

PROCEDURE TO ADD NEW VESSELS TO SHIP SIMULATOR 2008

Author: Pjotr van Schothorst, producer and technical director

Version 1.0, released 18 August 2007

Ship Simulator 2008 contains a number of different ships, each with its specific sailing characteristics. We intend to add new vessels to the game on a regular basis, as part of a subscription service. A number of users have shown interest in creating their own ship models, to be added to the game. There is no standard functionality in the game or in the mission editor to do this. A large number of manual steps need to be taken before any new ship model can be added. Many of these can only be done by different people at VSTEP. They are so specialist in nature, that it is impossible, or at least very difficult, to develop tools to automate or assist this process to a level that other people than the developers can use them. It would probably take us more time to create these tools than it took us to create the whole game, including the mission editor. The small number of users for this toolset does not justify this development.

New vessels in the game

Instead of developing a ship SDK or other toolset, we intend to launch a subscription service for new vessels. Subscribers will get one new vessel per month, and a set of missions in which that vessel plays an important part. The 3D models of these vessels can be supplied by external modellers, who will get paid for their efforts. In addition, they can offer their 3D model for sale at 3rd party model sites like TurboSquid. This way we can support external modellers with their efforts, even without the need to develop a complete 3rd-party toolset for this purpose. If you have interest in creating a new player ship for the game, contact us first at info@shipsim.com. Given the large time investment that our developers have to make for each ship, we want to carefully consider your proposal before committing to it. Our decision will be based on a number of factors:

1. Do you have the 3D modelling and texturing skills to make a ship of sufficient quality, and in line with our guidelines? This will be assessed based on other ship models you made in the past.
2. Can you cover some of the other points of the procedure below, like low-detail model, walkthrough collision model etc.? The more you can cover, the less work we have to do here, and the more likely it is we want to work with you.
3. Does the 3D model you have in mind add sufficient variety to the list of vessels we already have in the game? Do people on the forum ask for that ship type? Can we make nice missions with it?

Selected model creators will get a library of objects from us of small parts of a ship, that they may use for the new vessel, like anchors, winches, fenders, lifeboats etc. If you want to sell your 3D model also on TurboSquid or another commercial 3D modelbank, you cannot use the items of our library, or only after explicit permission from us.

Static objects

Adding scenery objects and static ships is a whole lot easier. We encourage users with an interest in 3D modelling to create objects like ramps, jetties, static ships (to be moored or anchored), wrecks, icebergs etc. Initially, you can send these to info@shipsim.com in the 3DS format, with accompanying texture in DDS format. Later, we may extend the mission editor to automate the process for adding static objects.

New scenery

The effort and workflow for creating new scenery for the game is time consuming and complex. We are still working on improving the internal toolset and procedure, so it is not possible to involve 3rd party developers in this process, until we have progressed this further internally.

Procedure for player ships

In this section, the steps are described that are needed to add a new vessel to the game.

Even if a user created a ship in 3D that looks nice on an image, the following elements need to be changed or created as well:

