# 9th Leipzig Forum on Computer Assisted Surgery

September 16, 2009 9:00h – 18:00h

International Reference and
Development Center (IRDC)
Käthe-Kollwitz-Straße 64
04109 Leipzig

**Workshop on Model Guided Therapy**
**between Robarts Imaging Lab and ICCAS**

The workshop focuses on the concepts and developments needed to move from image guided to model guided therapy with emphasis in surgery. Various modelling methods need to be considered with patient specific, workflow and interaction models as the keys for enabling this process. Patient modelling, in particular, includes geometric, functional, tissue and implant/instrument modelling as well as the interrelationship between information entities using, for example, Multi-Entity Bayesian Networks (MEBN's) and Probabilistic Relational Models (PRM's). Important aspects of IT architectures and software platforms for image and model management, such as the Therapy Imaging and Model Management System (TIMMS), and appropriate standards and guidelines, such as DICOM or IHE in surgery, are also presented and discussed. Finally, a number of examples, in particular from cardiovascular interventions, but also from ENT- and neurosurgery will demonstrate the existing and expected impact of patient specific modelling and management on actual patient care.

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**Selected Speakers:**

**Terry M. Peters,** PhD, Professor, Medical Imaging; Medical Biophysics; Biomedical Engineering. University of Western Ontario, Scientist Robarts Research Institute, London, Ontario
**John Moore,** MSc; Research Programmer, Laboratory Manager,
**Gerard Guiraudon**, M.D, CSTAR, London Health Science Centre, Emeritus Professor of Surgery, University of Western Ontario
**Bob Kiaii**, M.D, FRCS(C), Associate Professor Surgery; Director Minimally-invasive and Robotic Cardiac surgery. London Health Science Centre, Dept. of Cardiovascular &Thoracic Surgery
**Michael Chu,** MD, FRCS(C) Assistant Professor Surgery, University of Western Ontario.
**Cristian Linte**, MEngSc, PhD Candidate ( Image Guidance Techniques for Minimally-Invasive OFF-Pump Intracardiac Interventions) University of Western Ontario
**Pencilla Lang**, B Eng, MD/PhD candidate

**Heinz U. Lemke**, PhD, Research Professor USCLA
Guest Professor ICCAS Leipzig
**Jürgen Meixensberger,** MD, PhD, Professor
Dept. of Neurosurgery, Universitätsklinikum Leipzig
**Gero Strauss**, MD PhD, Dept. of ENT - Surgery
Universitätsklinikum Leipzig
**Christos Trantakis**, MD, Dept. of Neurosurgery
Universitätsklinikum Leipzig
**Thomas Walter**, MD PhD, Professor, Heart Surgery, Heart Center, Universität Leipzig
**Jörg Seeburger**, MD, Dept. of Heart Surgery Heart Center, Universität Leipzig
**Dirk Bartz**, PhD, Professor of Computer Assisted Surgery
ICCAS Leipzig
**Oliver Burgert**, PhD, ICCAS, Group Leader "TIMMS"
**Rafael, Mayoral**, PhD, ICCAS, Group Leader "Patient Model"
**Thomas Neumuth**, PhD, ICCAS, Group Leader "Workflow"
**Thomas Treichel**, MSc, ICCAS, Group Leader "S-DICOM"

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| 9:00 | | Coffee, guided tour through International Reference and Development Center |
| 9:45 | Jürgen Meixensberger | Welcome |
| | HU Lemke PhD | Welcome |
| 10:00 | Terry Peters PhD, | Overview of image-guided intervention research at Robarts |
| 10:20 | John Moore | Software platforms and system integration |
| 10:40 | Gerard Guiraudon | Successes and challenges of intra-cardiac interventions |
| 11:00 | Bob Kiaii | Modelling for Minimally-invasive cardiac procedure planning |
| 11:20 | Coffee break | |
| 11:40 | Michael Chu | Limitations of trans catheter and trans apical approached for aortic valve replacement |
| 12:00 | Pencilla Lang | Future directions for image-guided aortic valve implantation |
| 12:20 | Cristian Linte | Integration of models into guidance platforms for model-guided cardiac interventions |
| 12:40 | Final discussion | |
| 13:00 | Lunch | |
| 2:00 | Jürgen | Vision and Mission at ICCAS – |

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| p.m | Meixensberger | Automation and Surgery |
| 2:10 | Oliver Burgert | TIMMS - Realization of a Meta-Architecture at ICCAS. |
| 2:20 | Thomas Neumuth | Surgical Workflows – Methods and Applications at ICCAS |
| 2:40 | Thomas Treichel | IHE and the DICOM-Implant Supplements |
| 3:00 | Dirk Bartz | Visual Computing for Medicine |
| 3:20 | HU Lemke | Model Guided Therapy and Patient Specific Modeling |
| 3:40 | Coffee Break | |
| 4:00 | Christos Trantakis | Model guided therapy using the example of brain tumour surgery |
| 4:20 | Rafael Mayoral | A realization of the DPM for brain tumor surgery: locating the central sulcus |
| 4:40 | Thomas Walter | Transcatheter Aortic Valve Implantation (AVI)- current aspects in minimal invasive Surgery and Imaging |
| 5.00 | Jörg Seeburger | Mitral valve surgery in the future - wishfull thinking |
| 5:20 | Gero Strauß | Surgical Cockpit program for an integrated OR |
| 5:40 | Final discussion | |

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