

# HAPTEX Newsletter

2006/02

## About HAPTEX

The project "HAPtic sensing of virtual TEXTiles" (HAPTEX) is a European Research Project on multimodal perception of textiles in virtual environments. Its main goal is to develop a multimodal Virtual Reality System (including both software and hardware) for visuo-haptic interaction with virtual textiles. The HAPTEX System will consist of a novel haptic interface connected to a PC running the HAPTEX software. The application will display a physical-based 3D simulation of textiles animated in real-time. The user will select the simulated fabric from a wide range of different samples and manipulate it interactively by means of the HAPTEX haptic hardware. The virtual models of the simulated textiles take as input parameters the physical



properties of the real fabrics, which are extracted through specific measurements on the textiles. The project is coordinated by MIRALab, University of Geneva, under the direction of Prof. Dr. Nadia Magnenat-Thalmann (thalmann@miralab.unige.ch).

## Progress Overview

At the current stage, all main components of the HAPTEX System have been designed, realized and partly integrated. These components include:

### Software:

- Textile visualization
- Haptic Renderer
- Tactile Renderer

### Hardware:

- Tactile actuators (2 configurations)
- Force feedback device (2 config.)
- First prototypes and preliminary tests

### Measurements on Textiles:

- New measurements using standard and non-standard KES-F procedures and tensile tester
- New filtering methods

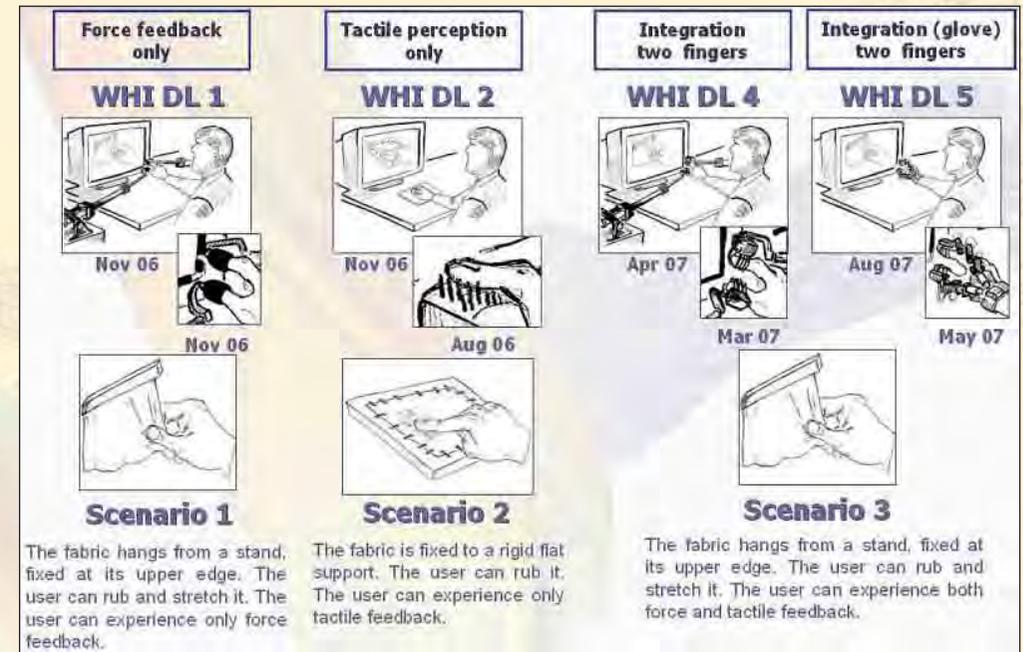
Most deliverables submitted so far have a public dissemination level and can be downloaded from the HAPTEX website: >>Downloads>>Documents>>Deliverables

Deliverables submitted during 2006:

- D1.2: « Textile simulation method »
- D2.1: « Software modules for the haptic renderer »
- D2.2: « Software modules for the tactile renderer »
- D3.2: « Database of properties for various kind of fabrics: 2nd Set of Textile Measurements»
- D4.1: « Specification of the Haptic Interface »
- D4.2: « Separate haptic and tactile interfaces »

## Implementation Plan and Development Levels

In order to assure a smooth integration of the hardware and software modules, the HAPTEX Consortium decided to realize a progressive system integration. The different components of the HAPTEX System are being integrated according to three predefined scenarios in a way that allows the evaluation of specific system functionalities. Moreover, the three scenarios are being realized with different hardware configurations.



