MinMaxMedical Network

Arnaud Clère, Software Technical Director, Stéphane Lavallée, President
September 2015

eccami
excellence center for computer assisted medical interventions

- Linking actors from the field: Clinicians + Scientists + Industry
- Promoting Computer-Assisted Medical Interventions

2011/2013 - KEY FIGURES

13 R&D collaborative projects financed
ANR – European- FUI

12 clinical assessments on patients
430 patients in all studies

3 structuring projects
CAMI LabEx – ROBOTEX EquipEx - IBISA

10 **spin-off set up** since 2008

7 bilateral research projects

Communication terrain **experts**
47 workshops and trainings
[illegible] visitors at the showroom

Experts Network:
More than 60 clinicians,
70 researchers and manufacturers

16 ***« Coup de Pouce »*** projects with clinical target
Projects supported by ECCAMI financing

Already **26** members
among them (others under discussions)

5 Research Centers (UJF/CNRS/CEA-LETI/INRIA/G-INP)
16 Startups (BLUE-ORTHO, Imactis, Endocontrol, Koelis…)
1 Major Company (THALES)
1 Hospital Center (CHU GRENOBLE)…

Almost 30 years of cooperation in Grenoble
Keys tools available for the success of your project

Our President : Stephane Lavallee, PhD

- Since 2007: co-founder of a network of +10 CAMI companies
- 1998-2007: CEO & President of Praxim
  - From 0 to 50 employees, 5M€ revenues, 20M€ funds raising
  - 200 CAS systems sold in F, D, I, BNL, UK & USA (CE & FDA, ISO 13485, 20 products)
  - Alliance with HSS in New York / 50 implant companies / 500 surgeons
- 1986-1998: CNRS Researcher at Grenoble University
  - More than 100 publications and 1 reference book (MIT Press, 1996)
  - World premiere in Robot Assisted Neurosurgery (1989)
  - Key innovations in orthopedics (Image free navigation, Bone Morphing, Surface-based registration, 3D/3D and 3D/2D elastic registration using SSM,…)
- Honors & Distinctions
  - Prix de l'Académie de Chirurgie de Paris (2011)
  - Maurice Muller Award for Excellence in Computer Assisted Orthopaedic Surgery (2006)
  - 1st European Grand Prize for Innovation with Praxim 200k€ (2005)
  - Winner of 1st edition of National Contest for Startups OSEO with ENTACT: 300k€ (1999)
  - Bronze Medal of CNRS (1994)
- Co-inventor of more than 30 patents

MinMaxMedical Mission (12 engineers)

- MinMaxMedical develops and markets **innovative technologies** for Computer Assisted Medical Interventions
  - Enabling Minimally-Invasive Interventions
  - Saving short term costs (less instruments, less OR time, short-term revisions…)
  - Saving long-term costs (less long-term revisions, faster return to normal activities…)
  - Increasing accuracy of planning & surgery
  - Reducing the variability of post-operative results
  - Offering more safety to surgeons and patients
  - Reducing X-ray radiation
- Software
- Hardware

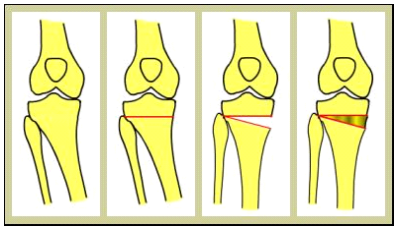
Some MinMaxMedical partners

MinMaxMedical:
New concepts

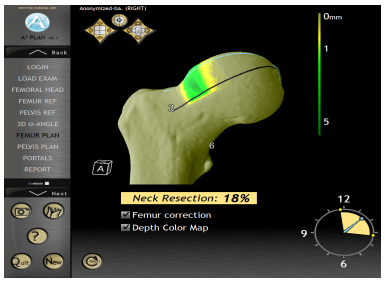
Blue Ortho: Effective and compact navigation for hip & knee & shoulder arthroplasty

IMACTIS: interventional radiology during CT exam

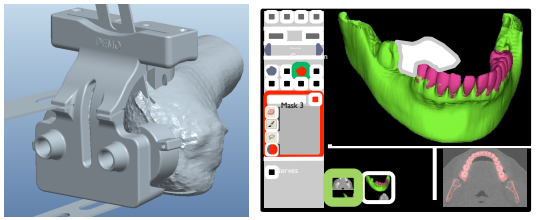
OSTESYS : MIS solutions for tibial osteotomies



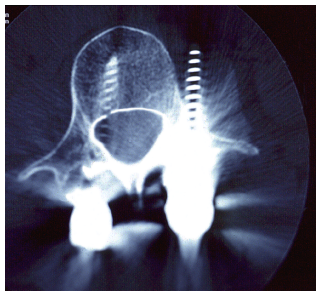
A3 Surgical : Hip Arthroscopy



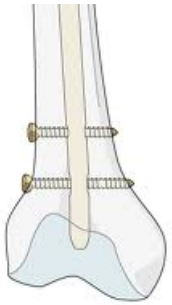
ORTHOTAXY:
surgical planning
& patient-specific guides



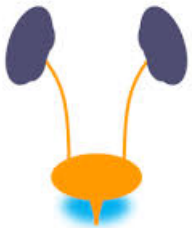
SURGIVISIO: 3D IMAGING For SPINE & TRAUMA



