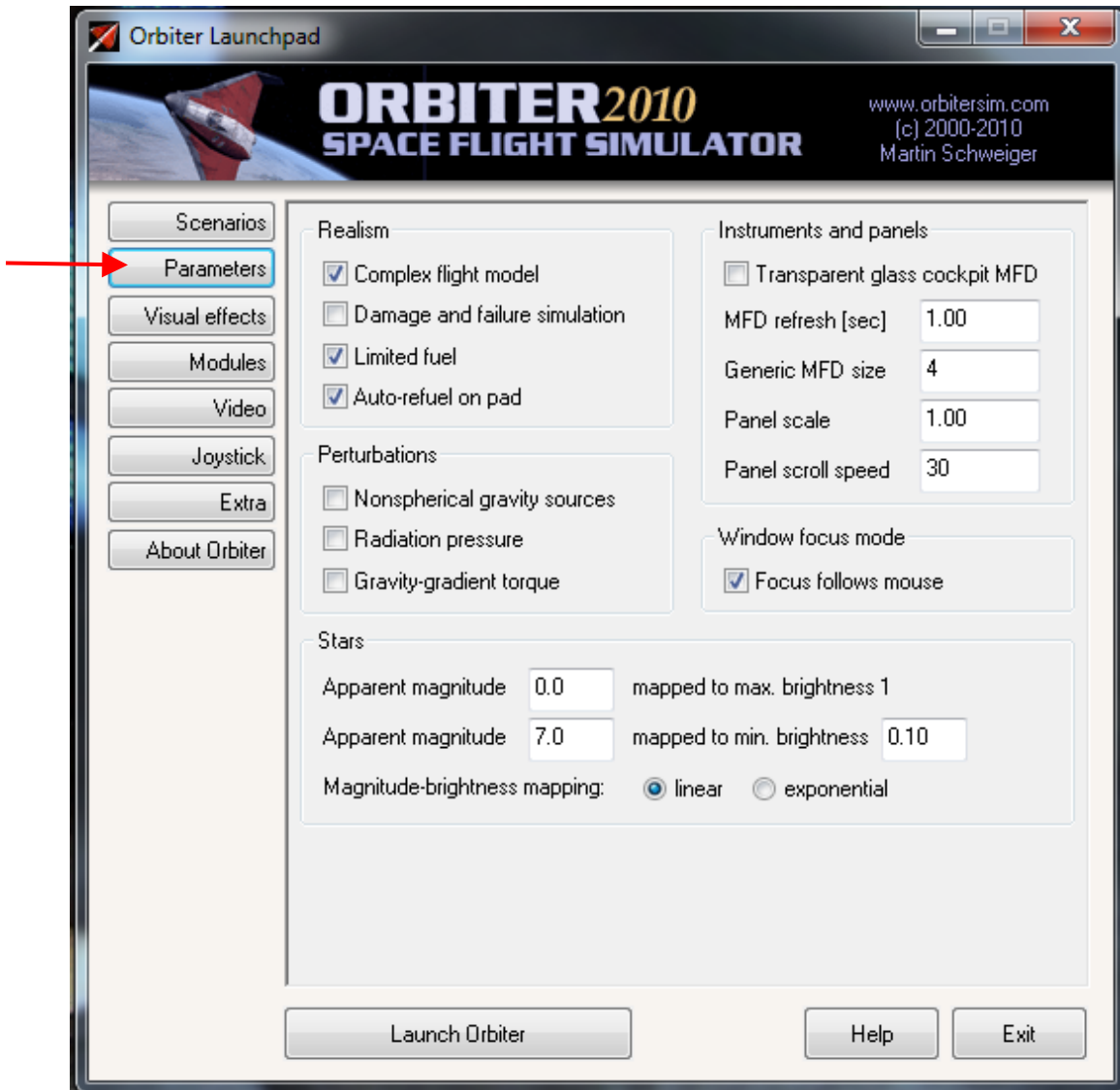# Download, Setup and Operational Information for Orbiter 2010 and the Flight Simulation Process

When you start Orbiter, it opens the Orbiter Launchpad window where you can setup and customize the Orbiter program:

