



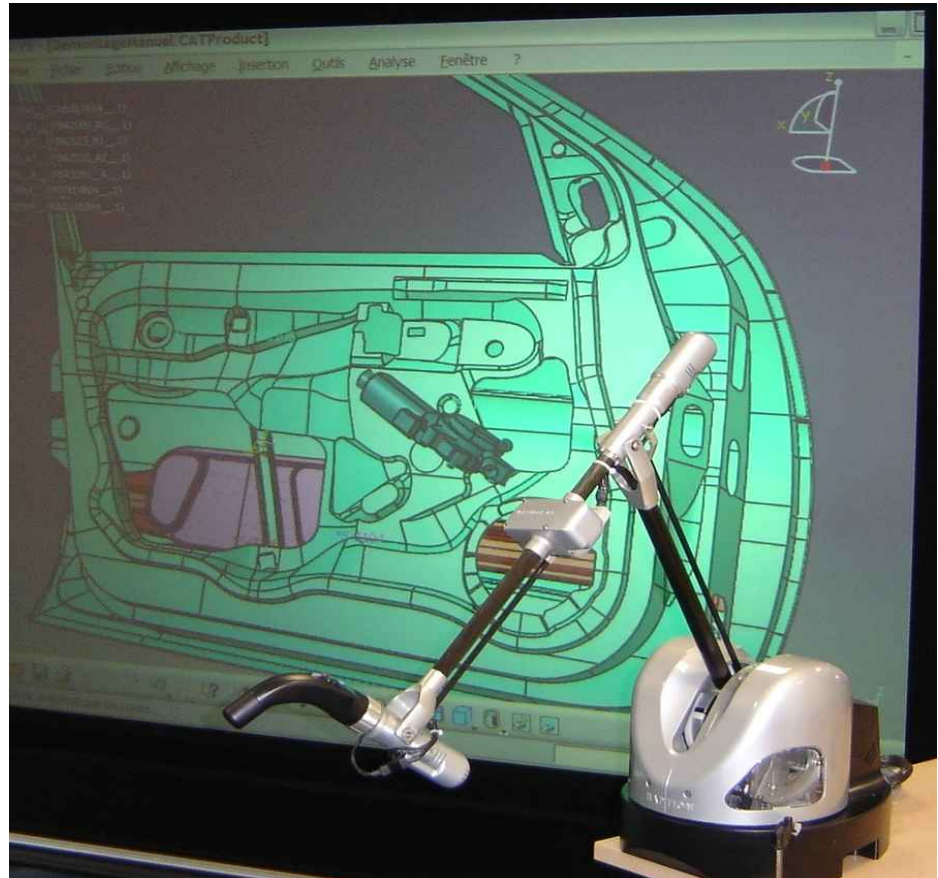
HAPTION → Virtuose 6D35-45

The Virtuose 6D35-45 is a 6 degrees-of-freedom haptic device, specifically designed for work in Virtual Reality environments.

Thanks to its large workspace and its high forces, it enables a scale one interaction with digital models coming from CAD.

Its main applications are:

- ergonomic studies
- accessibility studies
- assembly simulation
- project review



Technicals characteristics

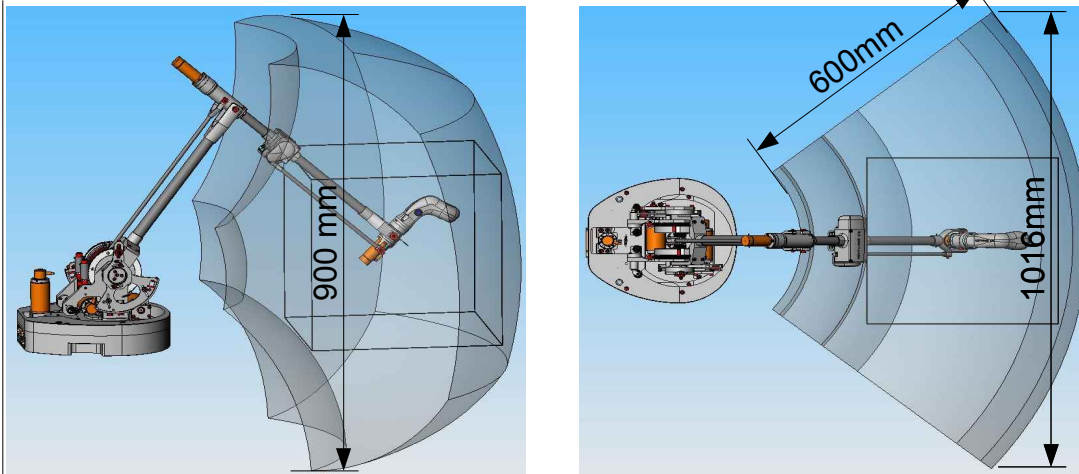
The VIRTUOSE 6D35-45 is the only force-feedback system of the market today, which offers the following characteristics:

- ✓ Force-feedback on all 6 degrees-of-freedom (3 translations and 3 rotations)
- ✓ Operational workspace corresponding to the movements of a human forearm
- ✓ Length of the segments constituting the arm: 450 mm
- ✓ Maximum force of 35N (10 N continuous), i.e. high enough to simulate the handling of heavy objects
- ✓ Maximum rotation torque of 3 Nm (1Nm continuous), i.e. high enough for two-handed handling of large virtual objects
- ✓ Exact static compensation of the device's own weight
- ✓ Modular end-effector equipped with programmable switches
- ✓ Gripping tool equipped with a proximity sensor, connected to a "dead-man" function. As long as the user does not hold the gripping tool in his hand, and as soon as he releases it, the motors are switched off, and no active movement can occur.
- ✓ Reduced weight, transportable without specific equipment
- ✓ Development kit (API) available for the major operating systems
- ✓ Demonstrated compatibility with the major software applications on the market today, using dedicated plug-ins: Vortex™, Havok™, ODE, Virtools™, Catia™ V5, OpenMask, etc.
- ✓ Compatibility with tracking device like ART

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Virtuose 6D35-45

Work Space



The VIRTUOSE 6D35-45 is composed of two main articulated segments fixed on a rotating base. The second segment ends with an articulated wrist, which can rotate around three concurrent axes. As a consequence, the haptic interface is a 6 degrees-of-freedom device, with force-feedback in all directions. The workspace of the VIRTUOSE 6D35-45 is large enough to include a cube 45 cm in size. The resolution in position is 6×10^{-3} mm

Articular characteristics

Axis N°	Clearance in °	Joint Torque in continuous en N.m	Joint Torque in continuous en N.m
Axe 1	79	5	15
Axe 2	100	3.1	9.3
Axe 3	100	3.1	9.3
Axe 4	215	0.79	2.37
Axe 5	111	0.79	2.37
Axe 6	162	0.79	2.37

Modularity



The user takes hold of the haptic device using a gripper or handle placed at the tip (called "end-effector"). The end-effector is easy to remove and replace, so that a frequent change of tool is possible, in order to customize the application and reinforce the sensation of immersion. The gripping tool is equipped with four push-buttons. One of the push-buttons is dedicated to the offset function (see the control system functionalities hereafter). The state of the other buttons can be accessed using the VIRTUOSE API.

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