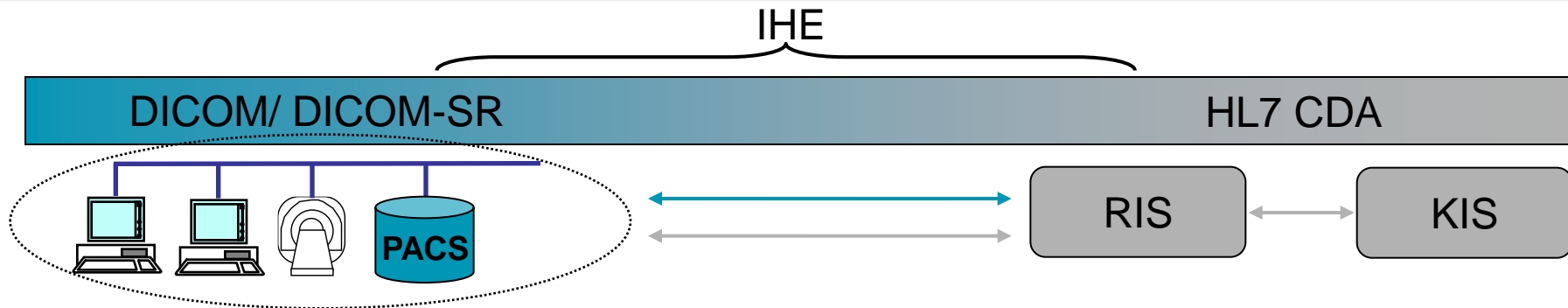


MEDICAL IMAGING AND INTERACTION

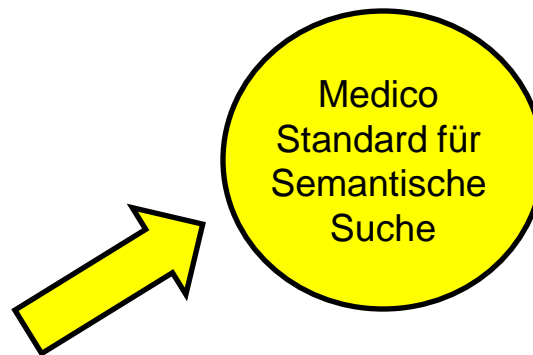
Dr. Daniel Sonntag, DFKI



Gefördert durch das



- KIS: Krankenhaus Informations-System
- RIS: Radiologie Informations-System
- PACS: Bildarchiv
- Daten Formate:
 - DICOM: Bilddaten Format
 - DICOM SR: Strukturiertes Report Format („Evidence Document“)
 - HL7 CDA: Standard Austausch-Format für klinische Dokumente („Freitext“)
- IHE: „Integrating the Healthcare Enterprise“ Initiative
 - Ziel: IT Interoperabilität verbessern



- Unmittelbar
 - Patente (Siemens, DFKI)
 - Einsatz von Bildanalyse-Modulen in kommerziellen Produkten
 - Detektion von Landmarken
 - zur Automatisierung von Gefäß-Segmentierung (Computertomographie)
 - zur Untersuchungsplanung (Computertomographie, Magnetresonanz)
 - Automatische Organsegmentierung für Molecular Imaging
- Langfristig (ab 2012)
 - Einsatz Semantischer Technologien in PACS/RIS/HIS
 - Semantische Befundung
 - Semantische Suche
 - Semantische Entscheidungsunterstützungssysteme



