

PAYLOAD MANAGER

user manual

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Introduction

The Payload Manager is a vessel built-in module which allows to join and configuring another vessels as a payloads.

The changing of a mother vessel gross mass, principle moments of inertia and cross sections are taken into account automatically and dynamically updates during the simulation. The mother vessel receives the forces from working engines on child vessels.



In the current version all another forces (excepting engines thrust, i.e. aerodynamic or something else) applied to child ships does not influence the mother vessel. The shifting of a center of gravity is not supported too. Possibly it will be implemented in future versions of Payload Manager.

Maximum number of payloads depends of addon and can be up to 100 for one vessel-carrier. Each payload can be configured (placed and rotated) separately. The vessels "trains" (linear connections of a multiple vessels) and "trees" (hierarchical connections of a multiple vessels) are possible also.

Technical background

Payload Manager is not an universal (vessel-independent) option. This is a program module which is built in vessels dll at C++ code level.

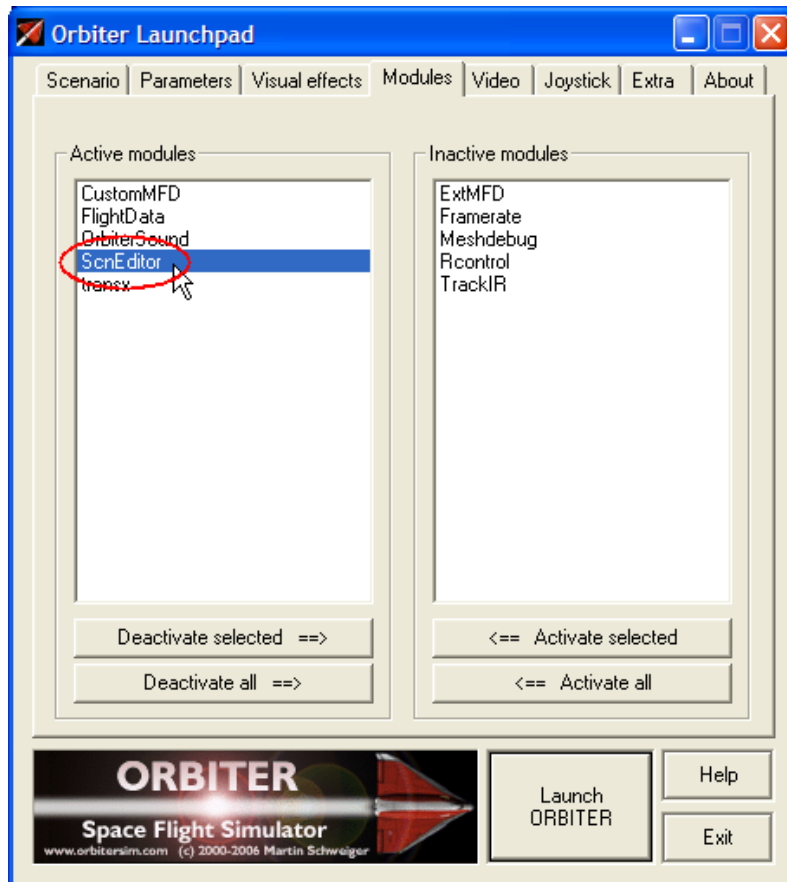
Payload Manager uses the technology of attachment points. It means that user can select any ship in simulation as a payload for his mother-ship. It also means that the user can switch the control focus from mother vessel to the child and back.

Placing and rotating of a child vessel is implemented by shifting of attachment points and rotating of a vectors which defines the attachment orientation.

All needed attachment points are creating automatically. The user does not need to know anything about attachment points.

Requirements

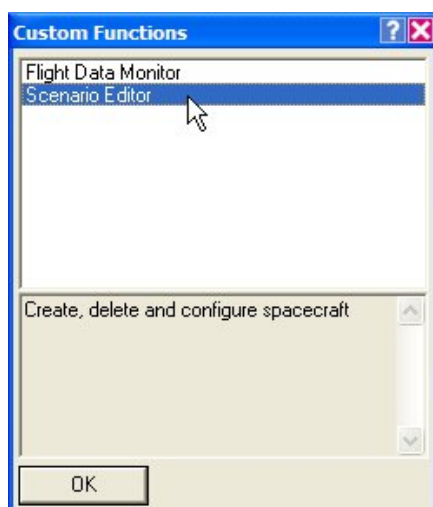
1. Of course, vessel should be equipped with Payload Manager.
2. The *Scenario Editor* module should be activated in *Modules* tab of *Orbiter Launch pad* dialog, see picture below:



3. The payloads names should not contain the space character.

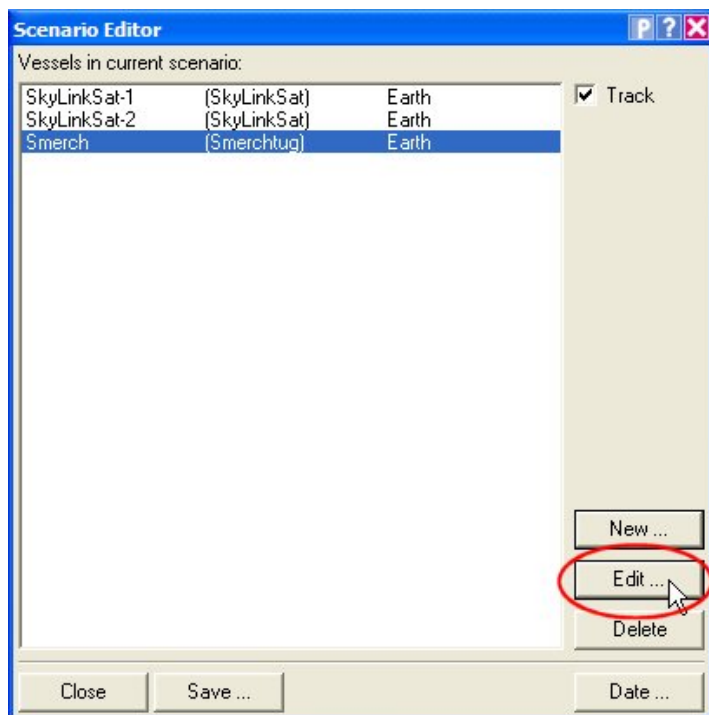
Configuring payloads

During the simulation open the *Custom functions* dialog (**Ctrl** **F4**). Select *ScnEditor* entry and click OK button:

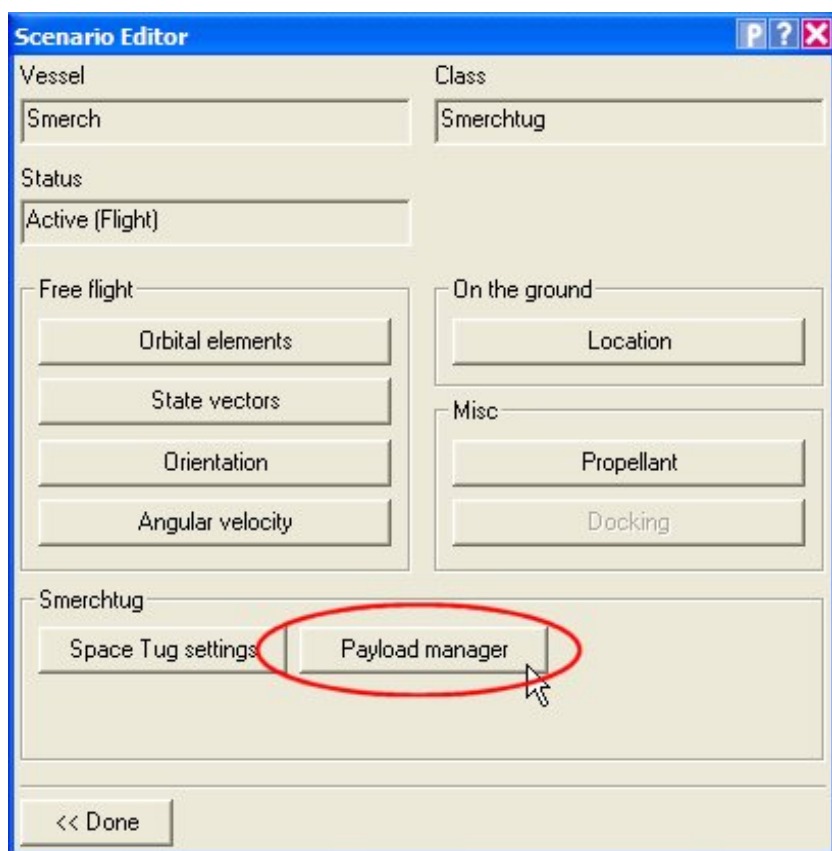


In the vessels list select the vessel equipped with Payload Manager which you want to configure.

