KOELIS

Augmented Surgery

11-09-2009

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Company Background

- **Medtech** company, inc. Oct 2006 in Grenoble, France
- **History**
  - 5 years R&D at Grenoble University (TIMC lab) France
  - Scientific & Clinical Partners (France, USA)
- **Domain: Computer-Assisted Urology**
  - Imaging - Planning
  - Modeling - Guiding
  - Navigation - Robotics
- **Team**
  - 5 people (2 managers, 2 R&D engineers, 1 app. engineer)

Our Focus: Urology – Prostate Cancer

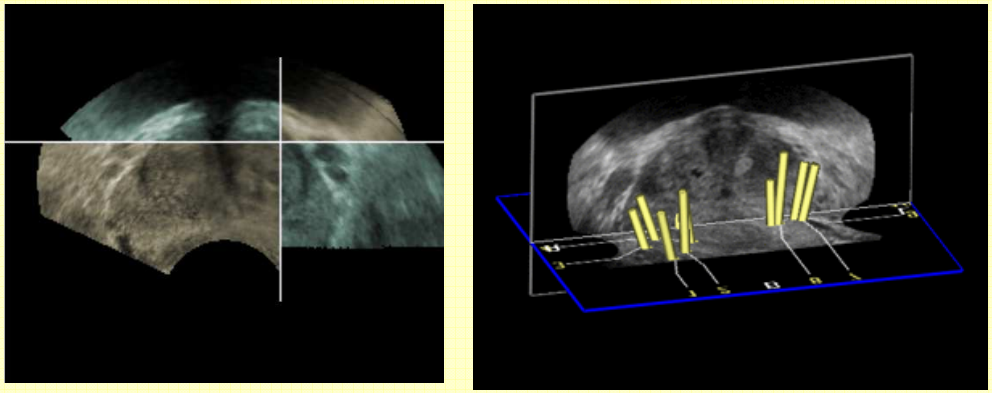
- FACTS
  - PCa incidence ↗, younger patients, smaller tumors
  - 2D echoguided biopsy is not accurate
  - New modalities contribute to diagnosis & prognosis

  → **Patients request accuracy and quality**
- VISION
  - For the first time **3D ultrasound**, image fusion and automatic **organ tracking** are combined to increase **prostate biopsy** precision and improve **focal therapy** outcomes for all patients.