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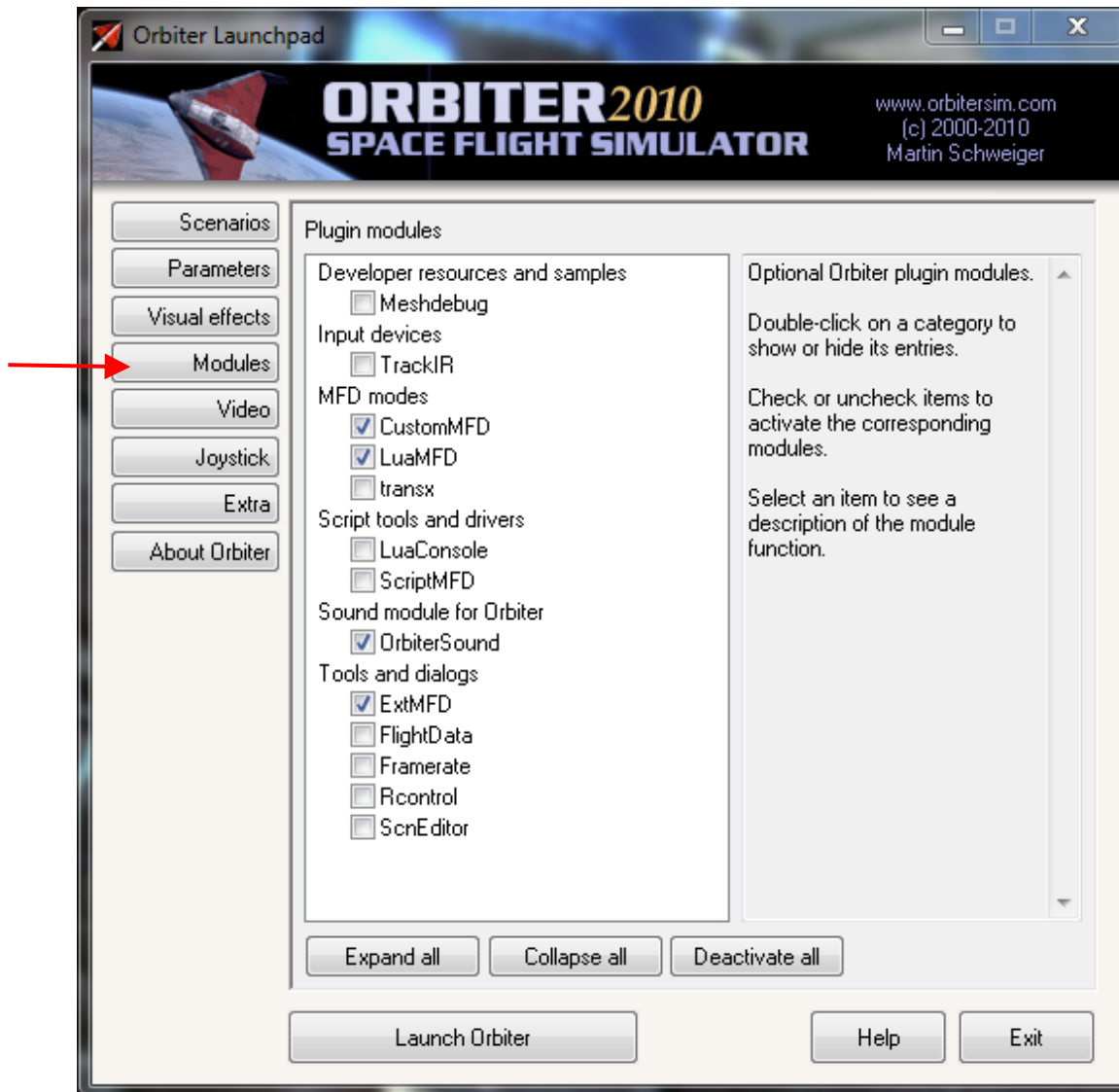
In the <u>parameters</u> section, use the following settings as a beginning point.