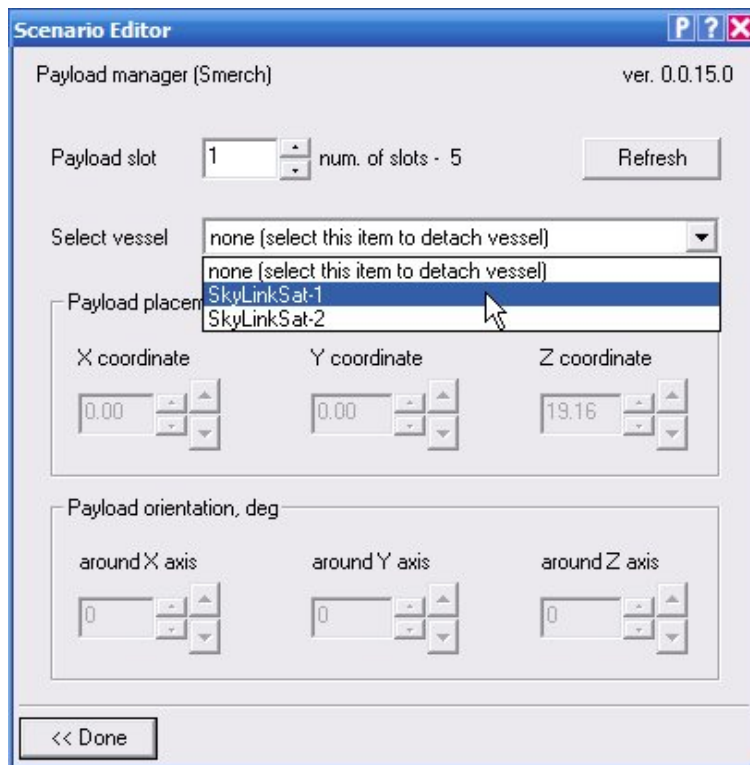
In this example it is a Smerch Tug from Space Tugs addon – see the picture:



Click the *Edit* button to open the vessel configuration dialog. If the vessel has a built-in Payload Manager the dialog contains the same-named button:



Click on this button opens *Payload manager* dialog.



Select the *Payload slot* number 1. Then select the payload in *Select vessel* combo.



Attaching or detaching the payload vessel occurs instantly if the simulator is not on a pause. Use *Refresh* button for updating vessels list and payload placement and orientation parameters.

In this example the SkyLinkSat-1 satellite is selected as a payload for Smerch spacetug:



Now we need to place the satellite more accurately. Satellite can be moved in three dimensions by changing coordinate values in *Payload placement* section:

Payload placement, m

X coordinate	Y coordinate	Z coordinate
0.00	0.00	24.23

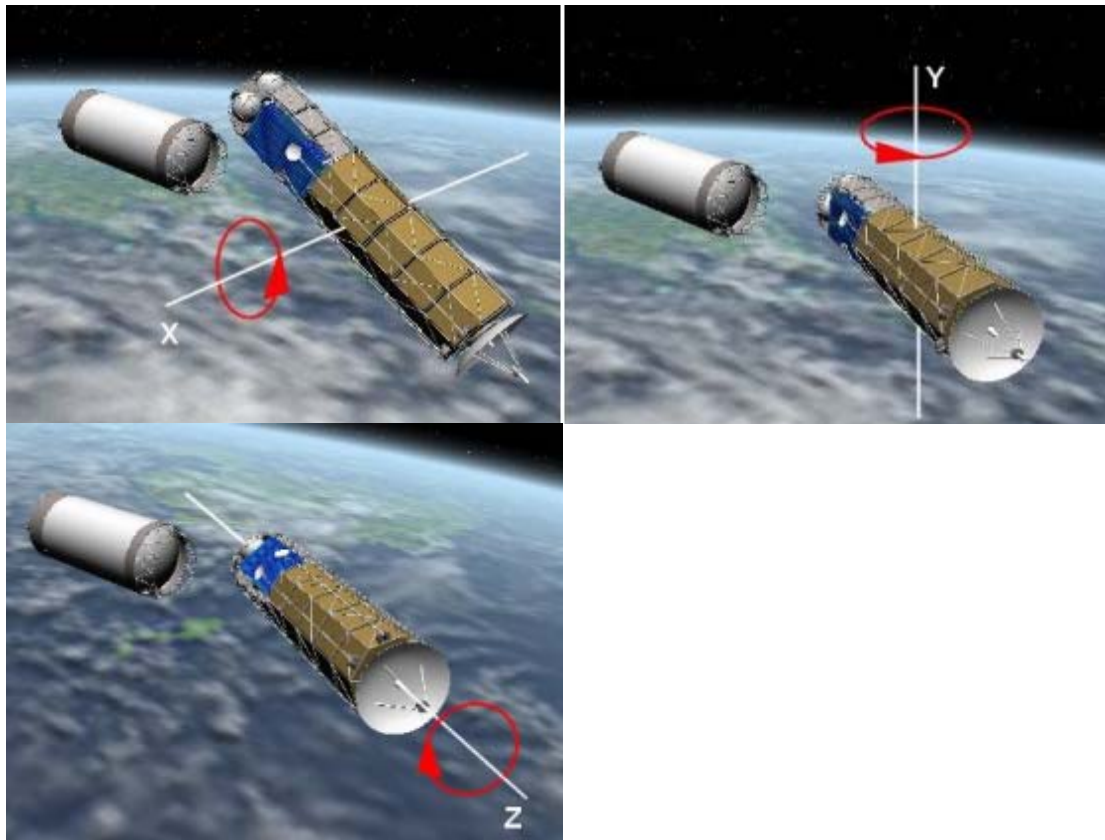
The accuracy is 0.01 m. You can move the payload by spinners (the big step is 1 meter and the small step is 0.1 meter).