Medico-Plattform



Bildanalyse

Image Parsing System

Kontext Unterstützung

Textanalyse

Text Parsing System

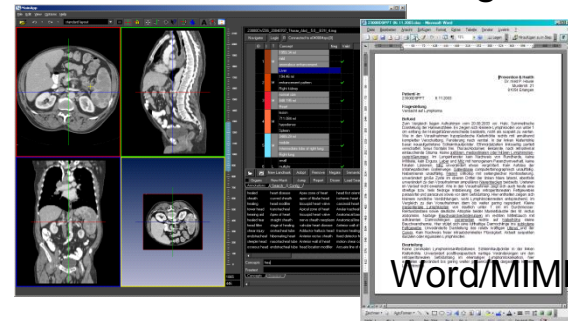
Navigations Unterstützung

Sprachanalyse



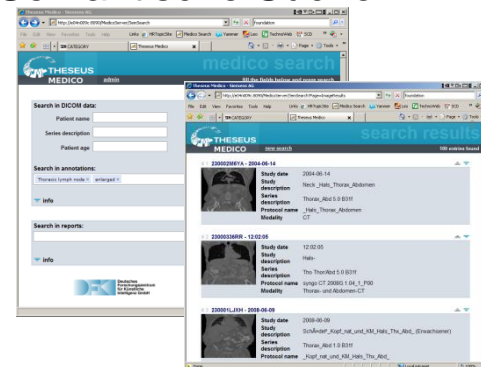
Neu ab 2011

Semantische Befundung

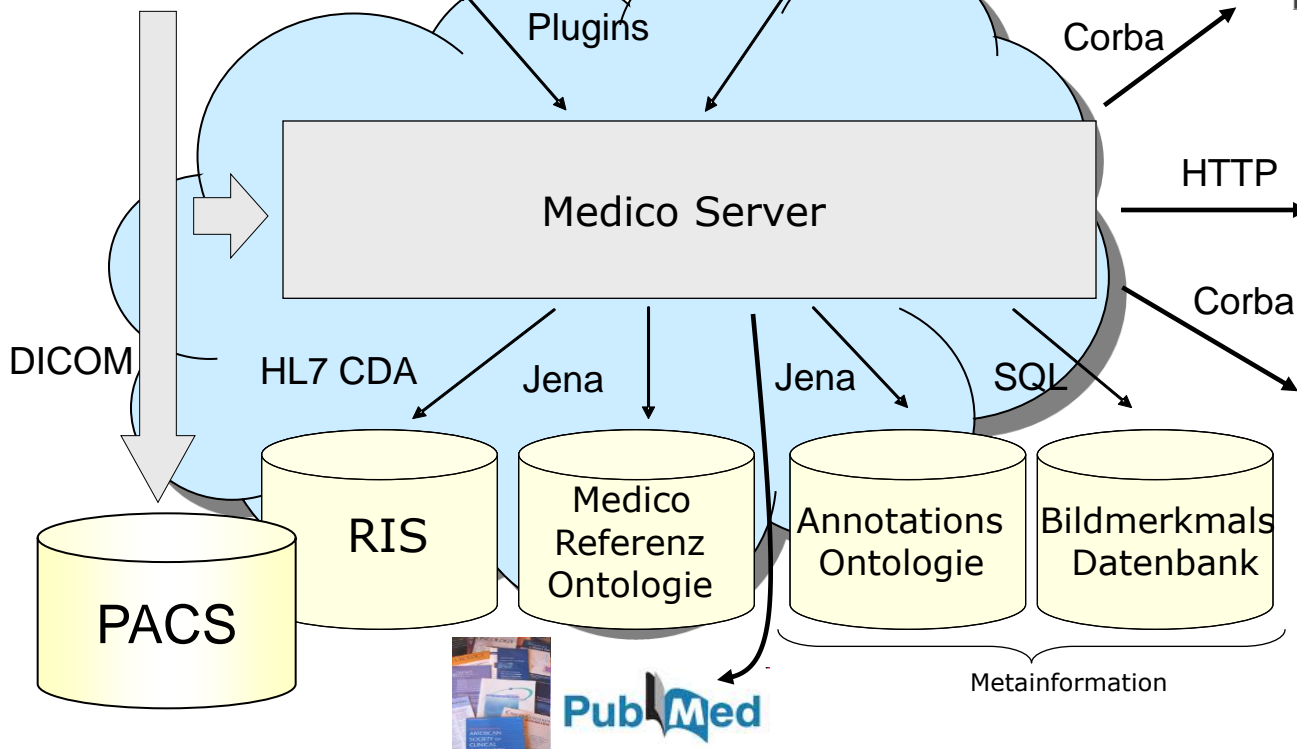
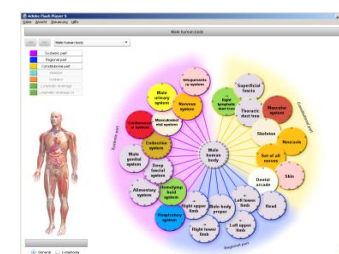


