

**6. Workshop
Automatisierungstechnische
Verfahren für die Medizin vom
24.-25. März 2006 in Rostock-
Warnemünde**



**„The integration of surgical assist systems into the
operating theatre“**

W Korb, A Voruganti, S Bohn, A Dietz, S Jacobs, V Falk, R Mayoral, J Meixensberger, G
Strauss, C Trantakis, HU Lemke, O Burgert
Innovation Center Computer Assisted Surgery, University of Leipzig, Leipzig, Germany
E-Mail: werner.korb@iccas.de

Band: Abstracts der Vorträge des 6. Workshops der Automed 2006
Editors: T. Ellerbrock
ISBN: 3-86009-296-0
Pages: 61

The integration of surgical assist systems into the operating theatre

Korb W, Voruganti A, Bohn S, Dietz A, Jacobs S, Falk V, Mayoral R,
Meixensberger J, Strauss G, Trantakis C, Lemke HU, Burgert O

Innovation Center Computer Assisted Surgery (ICCAS)
University of Leipzig
04103 Leipzig

werner.korb@iccas.de

MOTIVATION

Integration and interoperation of systems for Computer Assisted Surgery (CAS), such as telemanipulators, navigation systems, mechatronic devices as well as pre- and intraoperative imaging devices offer the potential to improve the overall surgical workflow [Lemke2005, Cleary2005] and hence the efficacy, effectiveness and efficiency in the operating room.

Similar to other high-tech fields, an interdisciplinary way of thinking and a common language are required for both surgeons and engineers. Only then will Computer Assisted Surgery (CAS) become a scientific discipline that balances technological advancements and clinical requirements in the upcoming era of technologically enhanced surgery.

OBJECTIVE

The main objective of the research is integration of surgical assist systems (SAS) into the operating theatre and the development of a "Surgical Picture Acquisition and Communication System" (S-PACS). The basis for this is also the development of a common standard such as "DICOM in surgery".

S-PACS architecture should be based on well defined standards and definitions for communication and image processing and display in order to allow a vendor independent interoperation of devices within the OR.

METHODS

In interdisciplinary workshops a user-based specification was defined for realization of S-PACS. This will not only ensure vendor independent interoperation of devices but also results in an open standard for medical device integration.

"Quality Function Deployment" (QFD) is a tool that brings voice of the user in to the design process, which is the fundamental idea of S-PACS and therefore QFD is chosen for the design phase. In this context the main

user's of medical integrated systems are the surgeons [Korb2005].

New intraoperative imaging devices and mechatronic conceptions are a part of Surgical PACS architectures and have to be integrated within the OR. Important is also the human-machine interface (HMI).

DISCUSSION

Finally, we conclude that there is need for ubiquitous computing in the operating theatre. The integration of systems within an S-PACS architecture is one step into that direction.

ACKNOWLEDGEMENT

ICCAS is funded by the German Federal Ministry for Education and Research (BMBF) with the Programme "Unternehmen Region" 03ZIK031 and 03ZIK032 and the Saxon Ministry of Science and the Fine Arts.

LITERATURE

[Lemke2005]

H.U. Lemke, M.R. Osman, S.C. Horii, „Workflow in the Operating Room“ in *Review of Arrowhead 2004 Seminar on Imaging and Informatics, SPIE Conference on PACS and Imaging Informatics*, Vol. 5748, 2005.

[Cleary2005]

K. Cleary, A. Kinsella, S.K. Mun, „OR 2020 workshop report“, Berlin, Germany. Amsterdam: in *Elsevier*, p 832-838, 2005.

[Korb2005].

W. Korb, S. Bohn, O. Burgert, A. Dietz, S. Jacobs, V. Falk, J. Meixensberger, G. Strauss, C. Trantakis, H.U. Lemke, "Surgical PACS for the Digital Operating Room Systems Engineering and Specification of User Requirements", *Stud Health Technol Inform* Vol 119, p 267-272, 2005.