The payload also can be rotated as you need. To rotate the payload use the *Payload orientation* section:

Payload orientation, deg

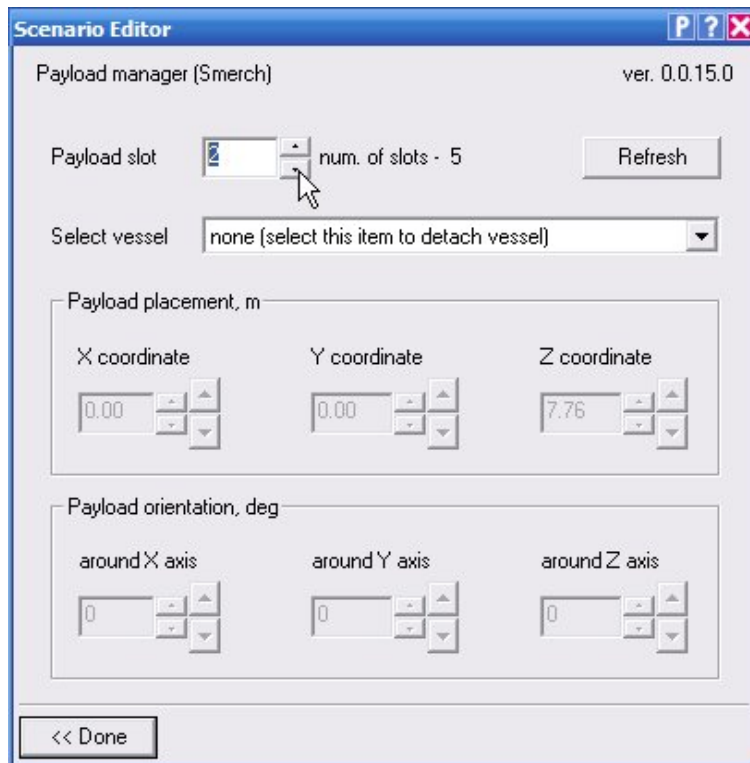
around X axis	around Y axis	around Z axis
0	30	0

The payload rotates in its own coordinate system, see the pictures:

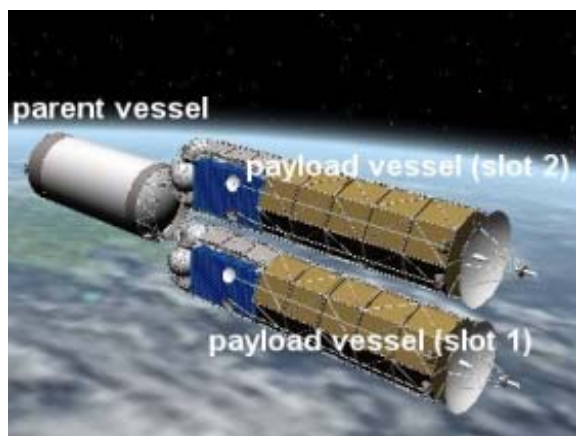


The angular accuracy is 1 deg. You can change orientation by spinners (the big step is 10 degrees and the small step is 1 degree).

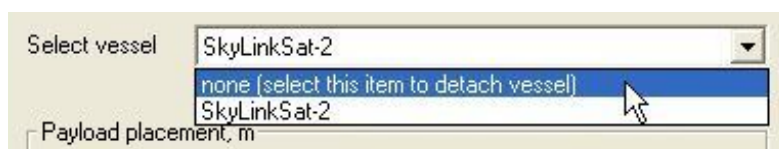
If you want to attach one more satellite select another payload slot:



In this example we have the Smerch spacetug with two satellites SkyLinkSat family:



To detach the payload select the appropriate slot and then select the *none* entry in *Select vessel* combo:



The vessel which was attached to this slot will be placed into the near planet orbit (later you can remove it from simulation using Scenario Editor).

As you finished configuring payloads click the *Done* button.