

IMPROVING DOWNHILL SKIER AERODYNAMICS THROUGH DETAILED FLOW SIMULATION

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- Aerodynamic drag accounts for 80-90 % of the total braking force of a downhill skier
- Collaboration to understand and improve the aerodynamics of the Norwegian alpine ski team
- Fast handheld 3D scanning of athletes
- Detailed computational fluid dynamics simulations with more than 20 million cells
- Validated against wind tunnel tests performed at NTNU and Politecnico di Milano
- Optimization of position by digital adjustments
- The improved position gives 20 % less drag due to reduced separation in the wake
- Ongoing work to further validate the process, evaluate more positions and automate the optimization

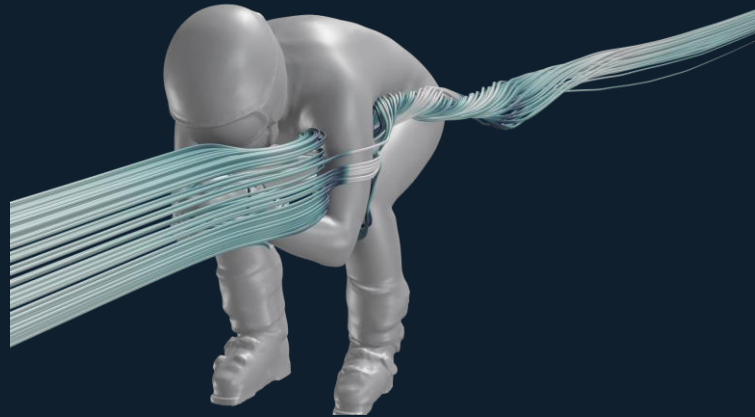
3D SCANNING



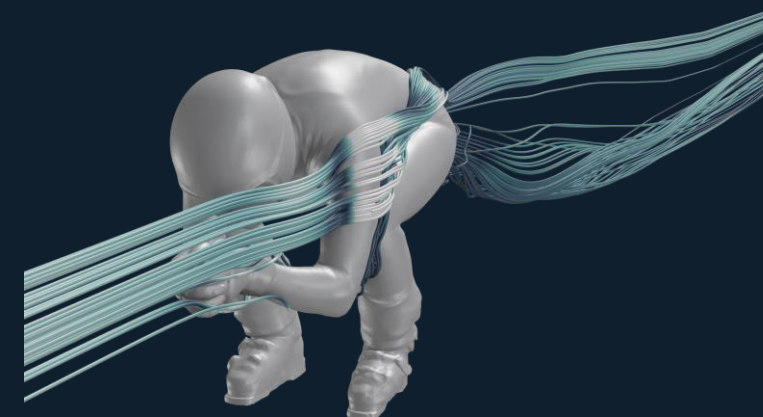
COMPUTATIONAL MESH



BASELINE POSITION



IMPROVED POSITION



NablaFlow



SIAT – Senter for idrettsanlegg og teknologi

