

DESIGN FOR PARASKI

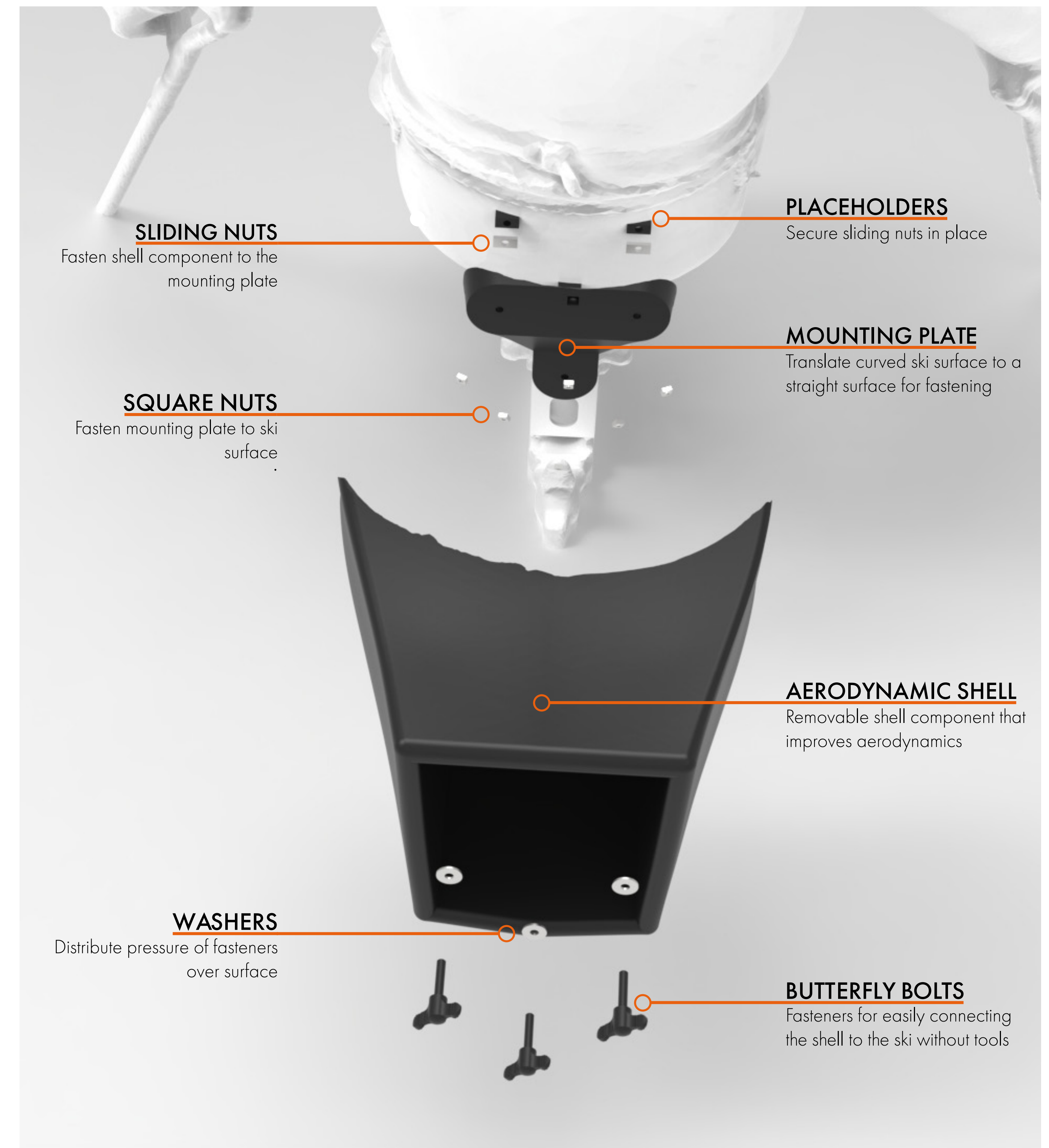
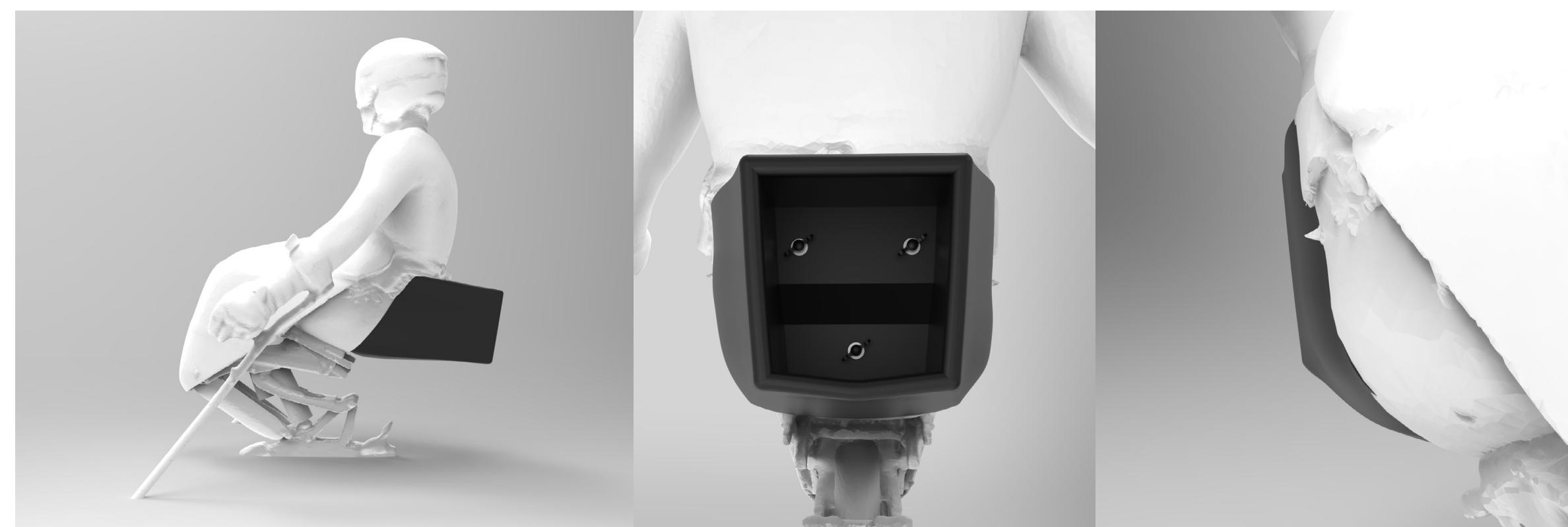
A new detachable aerodynamic shell component

Problem definition

Air resistance is the most significant opposing force sit-skiers encounter during downhill and super-G races, accounting for as much as 80-90% of the total resistance acting on the skier. The current sit-ski shells are not optimally streamlined, particularly the rear section. Any improvements made to the sit-ski's aerodynamics could have a big impact on a race result. This project addresses a critical issue: enhancing the aerodynamics of sit-skis without compromising stability, safety, or the user's ability to control the ski.

Solution

To counter the aerodynamic force, a new shell component was designed using 3D-scans to streamline the rear section of the sit-ski, significantly improving the aerodynamics. The shell component is 3D-printed using TPU filament and variable infill percentages. This ensures stiffness in normal usage and impact absorption in the event of a crash for safe usage. Aerodynamic improvements were validated using CFD-simulations and wind tunnel testing. A mounting plate was added to the ski to translate the curved ski surface to a straight surface for quick and easy connection without the need for tools. The images below show the new product and perfect fit from different angles.



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Design for paraski: a new detachable aerodynamic shell component
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