



# 9<sup>th</sup> Leipzig Forum on Computer Assisted Surgery

September 16, 2009

9:00h – 18:00h

International Reference and

Development Center (IRDC)

Käthe-Kollwitz-Str 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.





9:00		Coffee, guided tour through International Reference and Development Center
9:45	Jürgen Meixensberger	Welcome
	Heinz U. Lemke	Welcome
10:00	Terry Peters	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 p.m	Jürgen Meixensberger	Vision and Mission at ICCAS – 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	Heinz U. Lemke	Model Guided Therapy and Patient Specific Modeling

3:40	Coffee Break
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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	

## 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"