TECHNOLOGY

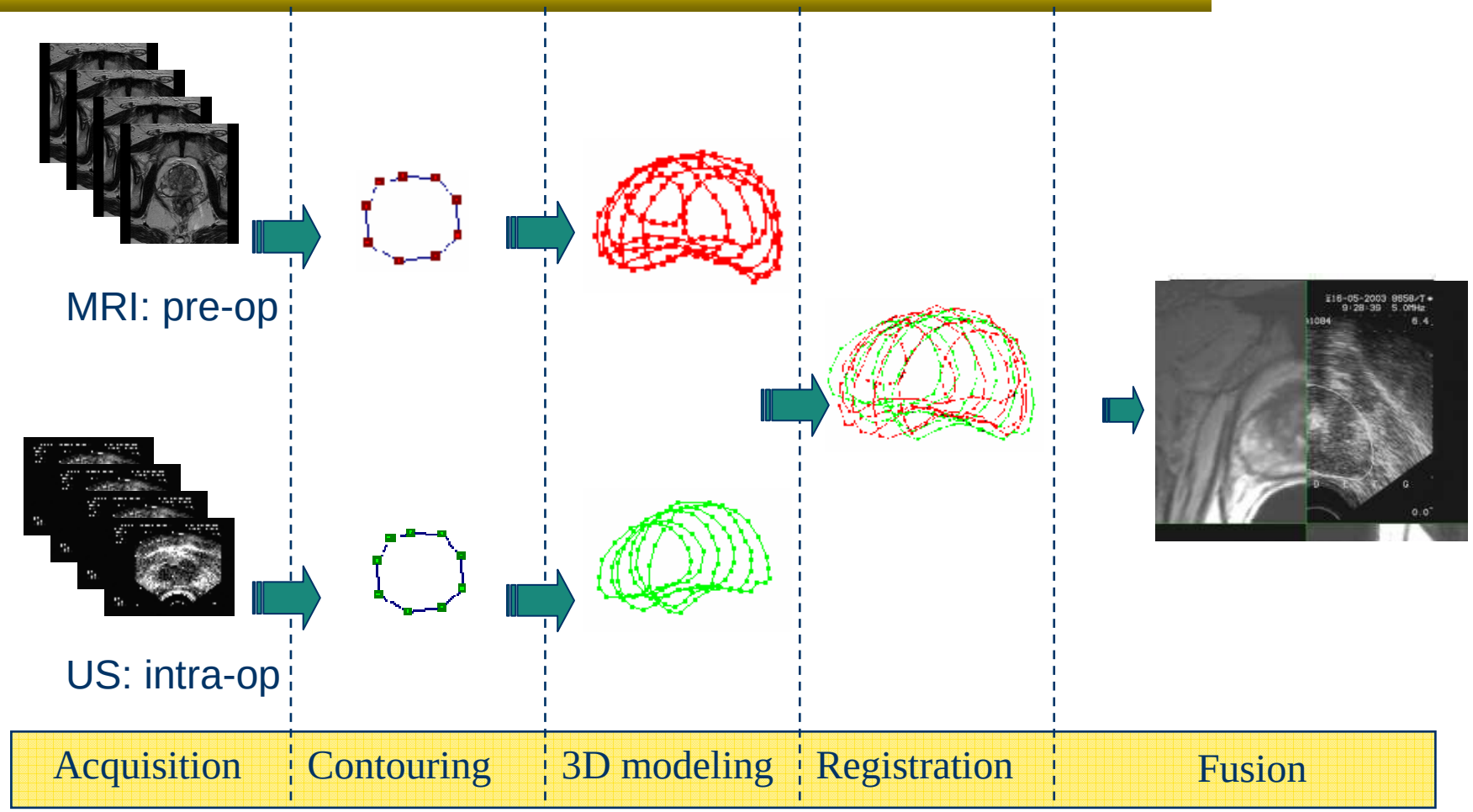
3D Image fusion

Prostate 3D US



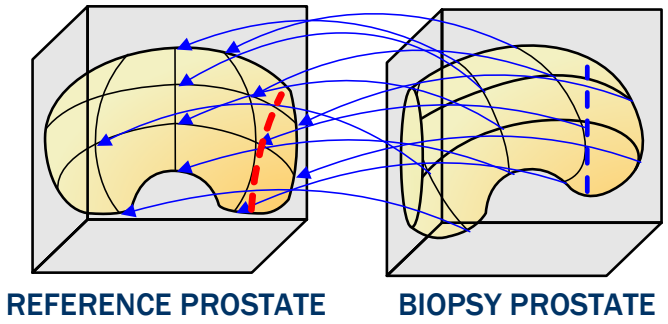
Prostate IRM/US

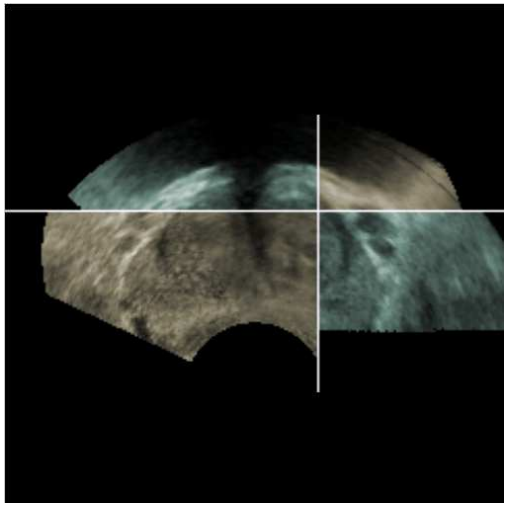
Method 1- Point-Based Registration



Method 2 - Iconic Registration

- Prostate Tracking/Morphing with intraop. 3D ultrasound



