

CUSTOMER SPOTLIGHT

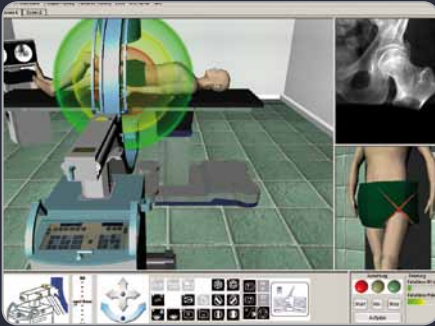
VirtX/virtusMED powered by Open Inventor®

Improving surgery Training



Currently the correct intrasurgical positioning and adjustment of mobile X-ray image intensifiers (C-arm) can be learned theoretically through the use of textbooks, the practical training with the device itself suffers from the lack of visual feedback, i.e. radiographs corresponding to the adjustment of the C-arm. This leads to the question, whether the training of correct operation and adjustment of a C-arm in different operation scenarios can be supported by a C-arm simulation system being part of a CBT system (Computer Based Training).

Improving surgery Training



Images: Peter L. Reichertz Institute for Medical Informatics. Acknowledgment Markus Wagner, Michael Teistler

In co-operation with physicians from accident surgery and radiology the computer-based training system virtX was developed. virtX confronts the user with different exercises of BV adjustment and evaluates their execution and the results. These tasks can be created with the help of an authoring tool and can be accomplished by the trainee in different modes: a pure virtual mode and a combined virtual-real mode. In the pure virtual mode the user controls the virtual C-arm in a virtual operating theatre via the graphic-interactive virtX user interface. In the virtual-real mode however the position and orientation of a real C-arm are detected and mapped onto the virtual C-arm. At any time during the completion of an exercise the user can produce a close-to-reality, virtual radiograph built upon virtusMED and can control all parameters, like the positions of the apertures, X-ray intensity, etc.

Open Inventor® by VSG is used in virtX and virtusMED as 3D rendering and scenegraph framework. Open Inventor by VSG was chosen mainly because of its fast and exact volume rendering VolumeViz, plus flexible slicing and clipping, fast offscreen rendering, possibility to use volumes and 3D-models in one scene, high level interaction capabilities and all the other features.

About virtX

"virtX" is a computer based training system (CBT) for Mobile image intensifier systems (so called C-arm Systems), which are used in trauma and orthopedic surgery. virtX is the result of a cooperative project between the Peter L. Reichertz Institut for Medical Informatics and the department of trauma surgery, plastic and reconstructive surgery (Prof. Dr. med Klaus Dresing). virtX is sold by the u_m_i Informatik GmbH and was funded by the European Union and Lower Saxony.

About virtusMED

"virtusMED" (virtual scenes for medical education and diagnostics) is a system that allows for a new kind of interactive visualization of volumetric medical images usable for education or diagnosis. www.virtusmed.info

Teistler M et al.: "Simplifying the exploration of volumetric images: Development of a 3D user interface for the radiologist's workplace." Journal of Digital Imaging_2007.

About Open Inventor®

Open Inventor® by VSG provides the power and functionality of OpenGL® at an object-oriented level. Its extensible architecture, its large set of advanced components, including seamless integration between visualization and GPU computation, provide developers with a high-level platform for rapid development of the most demanding 3D graphics applications.

About Peter L. Reichertz Institute

The Peter L. Reichertz Institute for Medical Informatics was established in 2007 by the University Braunschweig Institute of Technology and the Hannover Medical School as a joint institute for medical informatics. The Peter L. Reichertz Institute stands for high-level international research in medical informatics

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