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In the <u>Modules</u> section of the Launchpad, **activate the indicated modules** at a minimum by clicking the check box before each selection. You may activate other modules as you encounter a need for them:

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On the <u>Video</u> tab, full screen mode usually works the best but you may have to experiment to get the best visual settings for your computer.
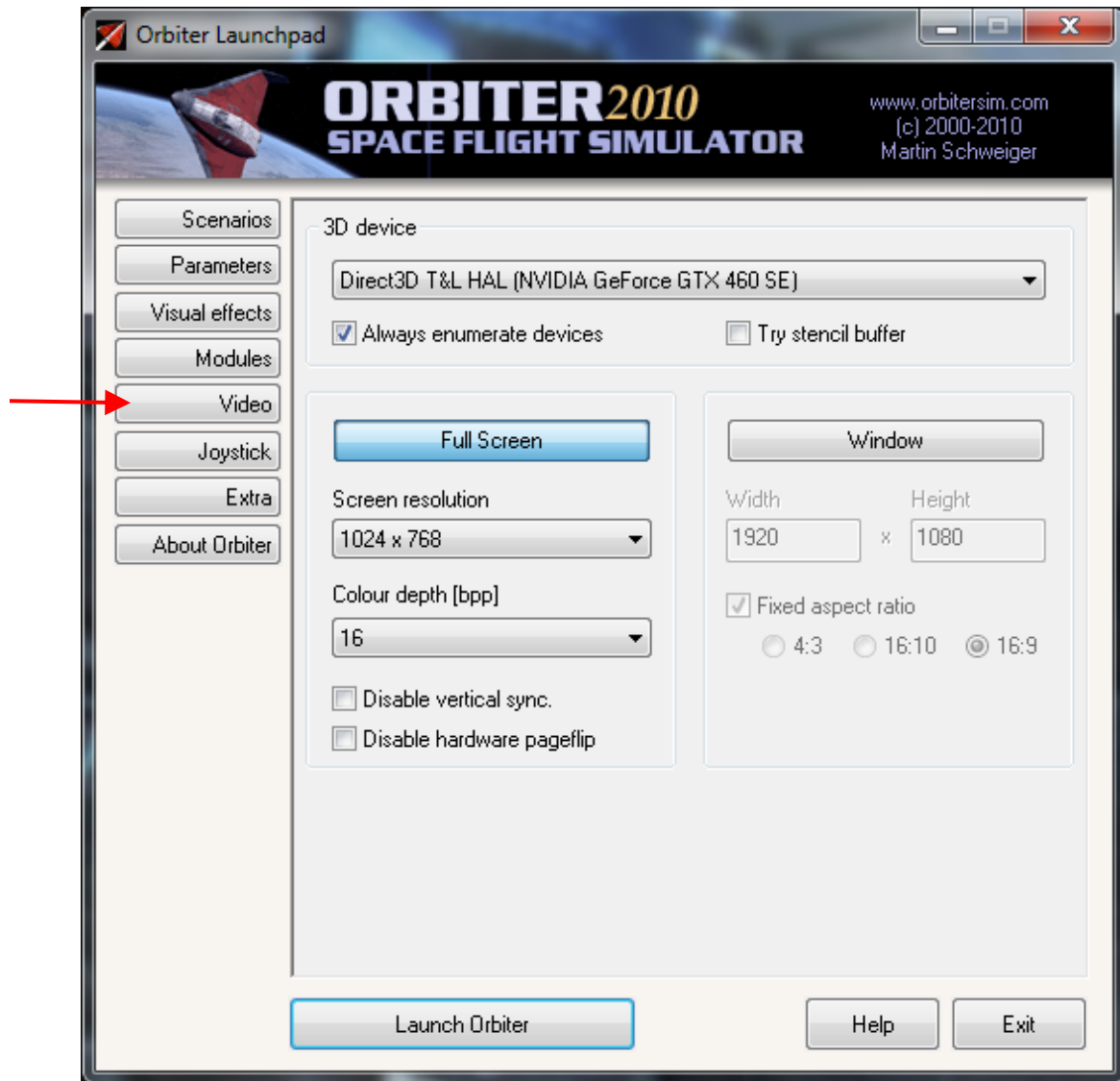
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If you are using a joystick (recommended) this is activated in the Joystick section. Plug in your joystick first, then click the down arrow under the Joystick Device label and select your joystick model:
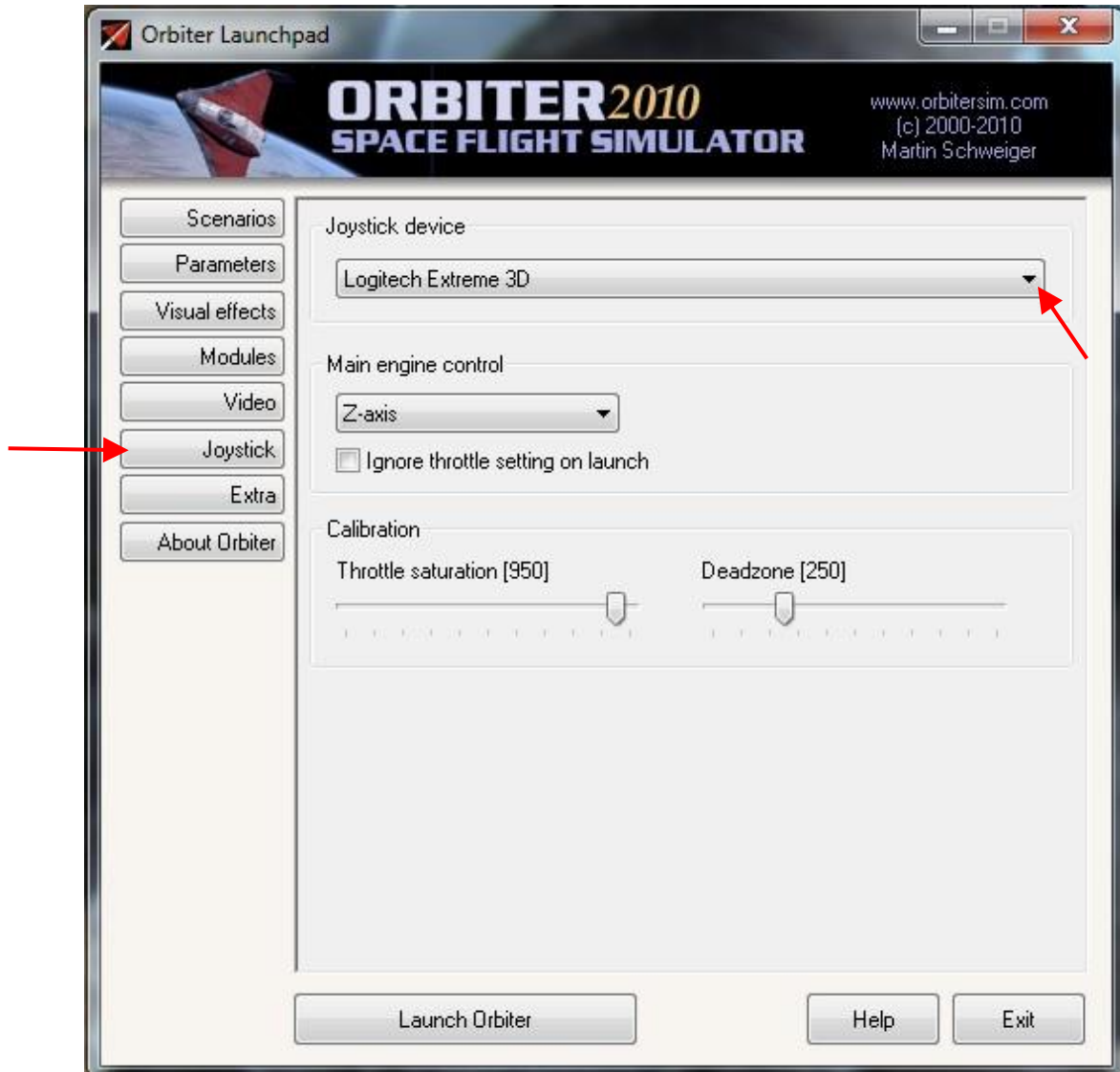
All these setup changes should only be necessary on the initial start of Orbiter.

