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Upcoming events

Meet MedCom on your visit to one of the following events:

- **ECR**
March 6-10 in Vienna
European Congress of Radiology
- **ESTRO 33**
April 4-8 in Vienna
The premier European event in Radiation Oncology
- **EAU**
April 11-15, Stockholm
European urology congress
- **DEGRO**
July 3-6, Düsseldorf
Jahreskongress der Deutschen Gesellschaft für Radioonkologie
- **DGU**
Oct 1-4, Düsseldorf
Deutscher urologischer Kongress

Welcome

Clinical Image-Based Procedures (CLIP) has always been the fundamental philosophy of MedCom: “seeing is believing” is true for everybody, and especially for the interventionalist. Therefore it was our distinct pleasure to support the CLIP workshop organized at MICCAI and we have been delighted with the presented results (see report below).

Evidently, an important aspect of CLIP is medical navigation, the central point of all MedCom activities. Thinking further down the same line, “automation” is the new megatrend, with medical software performing as many tasks as possible automatically, starting from data access over auto-segmentation, registration, fusion, re-planning... You will find the spirit of automation in every article of this newsletter.

Enjoy reading



Prof. Georgios Sakas, CEO

NaviSuite® enters Neurosurgery

MedCom has recently introduced a new neuro-navigation NaviSuite® module available on the Mylab twice ultrasound system of Esaote, boosting specific functionalities dedicated to neurosurgeons. These functionalities include craniotomy planning and visualizing the prolongation of the tip of a guided instrument inserted into the brain before opening the skull. But the most important clue of the system is its fast, accurate and intuitive correction of brain shift. By employing intraoperative ultrasound scan directly on the brain and fusion imaging with pre-operative MRI, brain shift and/or deformation can be corrected at all stages of the operation.

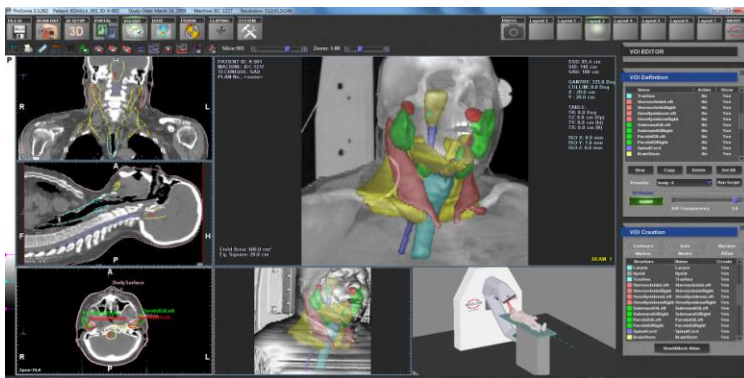


NaviSuite® has successfully been employed in neurosurgical operations on more than 60 patients. Brain shift/deformation correction has been used to correct the co-registration where the fusion was distorted after opening the skull. The registration accuracy confirmed intraoperatively was < 3 mm in all cases.

Furthermore, in order to boost the neurosurgery developments in NaviSuite®, MedCom has joined the EU-Project “TheraGlio” whose goal it is to develop a multimodal imaging system for “theranostics” (therapy & diagnostics) of patients bearing malignant glioma. Our task in this project is to enhance and accelerate navigation & image fusion between real time US and a 2nd modality (typically MR scan). The ultimate goal is that the initial registration and the fine adjustments in case of brain shift happen automatically with a press of a button. For this reason new image registration approaches and algorithms are being tested, and a first beta version will be in clinical evaluation soon.

ProSoma® 4.0 release

MedCom's radiotherapy toolkit ProSoma® is continuously being extended and its improved version will be released later this year. Besides an impressive number of user-requested new functionalities, features and usability fine-tuning, its major highlight is a brand-new atlas-based auto-contouring module for head & neck cases, which dramatically reduces the time needed to outline risk organs. ProSoma® 4.0 uses a unique, unprecedented algorithm to identify the position and shape of organ borders, based on a so-called “articulated atlas”. The new atlas approach is not only coding organ shape and variability, but also organ’s relative positions and movements (= articulation). Due to this new approach the atlas is even able to segment not clearly delineable risk organs like lymph node regions.



ProSoma 4.0 Head & Neck Atlas output

ProSoma® 4.0 can optionally be equipped with a very fast Monte Carlo Dose Engine to be used for dose verification purposes (2nd opinion 3D-dose calculator). The integrated dose engine is able to compute a MC simulation of an IMRT plan within minutes rather than hours as it used to be the case before - thus it enables the accuracy of the Monte Carlo simulation on standard computer hardware.

MedCom will present a first glance at ProSoma® 4.0 on its booth during the ESTRO 2014 exhibition. The exhibition will take place in Vienna on 4th - 8th April 2014.

„MedCom Best Paper Award” in MICCAI

MedCom has supported the Clinical Image-Based procedures (CLIP) workshop organized by the MICCAI conference on 22 Sep 2013 in Nagoya/Japan and sponsored this year’s Best Paper Award. The CLIP workshop is focusing on translational research on medical imaging and promotes innovative methods which have already proved their clinical applicability and impact, a subject perfectly in-line with MedCom’s strategic orientation. The workshop was a great success again and we are looking forward to learn from its outstanding contributions also in 2014.



