3-D Printed Mounts for HeadMouse Nano

There are many tablets that can use a HeadMouse Nano and the dimensions and shapes vary. People generally choose to enclose their tablets in a protective case which adds even more variations in size and shape.

To facilitate attaching HeadMouse Nano to this variety of host devices we have developed a 3-D printed mount approach that incorporates a separate piece for the HeadMouse Nano and the host device. This allows one to use the same HeadMouse Nano mount with a variety of custom host device interfaces.

We call the HeadMouse Nano mount the S*napTray.* We call the other piece that interfaces to the host device the *host interface profile*. We call it a profile since it is generally a two-dimensional shape that is extended in length to match the SnapTray's width. This makes this part very easy to print since it doesn't require support material.

- snap_tray.stp (3D mechanical CAD file, STEP format)
- snap_tray.stl (3D Stereo Lithography file format)

Next up is to determine the profile for the tablet by itself or the tablet in a protective case. This is the challenging part.

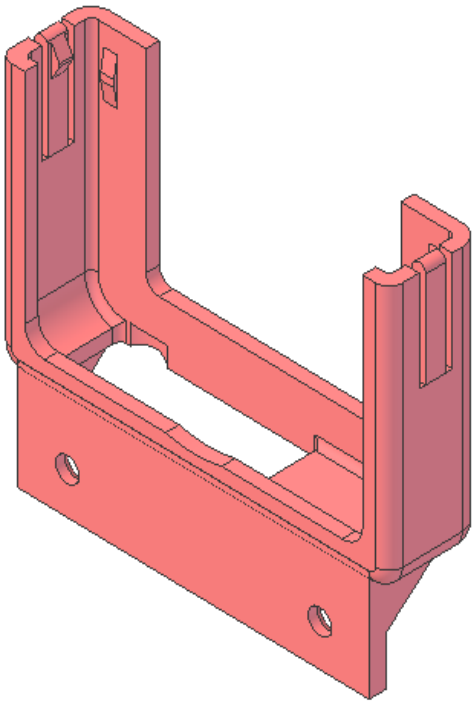

Figure 1: HeadMouse Nano SnapTray

There are two fasteners that are used to fix the two pieces of a mount. These can be the only connection between the two parts or can be used to align and hold the two pieces together long enough for adhesive to set. Instead of adhesive we use an acetone solvent to "weld" the two pieces together. Solvent weld just means we use a solvent to melt a small part of the two piece so where they touch they flow together and form one part.

When designing your host device profile refer to the drawing for the plane where the two parts meet. You can find the dimensions, hole diameters and the hole locations on the drawing. The diameter of these two mounting holes is important so that the thread forming screws will have sufficient material for a tight fit. If the holes are too small the part will crack when you insert the fasteners. If the holes are too large the fasteners won't have enough bite into the material to hold. Start with the diameter on the drawing, but you may have to adjust these holes a bit for optimum fit.

For the profile locate a part of the device or device and case that doesn't change over the length of the bracket. This makes 3D printing the part much easier since it doesn't change. For example, look at the part we made for the Unicorn Beetle case by Supcase. It is the length of the Snap Tray interface area and has a constant profile.

Our process was to measure(estimate) the case profile and print a small piece that was long enough to test fit to the device. After a few interations print a full length piece and see if it flexes the right amount for a snug fit.

You can use one of these file types to generate the sliced file used by your printer. We've had better results using a FDM printer (Fused Deposition Modeling) verses a liquid polymer printer. However, there are many printers, filament materials and resins. Your mileage may vary.

We used an inexpensive Creality Ender5 type printer for these mounts with a heated glass bed. The filament is a garden variety 1.75mm, PLA. We used the nozzle and bed temperatures suggested by the filament manufacturer.

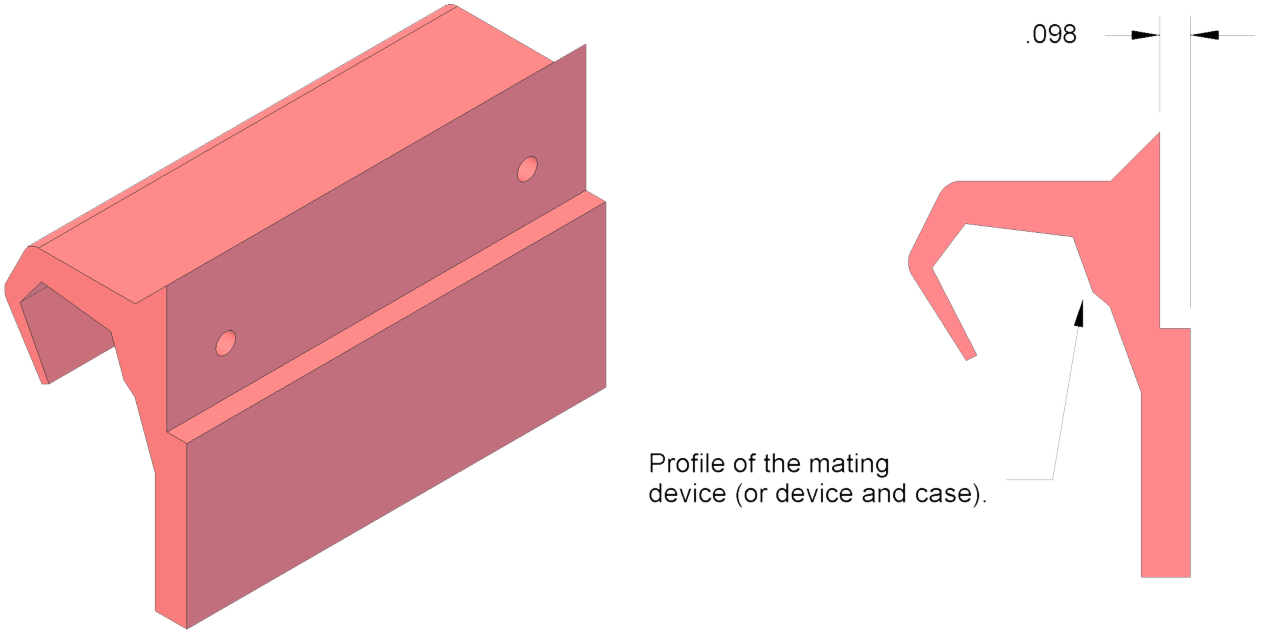

Figure 2: Unicorn Beetle interface Profile

We use Ultimaker Cura to slice our models and to generate the necessary supports. It is a free utility and available at https://ultimaker.com.