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Operating the Simulator

Initiating Launch

To use the simulator program system, three separate programs are run on the classroom computers, one on each computer. The Mission Commander runs the *"Orbiter"* program on their computer. The Pilot runs (double-click the icon) the "***Basic Control Data Panels"*** PowerPoint on their computer: The first slide is:
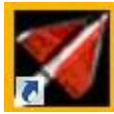

The Flight Engineer runs (double-click the icon) the *"**Flight Engineer Data Panels"*** PowerPoint on their computer. The first slide is:
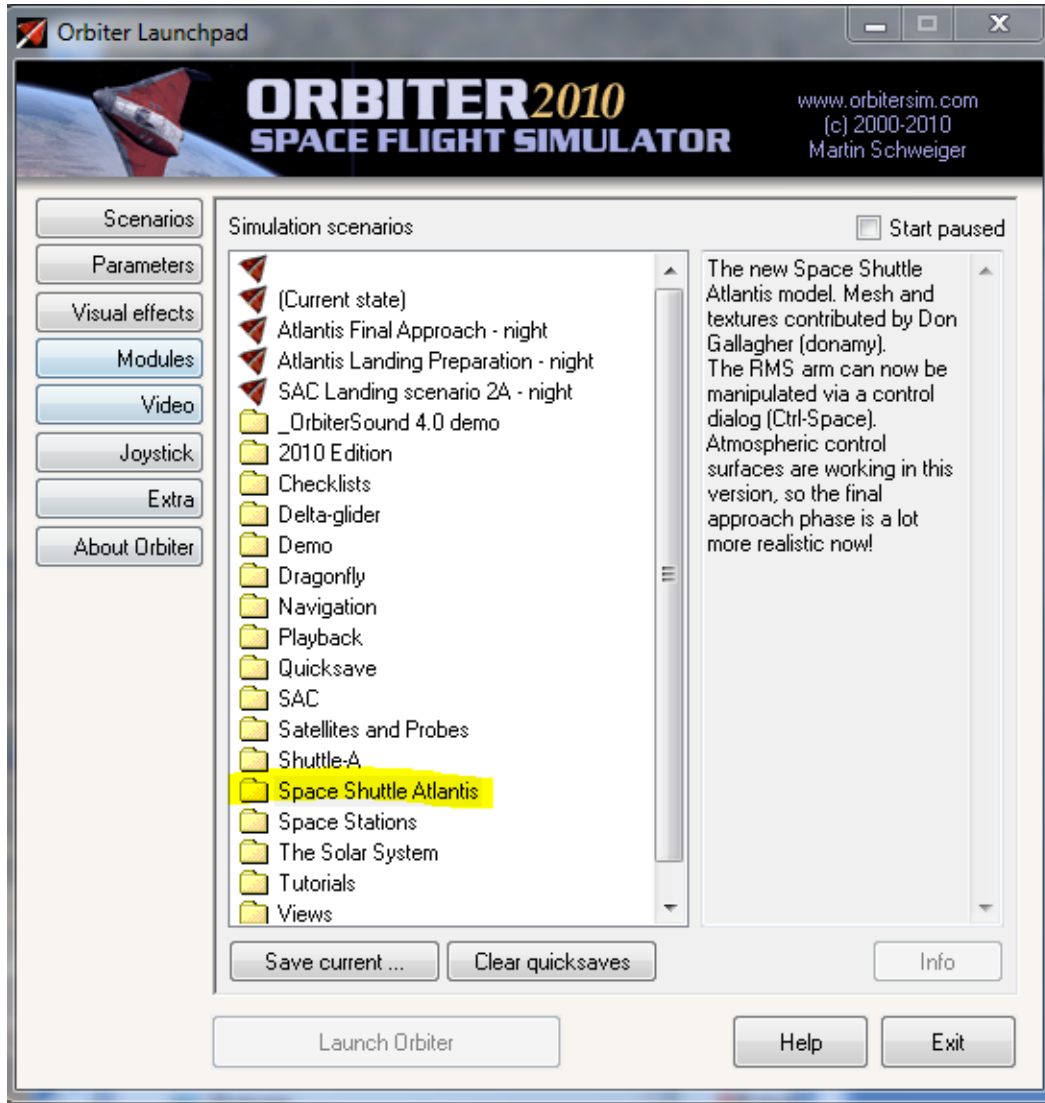
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The Mission Commander loads the Orbiter program by double-clicking the Orbiter icon:
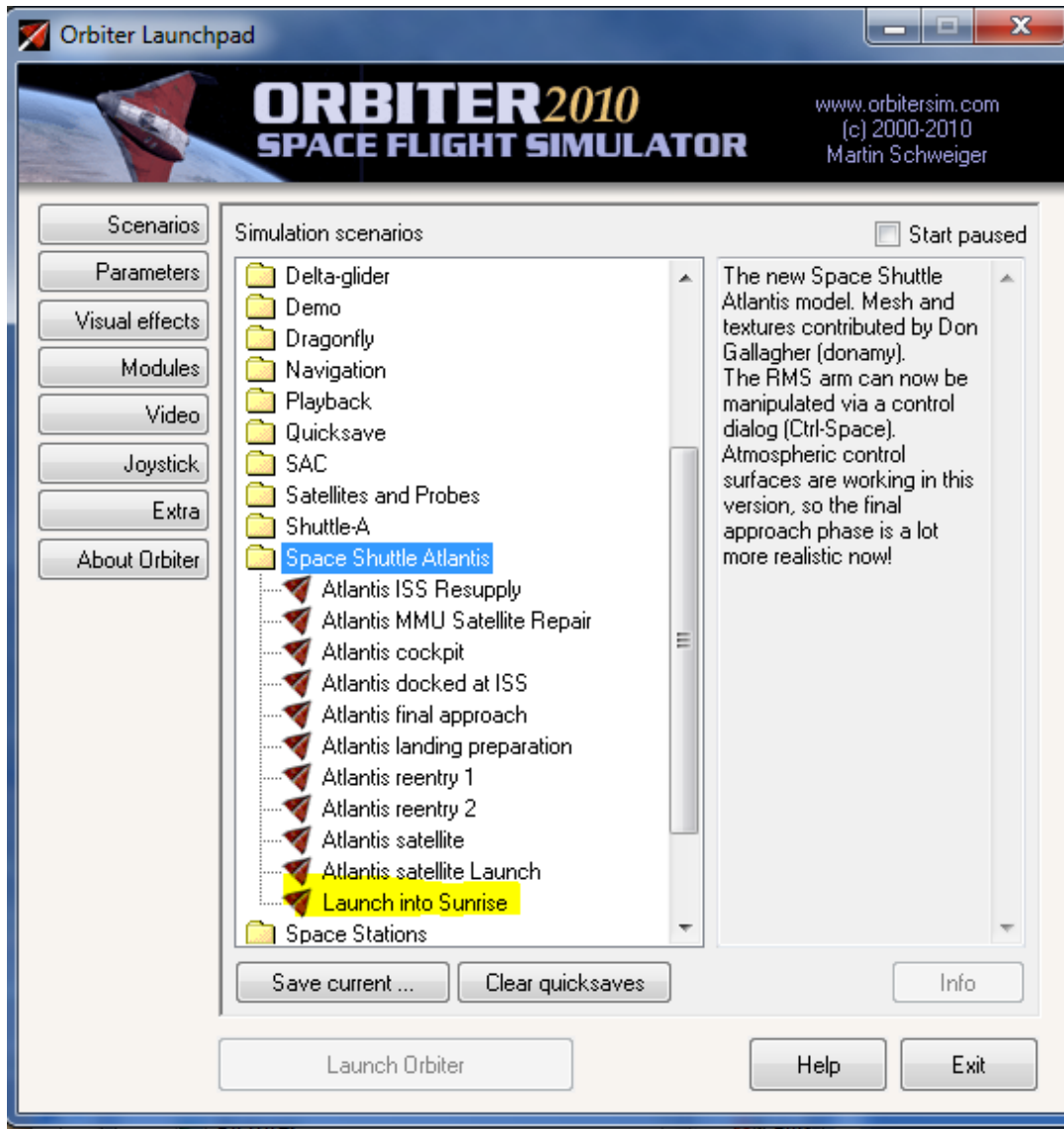
Orbiter will display the <u>Launchpad</u>. Select the "Space Shuttle Atlantis" file.
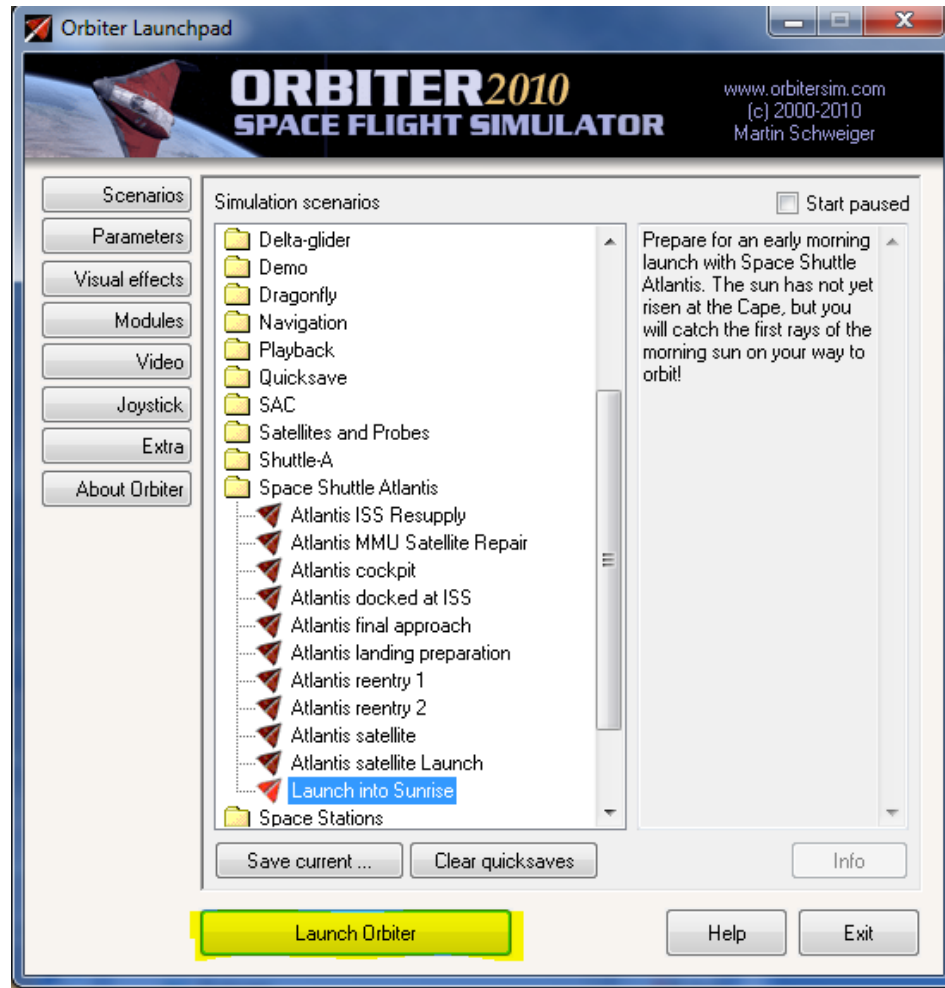
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Then locate and select the sub-file "launch into sunrise" program