Word/MIME

Semantische Suche

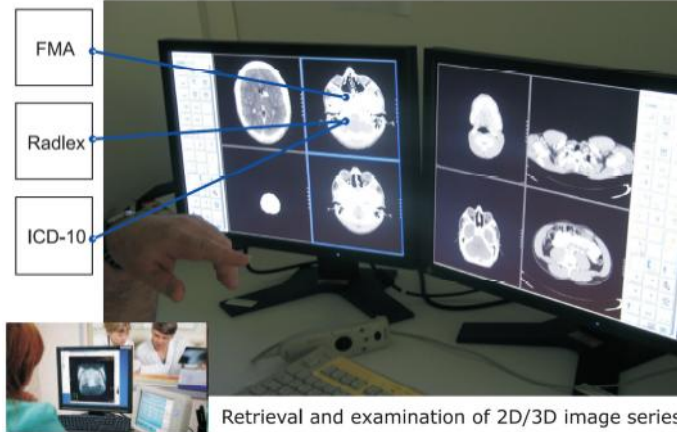


Semantische Navigation

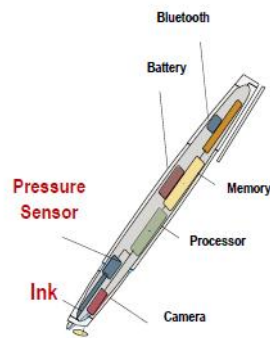



Digital Pen

Annotations



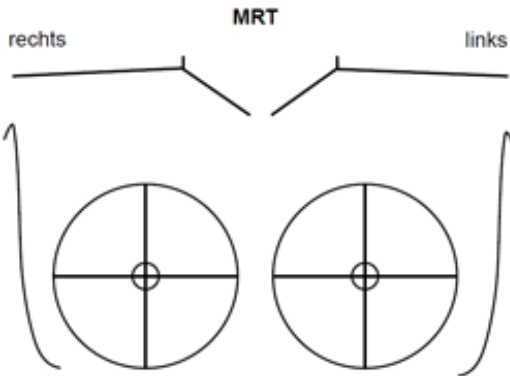
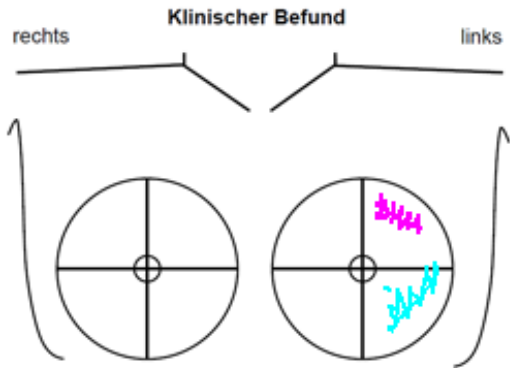
Retrieval and examination of 2D/3D image series



Erlangen Hospital, Department of Radiology		
Patient: M. Müller ID: 36716263861	Image: DCIM1489 Series: S-3454-13-08-10	Referring physician ID: 9938 Date of Issue: 23.10.2010
Findings		
FMA	Radlex	ICD-10
<i>kd A / dsf? Drug out UVI 2</i>		
<i>Ureter stones</i>		
Fatty liver: [Yes/No]. Iron deposition: [none/diffuse/patchy] Gall bladder is [normal/abnormal] and there is intrahepatic or extrahepatic biliary ductal dilatation [Yes/No]. Rim enhancement [Yes/No] Other cysts / cystic masses: [Yes/No]		
		

Gestures:       

Free-form Sketch Area



Links
 Verdichtung: **yes**
 Knoten:
 Größe in cm: **315**
 Lokalisation (cm v. Mamille/h): **2**
 BI-RADS: **3**

Freeform Text Area (as in structured CT reports)

Links
Herdbefund
 Form: rund / oval / **lobuliert** / **irregulär**
 Rand: glatt / irregulär / spikuliert
 Enhancement: homogen / heterogen / **Rand-E.**
 dunkle int. Sept. / anreich. int. Sept.
 zentr. Enhancement

nicht raumford. Enhancement
 Verteilung: fokal / linear / duktal / segmental
 regional / multipel / **diffus**

intern. Enhancement: homogen / heterogen
 punktiert / gruppiert / retikulär

Symmetrie: symmetrisch / **asymmetrisch**

assoziierte Befunde: **cell Lymph**

Annotation Vocabulary Fields



- Make dialogue-based radiology image reporting possible
- Reduce turn-over times and annotation errors
- Facilitate structured reporting

With the iPad's FDA approval, a breakthrough for mobile medical imaging, especially in the U.S., can be expected. With RadSpeech, we aim to build the next generation of intelligent, scalable, and user-friendly mobile semantic search and image annotation interfaces for the medical imaging domain.

German High Tech Award



Minister-Counselor
Andrea Noske



(Video)

(Future) RadSpeech Interfaces

