The Virtual Reality Center for the Study of Human Behavior in the near future!

Daniel Mestre, CNRS Research Director

Virtual… Real… Marseilles!

The virtual world is … increasingly real! Applications are developing quickly and are increasingly numerous in the industrial environment and its economic consequences are becoming more and more tangible. Marseilles and its region are coming into the lead with the spectacular development of the Virtual Reality Center for the Study of Human Behavior!
This center is the technological platform of the "E-J Marey" IFR – (Institut Fédératif de Recherche – Federative Research Institute) in Luminy (CNRS & University of the Mediterranean), and is firmly supported by Provence Promotion. It will be provided with the latest technology at the end of 2005 - beginning of 2006 through a large number of regional and national subsidies. Daniel Mestre, the CNRS Research Director, is at the helm.

> A platform to study human behavior

We have set up the virtual reality project in the context of the “E-J. Marey” I.F.R., a Research Institute specialized in the study of human movement and behavior. This institute is directed by professor Reinoud Bootsma and is affiliated both to the University of the Mediterranean and CNRS that has been installed in Luminy for many years.
The "http://www.laps.univ-mrs.fr/~mestre/mestre.htm" site helps to approach our work better.

Our Virtual Reality Center is based on a technological research platform using a technologically ambitious system combining particularly a means for the user of achieving sensorial stimulation and real time interaction with a fully controlled virtual world.

> Stereo vision and highly spatial sound …

We have brought together specialists in human perception and movement around this system. The purpose is to set up Virtual Reality (which usually concentrates on technological tools in the Information and Communication Sciences and Technologies field), at the service of research in Life Sciences and Physical Sciences for the engineer.

In particular, we are working on experiments aimed at providing sophisticated Virtual Reality interfaces (stereoscopic vision, spatialized sound, force feedback control interfaces, etc.) for the study of human movement and behavior. This is a very specific and innovative research field that can result in rational development centered on the user of Virtual Reality technologies.

> A wide field of applications … from La Timone hospital to ITER

Since virtual reality originated in the industrial and scientific world in America, we would also like to allow regional and national companies to use our technology for design, 3D display, evaluations in sports or medical fields (pharmacology, brain imagery, in cooperation with la Timone CHRU (University Regional Hospital Center). Eventually, why not cooperate with the ITER project (in the intensive display field) when it is finalized.

Therefore, there are many applications for this innovative project in the virtual reality field. Consequently, this center may be widely used in the region and in France alongside other major French research centers such as Laval, Rennes, Grenoble or Paris.

> Genuine cooperative financing

The project was financed by the University of the Mediterranean, the CNRS, the PACA Regional Council and the City of Marseilles. We are still hoping for a grant from the Bouches-du-Rhône General Council. We are also working on scientific cooperation with the ENSAM and the INRETS. We act at three different levels, namely regional, national (in networking with other centers) and international.

> In dates and numbers

Our planned calendar is to install and set up our system starting from autumn 2005 with effective start up at the beginning of 2006. The cost of the platform, including human resources, is well above a million Euros. The equipment was also designed and chosen so that it can be upgraded over the years to keep up with technological developments, which explains the high initial investment.

> Provence Promotion openings

Provence Promotion helps us with the development and application of this program with regional companies, and in the long term even to create companies working around the platform.
We are also working on cooperation with the United Kingdom and the United States, countries with which Provence Promotion is very active. In particular, the United States is well in advance on virtual reality both in terms of basic research and applications. All of this is prospective and will be materialized in forms to be defined. But we believe that we have an innovative and important development niche, emphasizing our specialty in the analysis of human movement and behavior.

Virtual reality: some basic concepts

Virtual reality enables one or several persons to perform sensor-motor and/or mental activities in an artificial world that may be either imaginary or a simulation of some aspects of the real world.

The techniques are based on real time interaction with a virtual world. This is done using behavioral interfaces that enable sensor and motor immersion of users in this environment.

It is used by the transport, multimedia, cinema, sports, medical, pharmaceutical, computer assisted design and museography industries.

There are many scientific applications varying from the interactive display of complex three-dimensional data (geology, brain imagery) to the study of the human sensor-motor behavior and cognitive behavior, including behavioral therapies.
The social impact of virtual reality (video games, multimedia telephony) is another important study subject.