

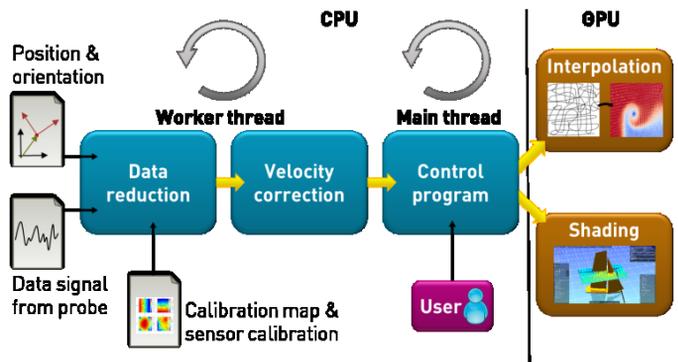
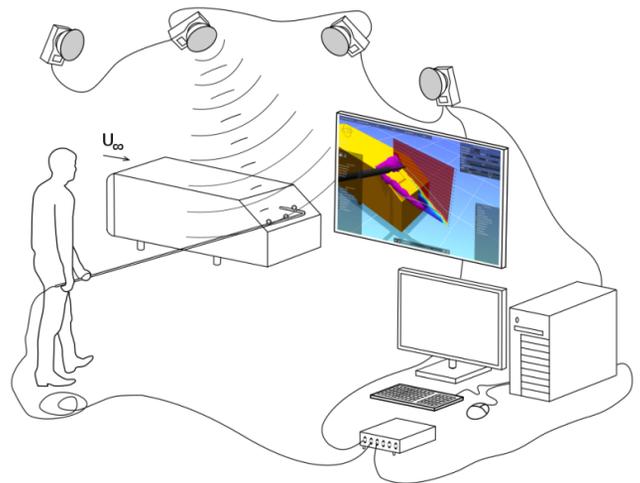
ProCap System A new world of quantitative flow visualization Standalone system for windtunnel measurements

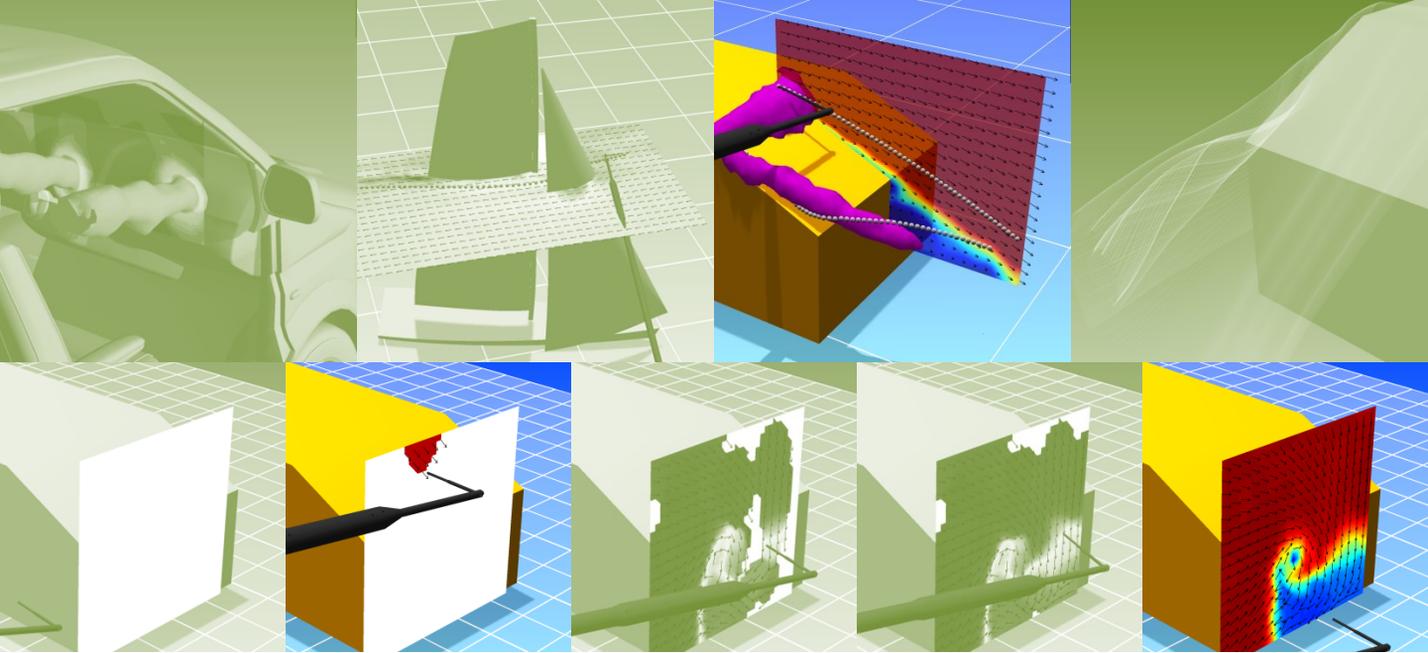
ProCap (Probe Capture): Optical tracking of hand-held probes

Probe Capture (ProCap) is an innovative approach that combines the simplicity and speed of a smoke probe with the quality of a 3D-point measurement scan. While the operator guides a hand-held probe in the region of interest, the probe's instantaneous position is tracked with a camera system. The data is interpolated and visually presented in real-time and stored for later analysis. This human-based scanning approach is very efficient as in regions of large gradients the scanning is refined and no machine-teaching even for complex geometries is necessary.

Software architecture

The software is designed to efficiently handle the workload from the different real-time tasks like data reduction and interpolation. The view and the visualization features can be adjusted in real-time during measurements by the user. The visualization is implemented in Unity and is 3D ready with the data exportable to various standard file formats.





Optical tracking

- passive marker technology
- sub-millimeter position accuracy
- 200 Hz tracking rate
- measurement volume of 1 m³ typical
- working distance up to 7 m
- low latency of 4 ms
- outdoor (daylight) capability
- model position and deformation measurement
- high-speed video output (optional)

ProCap software

- real-time data reduction and interpolation
- physically constrained interpolation with adaptive spatial resolution
- visual probe position and measurement point density feedback
- derived quantities: vorticity, Q-criterion, pressure gradient
- extensive visualization library: vectors, contour plane, isosurfaces, streamlines
- model-reference frame based coordinates
- in-line probe calibration function
- VRPN supported
- fusion of different measurements to one dataset
- data-export to Matlab, Paraview, VisIt
- integration of application-specific probes

- CAD model import (.stl)

- manipulation of imported model with reference markers

Flow probes

Most flow probes can be used with ProCap:

- multi-hole probes: 5, 7 and 12 holes
- thermal mass flow meters
- Pitot-static tubes
- temperature probes
- sound pressure

System package

The standard system package includes:

- tracking cameras and software
- ProCap software
- DAQ hardware
- 5-hole probe
- laptop with pre-installed software

The system is highly modular and can be adapted to customer requirements.

Please contact us with questions regarding your application.

Contact

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