

# Event Report

## EG2003 Medical Prize Competition

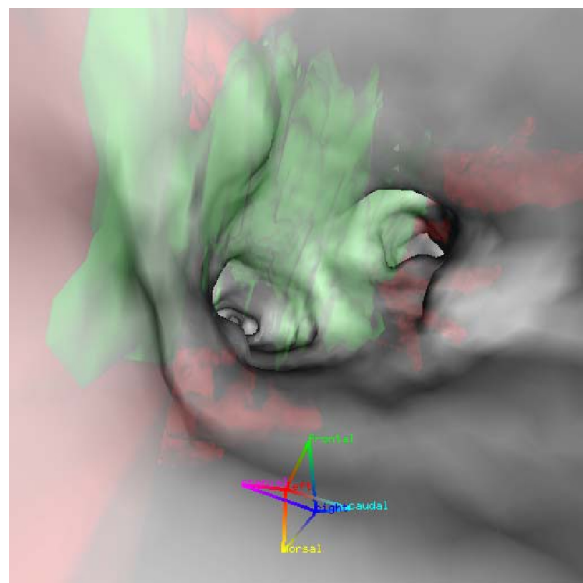
Over the past three decades computer graphics and visualization technology has played a growing role in providing added value to medical applications. For example, the medical field was the first to exploit volume visualization and innovative clinical applications were reported in the late 1970's that used the visualization of bone from CT data in craniomaxillofacial surgery and orthopaedics. Today, CT, MRI, Ultrasound, SPECT and PET are all common sources of data for processing using computer graphics techniques and then applied within medical diagnostic, procedures training, pre-operative planning, augmented reality surgery, and many other areas. The EG2003 Medical Prize competition was launched this year to acknowledge the contribution that computer graphics is playing in this exciting field and is intended to encourage further development.

Submissions were received from researchers and developers who demonstrated that a particular benefit has resulted from the use of computer graphics technology in a medical application that they have produced. Fourteen high quality entries came from across the world and covered a diverse range of clinical applications from radiotherapy planning, to diagnostic visualization, to augmented reality surgery. The current state-of-the-art in surgery planning for craniomaxillofacial surgery was also well represented. Entries were judged on their clinical value, the use made of computer graphics, and their novelty. A prize of €500 sponsored by Eurographics was awarded to the best entry and announced at the EG2003 conference. Some of the highlights of the competition are presented below and full details of all of the entries are available online at: <http://www.informatics.bangor.ac.uk/~nigel/eg2003-mp/>

The overall winner was "Augmented Reality based Liver Surgery Planning" - see Figure 1. The judges were particularly impressed with the use of new media technology and the potential that it has for future use in this and other clinical areas. It will be fascinating to see this work develop and discover how readily radiologists and surgeons will accept such interactions.



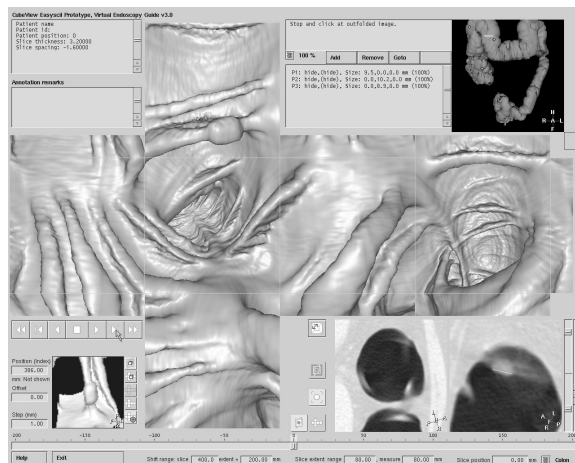
**Figure 1:** Augmented Reality based Liver Surgery Planning. Alexander Bornik, Reinhard Beichel, Bernhard Reitingner, Erich Sorantin, Georg Werkgartner, Franz Leberl and Milan Sonka



**Figure 2:** VIVENDI: A Virtual Endoscopy System Supporting Minimally Invasive Interventions. Dirk Bartz

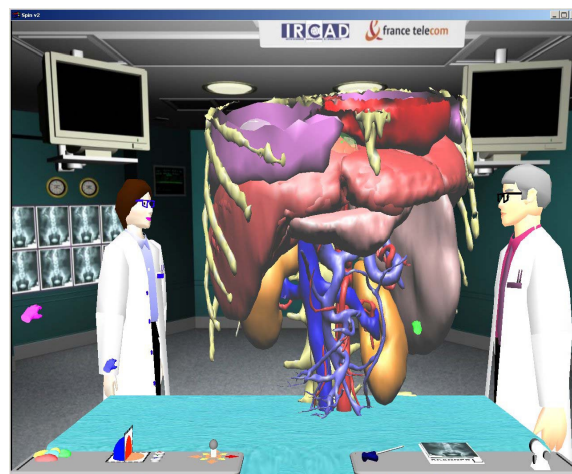
An important clinical application that has developed over the last decade is virtual endoscopy. Two innovative entries were received in this area demonstrating the current state-of-the-art (Figures 2 and 3). VIVENDI is of particular note for its interactive methods.

The Unfolded Cube Visualization technique for Virtual Endoscopy impressed the judges who noted that this approach is currently being received with great enthusiasm by many clinicians.



**Figure 3:** Unfolded Cube Visualization for Virtual Endoscopy. Iwo Serlie, Frits Post, Roel Truyen, Frans Vos

The use of high bandwidth telecommunications in medicine was also highlighted. Argonaute 3D (Figure 4) uses automated segmentation and visualization of pathological anatomy, and puts the system to work in the real world with 3D technology for team collaboration. This is representative of an area that is of growing interest to the medical field.



**Figure 4:** Argonaute 3D: A real time cooperative medical planning software. Luc Soler, Johan Moreau, Didier Mutter, Jacques Marescaux

It was a difficult task to select the overall winner, and the final result was very close. It was evident, however, that the best work requires a collaborative team of people from many disciplines. Computer scientists, medical physicists, and clinicians all have important roles to play.

The judging committee consisted of: Frits H. Post, Delft University, The Netherlands; R F McCloy, Clinical Director, North of England Wolfson Centre for Minimally Invasive Therapy, UK; W. LeRoy Heinrichs, Professor (Emeritus, Active and Past Chair) of Gynecology and Obstetrics, Stanford Medical School, USA; Frans A. Gerritsen, Director Research and Advanced Development, Medical Imaging Information Technology, Philips Medical Systems; and Nigel W. John, Professor of Computing, University of Wales, Bangor (formerly head of Manchester Visualization Centre, University of Manchester).

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