

# Interactive Transportable Architecture

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## Abstract

Transportable architecture which embeds the means to communicate with real or imaginary digital information spaces in a natural fashion offers unprecedented opportunities to make multimedia experiences available to the public almost everywhere. This installation demonstrates an example of interactive transportable architecture which incorporates unencumbered real-time body tracking and gesture recognition to explore a 3-D cityscape and a brain-like web-based information space.

## 1 The iTube

Like transportable dreams, the iTube brings virtual reality and multimedia applications to every desired location. Thus, multimedia experiences are made possible - almost - everywhere. Within its interior, an interactive rear projection large screen is steered without touch by the user via real-time body interaction. 3-D sound ensures an immersive experience. The technology is permanently integrated within the telescope-like, extendible iTube architecture, which ensures a very fast assembly and dismantling time. The iTube's dimensions are: 8,5 x 4 x 2,8 m (approx. 25,5 x 12 x 8,4 feet); it can fit on a truck's trail for transportation and can be installed indoors or outdoors. It is waterproof and very stable. It is designed specifically for road shows and easy installation.  
[<http://www.peyote.cc/en/products/itube/default.htm>]  
[<http://www.peyote.cc/en/products/lip/default.htm>]



Figure 1. The iTube.

## 2 NEWYORK EXIT NEWYORK and BrainSpace

The SIGGRAPH 2003 iTube will feature two applications. One allows visitors to explore a cityscape in 3-D and to surf in real-time from top of the buildings to street traffic level [Givord, 2002][<http://www.newyorkexitnewyork.com>]. Defying gravity laws to dive in and out of space and time, the participant becomes part and observer of a new interpretation of urban patterns like traffic, noise and street life of a virtual city. The other application will allow users to naturally use hand gestures (no gloves or markers) to browse through a 3-D brain-like matrix structure which contains in its neuron-cells information extracted from the World Wide Web[<http://web.media.mit.edu/~flavia/projects.html>]



Figure 2. 3-D cityscape to be explored inside the iTube

## 3 Interaction and Sensing

In the iTube participants explore the virtual 3-D spaces projected onto its large screen with a small set of pointing and command gestures. A robust computer vision based full body immersive interface (called MetaSpace) [Sparacino, 2001] is used to surf inside the cityscape. A separate computer vision based hand tracking and gesture recognition system drives navigation inside the BrainSpace [Sparacino, 2002]. The computer vision systems feed tracking data to an HMM gesture classifier to reliably recognize the user's browsing commands. These interfaces work in real-time and require only standard computers and small cameras. They do not require special calibration procedures, do not limit body movements with cables or tethers, nor do they require wearing special suites with markers for tracking.  
[<http://www.sensingplaces.com>]



Figure 3. Real time computer vision sensing, for full body-driven (left) and hand gesture-driven (right) navigation.

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## References

- SPARACINO, F. 2001. (Some) computer vision based interfaces for interactive art and entertainment installations. In *INTER\_FACE Body Boundaries, Anomalie, n.2, anomos ed., Paris, France.*
- SPARACINO, F., WREN, C., AZARBAYEJANI, A., AND PENTLAND, A. 2002. Browsing 3-D spaces with 3-D vision: body-driven navigation through the Internet city. In *Proceedings of 3DPVT*.
- GIVORD, P. AND LENCLOS, M. 2002. NEWYORKEXITNEWYORK. ACM SIGGRAPH Visual Proceedings, Art Gallery installation.