

Real-time interaction with Haption technology

Motion Capture for Human Tasks (also called “IPSI for V6” or simply “IV6”) is a new tool enabling the streaming of Motion Capture data into V6, in order to animate human models in real-time. More than just a software connector, IV6 is a complex simulation software module based on real-time rigid-body physics.

The first benefit of IV6 is the ability to create new human skills, based on the real motion of a human operator. The human operator performs the task at real speed, and the system generates a Gesture Activity containing the sequence of postures with a high degree of details, up to 100 key-frames per second if needed. The Gesture Activity can be transferred into a new generic skill, which can be reused later on for building complex animations with a very high realism of motion.

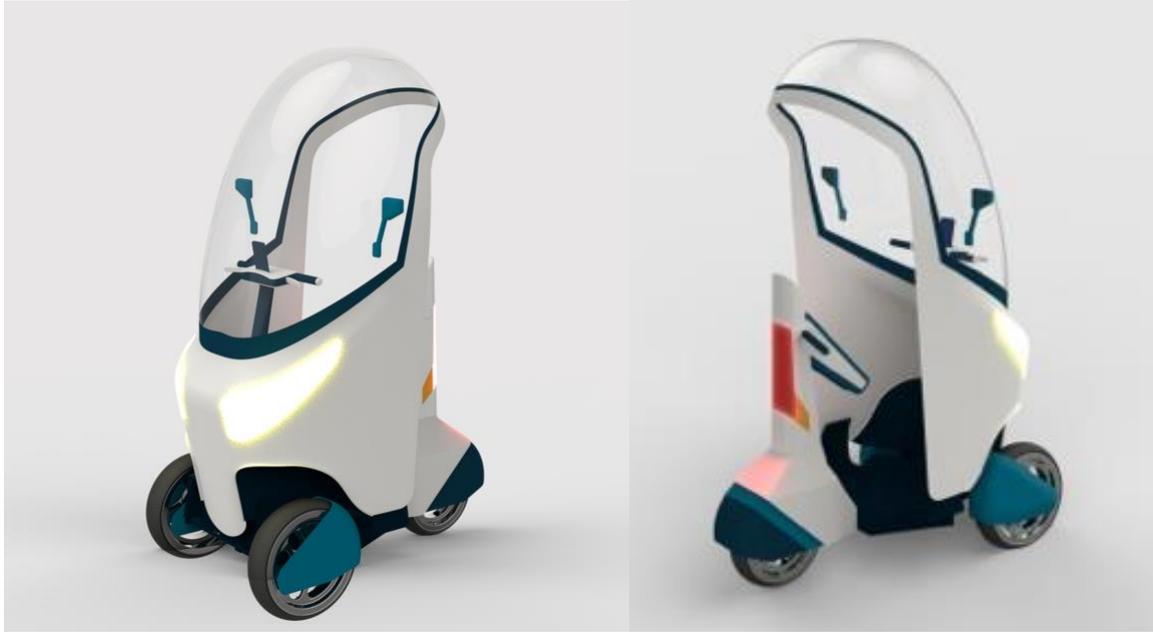
But the real power of the solution lies in the first-person experience for the human operator. Through the motion capture device, he is controlling the human model as an avatar of his own body. When combined with a head-mounted-display (HMD) or an immersive visualisation device, the operator can see the CAD model through the eyes of the avatar, and manipulate objects with its hands.

Depending on the scenario, the avatar may have the same anthropometry as the operator, or a very different one. But even with differing body sizes, the system generates relevant postures, thus greatly simplifying validation studies such as reachability, visibility, accessibility, etc.

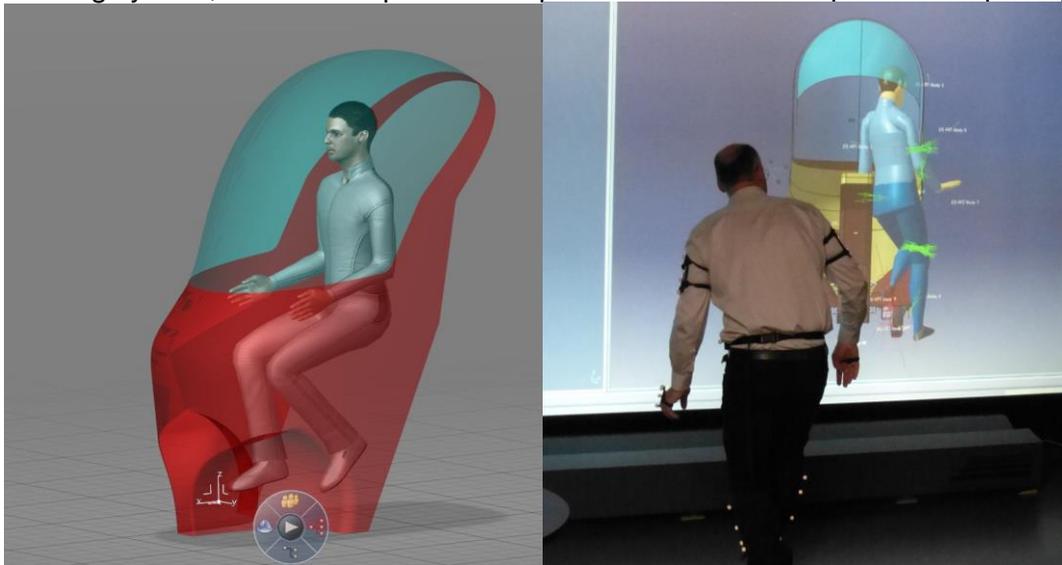
The core of IV6 is a real-time rigid-body simulation. As a consequence, the human model is not just a visual avatar, but a real actor of the 3D environment. It can pick and place objects, operate tools, push furniture around, etc. Moreover, the physics simulation ensures that the avatar does not pass through obstacles, but stops at their contact and slides on their surface. Therefore, the resulting animation is always free of clash.