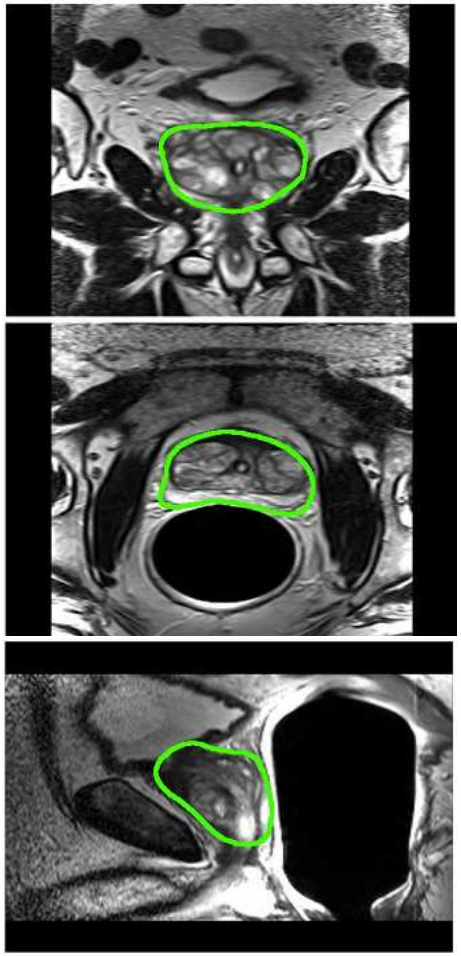


Baumann et al., MICCAI 2007
Towards 3D Ultrasound Image Based Soft Tissue Tracking: a Transrectal Ultrasound Prostate Image Alignment System

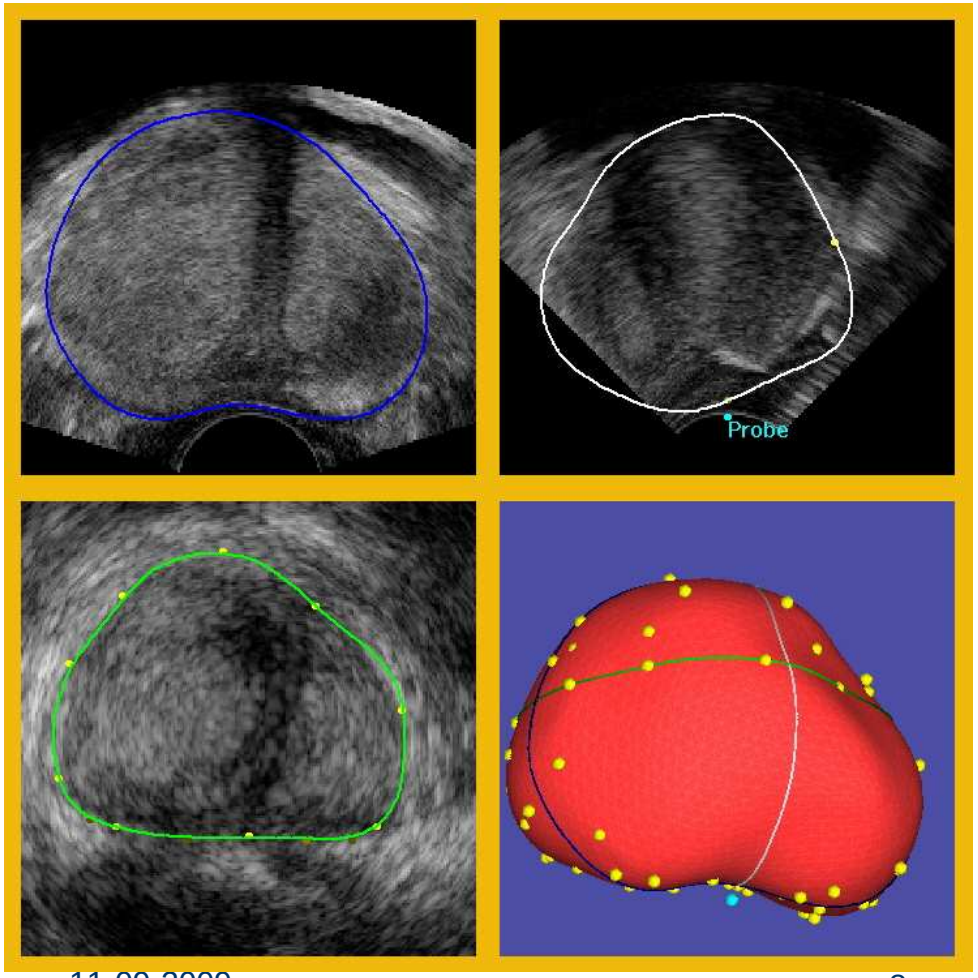
Baumann et al., MICCAI 2009
Prostate Biopsy Assistance System with Gland Deformation Estimation for Enhanced Precision