## Project Results

The main impact of the HAPTEX Project will be the significant advancement of multimodal interaction tools, techniques and know-how. This includes the synchronization of haptic interfaces with real-time deformable objects (here: highly realistic textile simulation; DL1, DL2), and the integration of tactile displays with force-feedback devices into one single haptic interface (DL4, DL5).

While research on the separate, single components is common nowadays, their integration into one unique system represents a high challenge. Furthermore, the final objective of HAPTEX is to study the realization of a portable, glove-like tactile/force-feedback device (DL5) allowing for real-time multipoint interaction with deformable objects. This final goal has groundbreaking potential.

## HAPTEX workshops in 2006

The HAPTEX Coordinator has organized several workshops in 2006 to bring together researchers working in the field of haptics and to disseminate the project's results.



### HAPTEX Workshop at CASA2006 Geneva, July 6, 2006

The HAPTEX Workshop at the Conference of Computer Animation and Social Agents (CASA) 2006 presented intermediate results from the project consortium in selected topics.

### CUSO - 3<sup>ème</sup> Cycle Romand d'Informatique Geneva, October 2-3, 2006

The workshop "Le toucher virtuel", organized within the swiss PhD student program "Conférence universitaire de Suisse occidentale (CUSO) - 3<sup>ème</sup> Cycle Romand d'Informatique", gathered many internationally renowned experts in the field of haptics and proposed both experts talks and presentations from PhD students.



### IST2006: HAPTEX'06 – Advanced Haptics Helsinki, November 23, 2006

"HAPTEX'06 – Advanced haptics" took place during the IST2006 event in Helsinki. It presented the intermediate results of the HAPTEX project and networked different EU projects on haptics with other experts from the sector. HAPTEX was also represented at the IST2006 Exhibition with an own research and technology stand in the "emerging innovations and core technology" zone.



More information about the HAPTEX workshops, the list of all talks and the slides of selected presentations are accessible on the HAPTEX website:

>>Download >>Documents>>Presentations

### Next Meeting

The next HAPTEX meeting will take place in Hanover, Germany on April 23-24.

### Next Newsletter

The Jan.-Mar. issue of the HAPTEX Newsletter will appear in April 2007.

<http://haptex.miralab.unige.ch>

## HAPTEX'07 Workshop at CyberWorlds 2007



The HAPTEX'07 workshop on haptic and tactile perception of deformable objects will be organized within the CyberWorlds 2007 Conference in Hanover, Germany, on October 24, 2007.

The Call for Papers for the HAPTEX'07 workshop is on the HAPTEX website:

>>WorkProgress>>Events>>HAPTEX'07

### Important Dates:

Paper Due: May 1, 2007

Notice of Acceptance: June 4, 2007

Registration: July 15, 2007

Camera Ready: August 2, 2007

CyberWorlds 2007: October 24-27, 2007

### Program and Workshop Co-Chairs:

- Nadia Magnenat-Thalmann  
University of Geneva
- Franz-Erich Wolter  
Leibniz Universität Hannover

### Topics of interest include:

- Human-Computer Interaction
- Simulating the touch, the hearing and the vision in virtual worlds
- Multimodal interaction system for presenting deformable materials
- Presenting haptic feedback in multimodal interaction
- Hardware for haptic/tactile interaction in virtual worlds
- Haptic/tactile rendering
- Modeling dynamics of deformable objects for haptic/tactile feedback
- Dynamic simulation of soft tissues/deformable objects including textiles
- Perception of material using haptic feedback
- Applications of haptic/tactile interfaces for soft/deformable objects

### HAPTEX Project Details

"HAPtix sensing of virtual TEXTiles"

#### Project Nr.:

IST-6549 (EU-FP6-IST)

#### Project Duration:

01.12.2004-30.11.2007 (36 months)

#### Funding agency:

Future and Emerging Technologies (FET)

#### Project Website:

<http://haptex.miralab.unige.ch>

### Coordinator Contact Details

For publishable results, images or any information concerning HAPTEX, please contact the coordinator of the project:

Prof. Dr. Nadia Magnenat-Thalmann  
MIRALab - University of Geneva  
24, rue General Dufour  
CH1211, Geneve-4  
[thalmann@miralab.unige.ch](mailto:thalmann@miralab.unige.ch)  
<http://www.miralab.unige.ch>