Workshop organizing committee

We congratulate all winners for their award-winning research (refer to <http://miccai-clip.org/2013/program.html> for detailed list)



Award winners 2013

Prostatakarzinom 2014 in Heidelberg

It feels like Christmas: the prostate symposium in Heidelberg takes place late January, and all participants find it great – every year! Following this tradition, an impressive list of presenters covered different aspects of this important topic. Focal therapy, targeted imaging & navigated biopsy are becoming the new hot topics and have been attracting the attention of a multi-discipline audience, including urologists, radiologists, oncologists and surgeons. MedCom has sponsored the event and presented the latest BiopSee® 2.0 version to the interested audience. Great event, we are looking forward to join again in 2015.

MedCom participates Pudis, a 3D/4D Ultrasound development project

A consortium of European and Canadian companies has been awarded the development of a novel portable real time 3D/4D ultrasound diagnostic imaging system (PUDIS), capable to provide inner bleeding detection and other diagnostic cases in trauma and combat casualty care, by Defense R&D Canada (DRDC), an agency of the Canadian Department of National Defense (DND). The PUDIS project has a long history, originating from the successful EU-Canadian ADUMS collaborative research (2002-2005) supported by the European Commission. Within ADUMS it was possible to demonstrate the implementation of 3D adaptive beamforming technology and to demonstrate the impact of telemedicine in evaluating emergency care images. Following a series of several in-between collaborative projects, the ADUMS key-players have been continuously developing the technology leading to the PUDIS project in 2012.

PUDIS is a dual-purpose development, targeting both civilian and military diagnostic imaging applications with minimum requirements for training. The backbone of the system is a matrix-array, portable, real time, volumetric 3D/4D ultrasound device, able to acquire and process several volumes per second. The electronics, computing architecture and 3D adaptive beam-forming are proprietary DRDC technologies, whereas Fraunhofer IBMT is developing the matrix transducer and the relevant integrated electronics. All software developments are carried out in Darmstadt, Germany: MedCom is contributing the telemedicine functionality, a user-assistance module for supporting the inexperienced operator and the user interface of the whole system, whereas Fraunhofer IGD is developing image processing algorithms for correct probe placement and automatic bleeding detection.

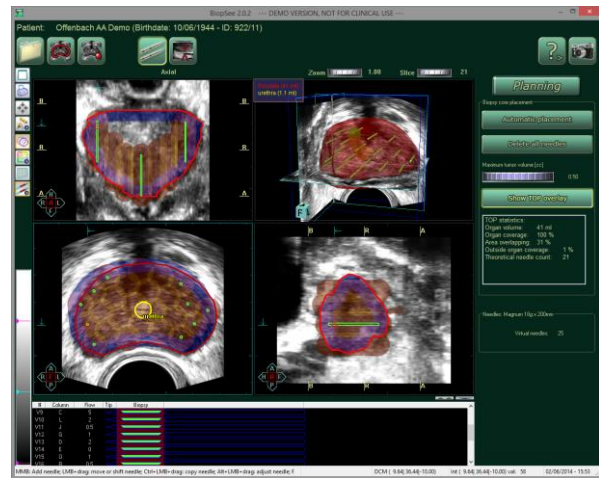
The first prototype version will be delivered by end of March 2014 to DRDC to be clinically evaluated in Canadian Hospitals by the trauma surgeons of the Canadian Forces Health Services.



BiopSee®:

The future of prostate diagnostics

The success story of the transperineal, stereotactic navigated biopsy suite BiopSee® continues in 2014. Last year was full of interactions with existing and new customers. The MedCom team visited the most important urological congresses (EAU, AUA, DGU, SIU, ESUR, ECR) and has gathered a lot of feedback from different hospitals around Europe. As a result, a new version 2.0 is scheduled to be released this spring. Its key feature is the software usability: the new version comes with a totally re-engineered user interface, which has been optimized for short and uncomplicated workflow, improving user experience and procedure efficiency.



Besides improved usability, version 2.0 incorporates several new features. The DICOM interface has been enhanced to incorporate more vendor specific issues. Fusion now offers a new automatic mode suggesting anticipated prostate positioning on U/S and MRI. Most important, a non-rigid fusion between MRI and US has been integrated.

A totally new feature is the automatic needle placement method called TOP (*transperineal optimized placement*), which automatically places needles based on pre-defined protocols. The TOP algorithm is designed to ensure needle placement in a manner enabling not to miss a user-defined cancer volume, typically 0.5 cc³.

Finally, the reporting module supports a new pathology printout mode: users can get a paper or electronic (PDF) printout listing all placed needles in 3 views (transversal, sagittal and coronal) plus a table of the needle cores with anatomical coordinates and free space for further filling-in.

We will exhibit BiopSee® at the following congresses:

06-10.03: ECR, Vienna, Austria
11-15.04: EAU, Stockholm, Sweden;
01-04.10: DGU, Düsseldorf, Germany