Morphological Segmentation

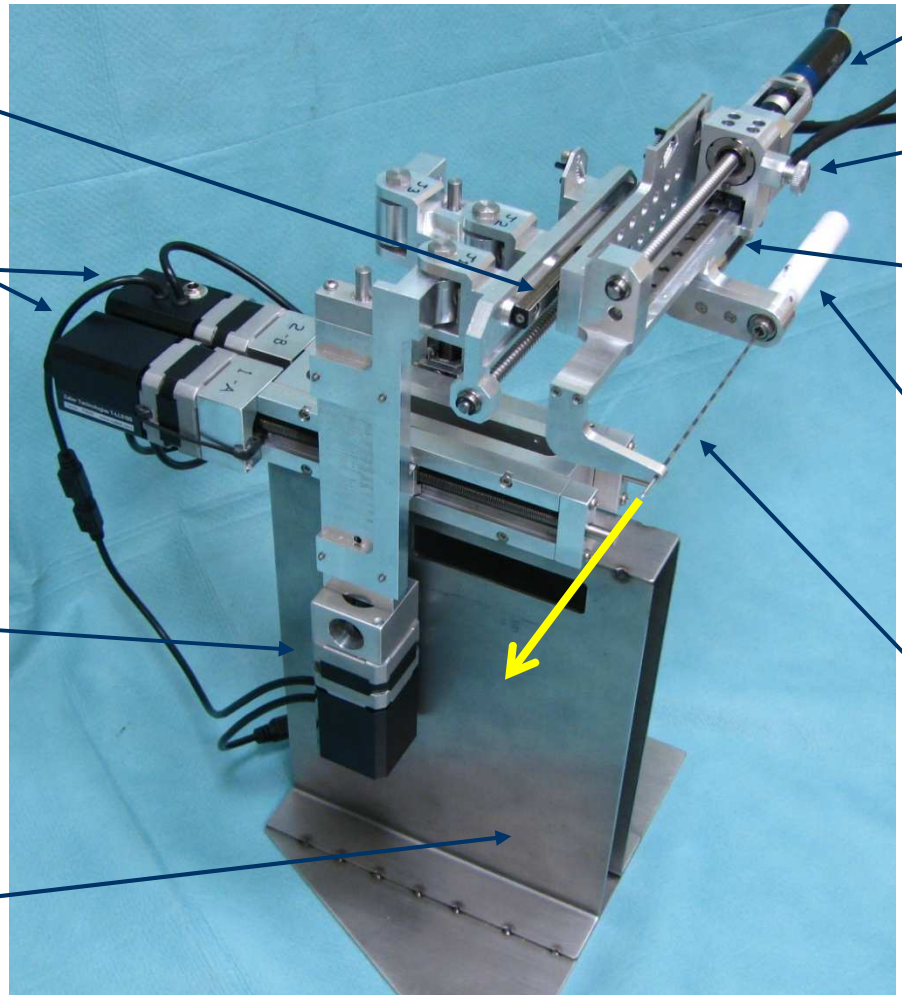
- On MRI



On 3D TRUS

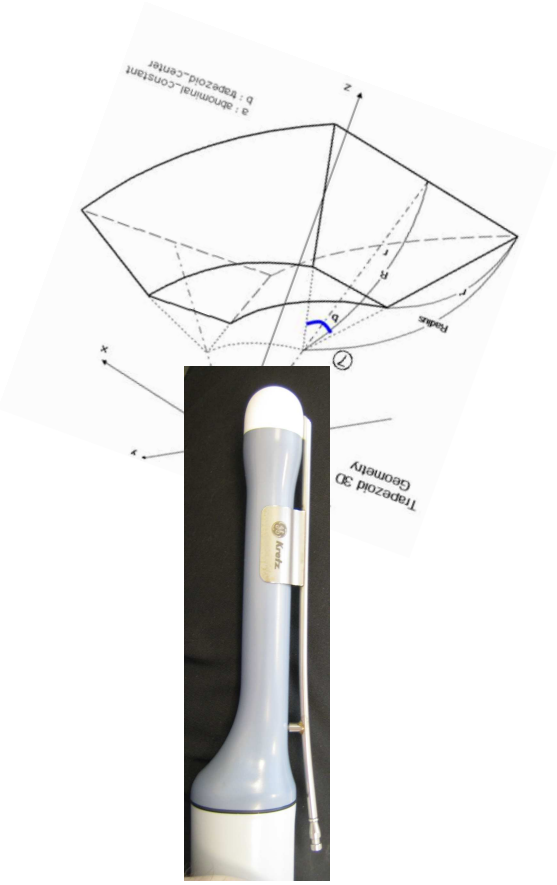


Research Projects - Robotics



PRODUCT

UROSTATION

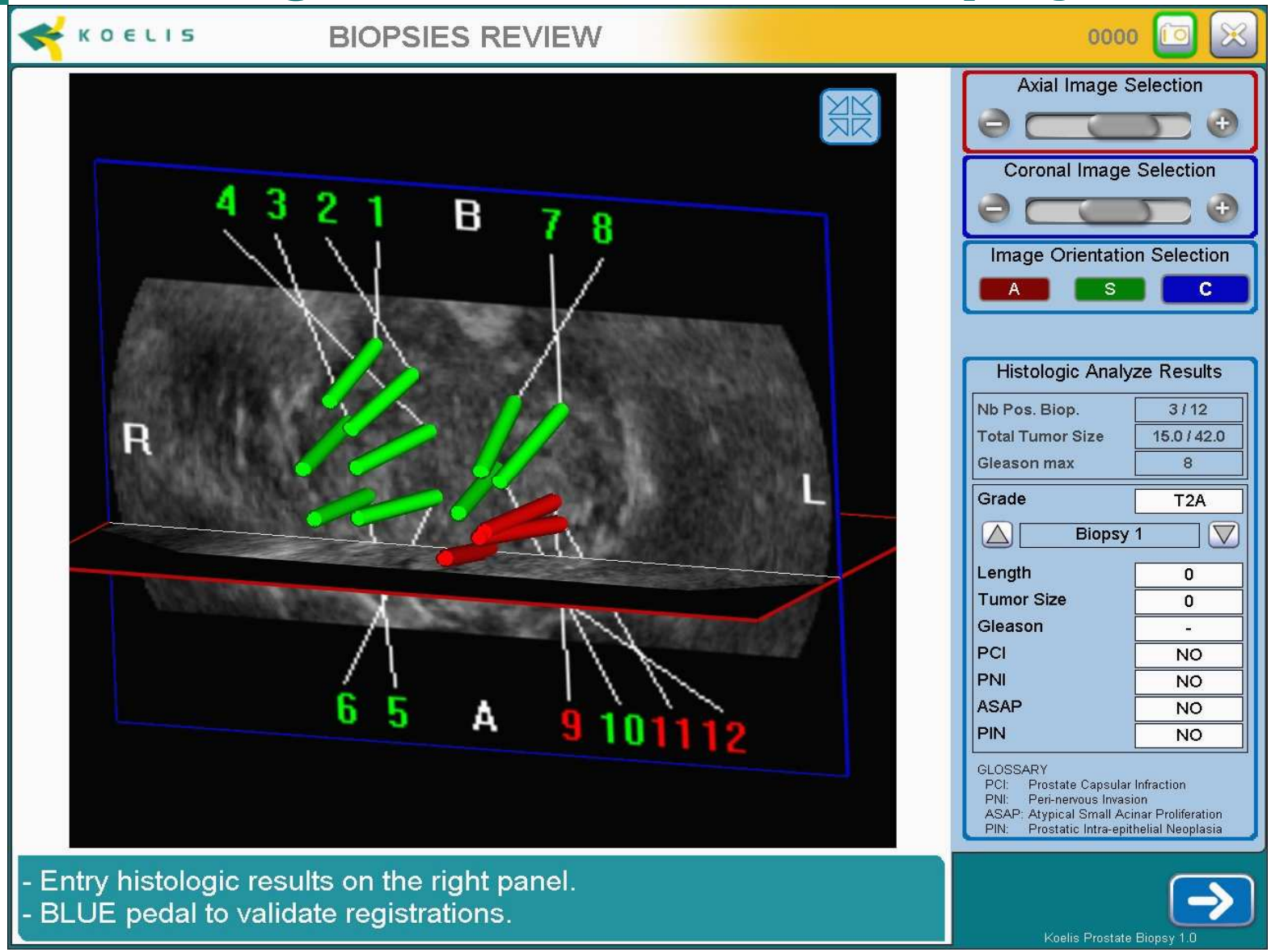