1. We need to have permission from the ship's owner and/or designer, to use it in the game. We have a standard letter for that purpose.
2. The ship model complexity needs to be brought down to about 100,000 polygons. Overlapping surfaces need to be cleaned up, as they cause flickering in the game.
3. An extra low-complexity model needs to be made of 10,000 maximum polygons, for distant viewing
4. The bridge interior and staircases need to be made. Some ships need some extra interiors to walk from the bridge to the deck level. No need to create consoles models on the bridge, please use the objects from our library. Do not attach the bridge interior to the exterior of the Ship. Also other interior parts of a ship should be detached from the exterior.
5. The 3D model needs to be textured with as few textures as possible. Multiple textures need to be combined on one larger texture. All the texture space of a texture should be used, or else the texture needs to be cropped. Textures need to be in DDS format, with resolutions that have a power of 2 size. For example 64x64, 128x64, 512x256 are allowed. The fewer the number of surfaces, the better the performance in the game. Max size for a texture is 1024x1024 pixels.
6. A lightmap needs to be made for the ship, only for the bigger, flat areas like walkways and walls (but not the hull). This should go on all surfaces apart from railings and other really small polygons. Don't lightmap the interior of the bridge. Use a SkyLight in the Scene to Create The Light map.
7. A damage texture needs to be added to the hull. This will be an extra texture stage for the hull only. The hull should be ever thing that should get damage and can have no LightMap. The 2nd UV channel is used for a tiling damage texture. The model should be completely flatten-mapped.
8. The hull needs to be vertex-colored according to the areas that can have dents and holes.
Vertex Colour Black: Make Holes, Dents and Draw damage.
Vertex Colour Red: No Holes But Dents and Texture Damage
Vertex Colour Blue: No Dents But Holes and Texture Damage
Vertex Colour Violet: No Holes and Dents but only Texture Damage
9. An inner hull is needed, black, to avoid that you can see the ocean through a hole after collision
10. For small ships like powerboats, the outer hull needs to be inverted and slightly reduced in size, to function as the inner side of the hull. This is to avoid seeing through the hull in case of a hole.
11. The hull needs to get the right polygon grid for collisions. Some areas may need more polygons, to make it possible to get small dents and holes. The minimal Space between vertices is 2 meter. Long stretched polygons should be subdivided into more square shapes because they subdivide strange by the damage collision algorithm.
12. A collision model needs to be made for the ship dynamics. This should be made of the High Polygon Mesh and should be REALLY low but should fit like a cage around the model. Small objects can be left out of the Collision Model.
13. A walkthrough collision model needs to be made, with all the walkable areas of the ship and vertical areas to prevent people from falling off or walking through walls. The vertical areas need to have rounded edges (angles less than 90 degrees) to avoid getting stuck in tight places. Chafer the Edges of the walkable areas. Stairs should be slopes in the walkthrough model and can't have steps. Also offset the Collision wall at least 0.2 Meters of the visible wall.
14. A roof collision model is needed to avoid the appearance of rain in interior areas like the bridge/cockpit (rain collision model). This can also be used to switch on/off specific sounds based on where you are. The normal Should Face down to the walking Area. This should go a little bit above

the Roof and be a little bit large that the Surface its Covering. And be a little bit above the Roof cause otherwise you would still see the Rain entering the Roof.

15. Interactive bridge objects need to be placed on the bridge (navigation and steering equipment). These need to be connected to the corresponding values in the game. Consoles objects are ready made and can be given to 3rd party modelers. Interactive elements need to be added by the developers. If special controls are made, they should be a bit oversized to make them easier to use. Also text that people should be able to read should be made white polygons instead of a texture because then you can see them better, If you still choose to use a texture for text, no Mipmaps are used in that case.
16. The ship needs to get its dynamic properties, for steering/manoeuvring/handling, for collisions, and for its behaviour in waves. We need to know the physical properties (dimensions, weight), engine characteristics, and manoeuvring characteristics (top speed, turning angles, acceleration/deceleration).
17. props and rudders should be exported separately from the object with the X,Y,Z, at 0, placed at the pivot point. The same props should still be left also at their original position, as a separate surface, so we know where to place the dynamic equivalent of the item. After adding the dynamic version, we need to simply take off or hide the original static element.
18. The ship needs to get special effects like bow wave (dependent on its motion on waves), stern wake water, foam on its sides, and a fume from the exhaust. All of this dependent on its speed and the wind speed.
19. Many ships have some special items, like doors that turn or slide open and close when you get close to them in walkthrough mode. We may add window wipers to some ships for bad weather conditions. For doors, the easiest solution is to leave them open so people can walk through them. Animated opening doors are harder to program.
20. Each ship needs to get an extra horizontal flat surface with just its outline, to show the ship on the electronic chart in the correct dimensions.
21. Each ship will get special areas where ropes can be attached to, like mooring ropes and towing ropes. Of course there should also be objects on the ship on the correct spots for mooring and towing. We have a library of re-usable elements for this.
22. Reflective and transparent areas like windows will need some special treatment with materials. They should be separate surfaces, placed slightly off the wall, to avoid flickering.
23. Navigation lights need to be added, in accordance with the IMO Regulations
24. We need to have sound files for the ship, of the engine in different speeds. Both recorded outside and on the bridge.
25. Icons and renderings need to be made, for in-game display and for display on the Website.
26. Promotional videos need to be made and posted on the site and on YouTube, to stimulate the demand for the vessel.
27. A loading mechanism needs to be made to make the ship usable with the mission editor and in gameplay mode.
28. Missions need to be made where the ship plays the main role.