and then launch orbiter.

This should launch Orbiter displaying an external view of the shuttle on the launch pad.

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Press **F1** to switch to the cockpit view.

The Mission Commander will need to configure the MFDs and enter the launch commands into Orbiter.

Shuttle Launch Commands for the Right MFD

1. Have the student use the mouse and click on **[SEL]** on the right Multifunction Display (MFD) and then **[Orbit].**

Shuttle Launch Commands for the Left MFD

1. Have the student click **[SEL]** on the left MFD with the mouse and then select **[Terminal MFD]** (you may have to hit **[SEL]** twice to get to this prompt)
2. Then select **[INP].** An "Input Script Command" dialog box will pop up (center of the screen).
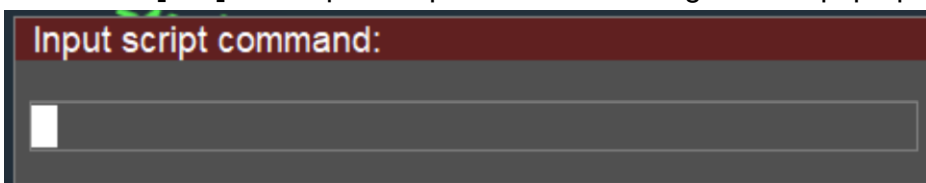
3. In the dialog pop-up box:
   a. Type in *run"atlantis/launch"* and press **ENTER**
   b. Select [**INP**] and then type in *do_oms2=false* and press **ENTER**
   c. Select [**INP**] and then type in *launch()*
   d. Press **ENTER** when you are queued to launch the shuttle at **T-minus 4 seconds**.

Be careful not to touch the keyboard before T-minus 4 seconds or it may change or erase the final command and mess up your launch timing with the Pilot's PowerPoint.