3D TRUS PROBE

Ethernet

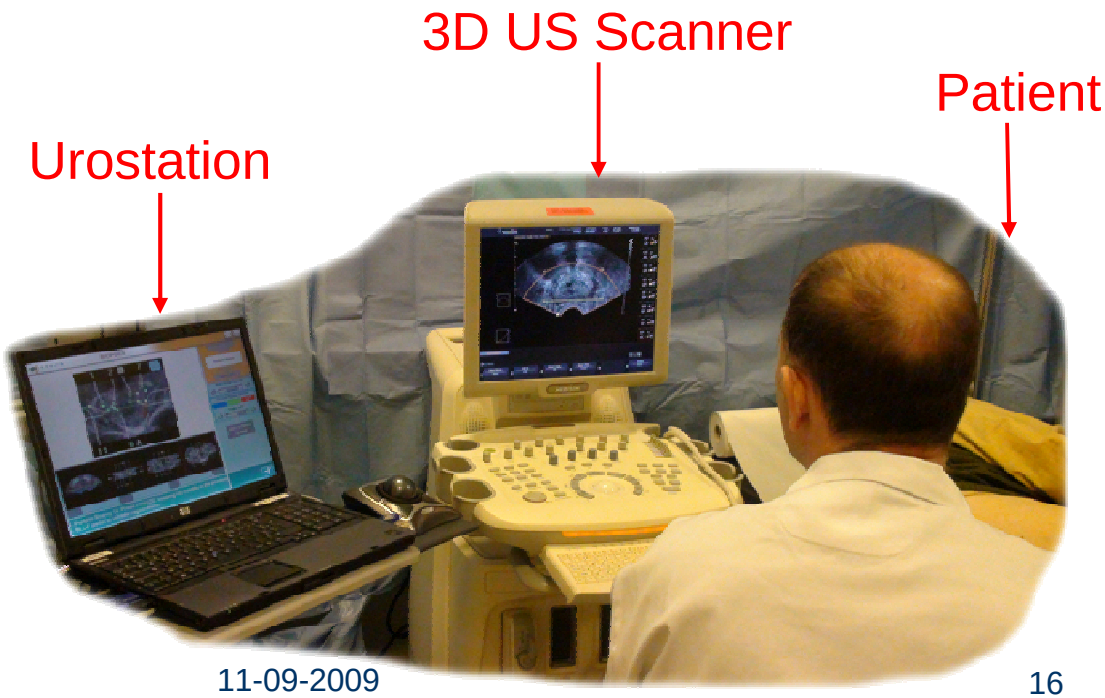
3D TRUS SCANNER

3D Targeted Prostate Biopsy



Clinical Validation

- Pitié Salpêtrière Hospital, Paris
  - +100 Patients enrol.
  - Live targeting
  - Improved distribution
  - 3D recording



Mozer et al., Journal of Ultrasound in Medicine 2009
Mapping of Transrectal Ultrasound Prostate Biopsies: Quality Control and Learning Curve Assessment by Image Processing