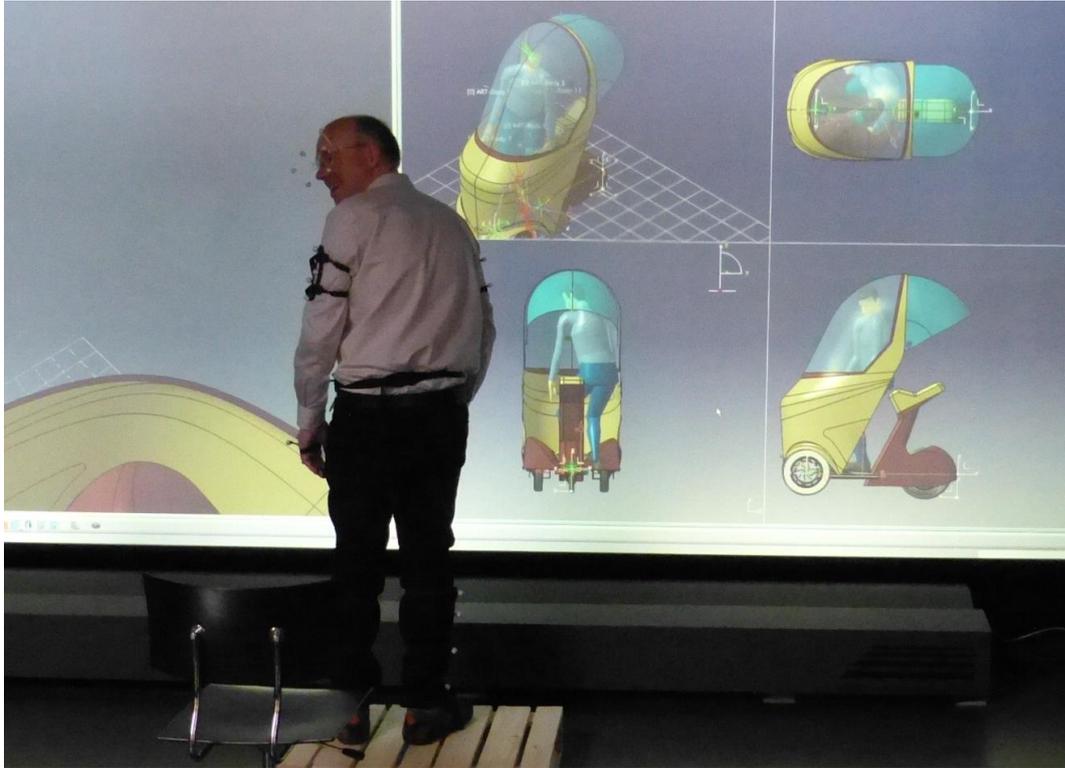
Success story

Within the project BiCar, the ZHAW School of Engineering developed a specific mobility concept targeted at urban mobility in 2030. The associated vehicle is designed only for car-sharing use, and is intended as a platform for developing, testing and demonstrating new ideas. By the end of 2014, a first model will be presented, with limited driving functions, illustrating the feasibility and the idea of BiCar.



To develop this vehicle we use DELMIA Ergonomics tools with Haption software and a tracking system, in order to optimize its operation as well as step-in and step-out procedures.





More to the project BiCar on the BLOG: <http://blog.zhaw.ch/bicar/>

About ZHAW

Located in Winterthur, the Zurich University of Applied Sciences (ZHAW) is one of the leading universities in Switzerland. Teaching, research, continuing education, consulting and other services are both scientifically based and practice-oriented. The eight Schools of the ZHAW cover a broad range of subjects, and all of them carry out disciplinary and interdisciplinary research. The results of ZHAW research projects are both scientifically sound and practice-relevant. About 11,100 students are enrolled in 26 Bachelor's and 14 Master's degree programmes.

Web site of the ZHAW: www.zhaw.ch

About Haption

A French SME based in Laval, Haption develops hardware and software solutions for real-time human-computer interaction. Its main fields of expertise are haptics (force-feedback) and real-time physics. In the industry, the application domains range from assembly validation and maintenance simulation to ergonomics. Haption is also active in the nuclear industry (robot tele-operation with force-feedback) and healthcare (simulation-based training, surgical assistance). Haption has been a V5 CAA Adopter since 2004, and became a V6 Partner in 2014 (<http://www.3ds.com/partners/partner-details/haption-sa/#Software>).

Web site of Haption: www.haption.com