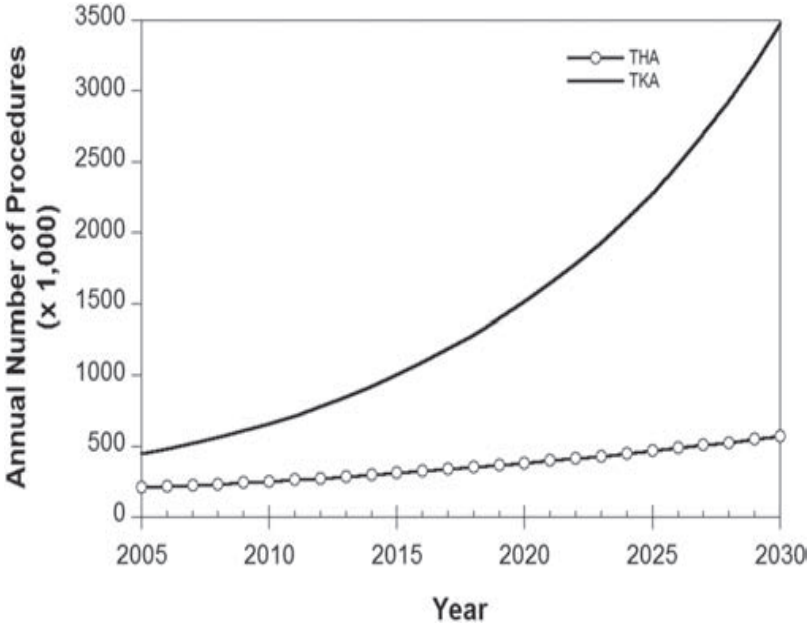
TRAUMIS: distal nail locking



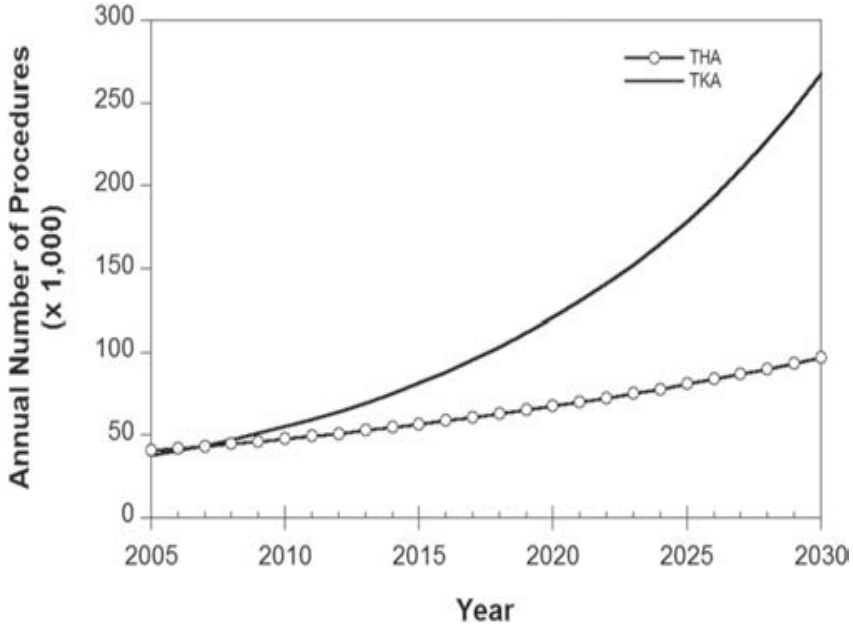
UROMEMS: artificial urinary sphincter



Blue Ortho (Exactech) : Total Knee Arthroplasty

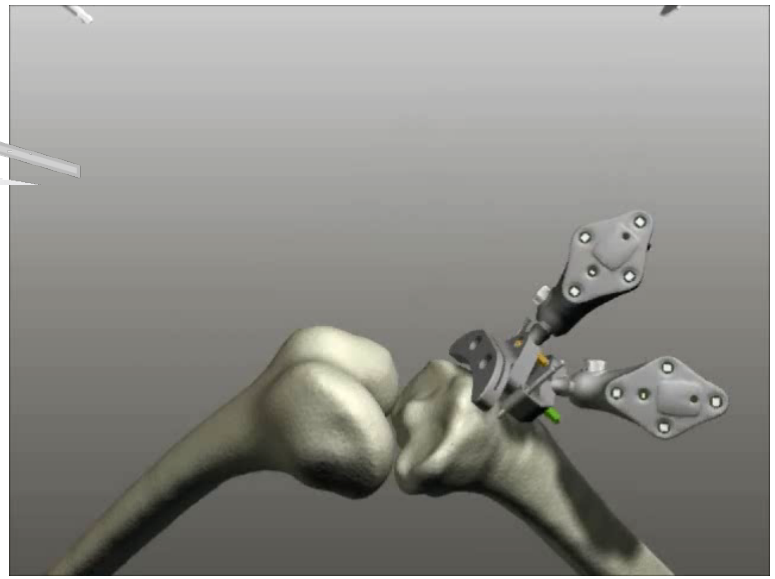


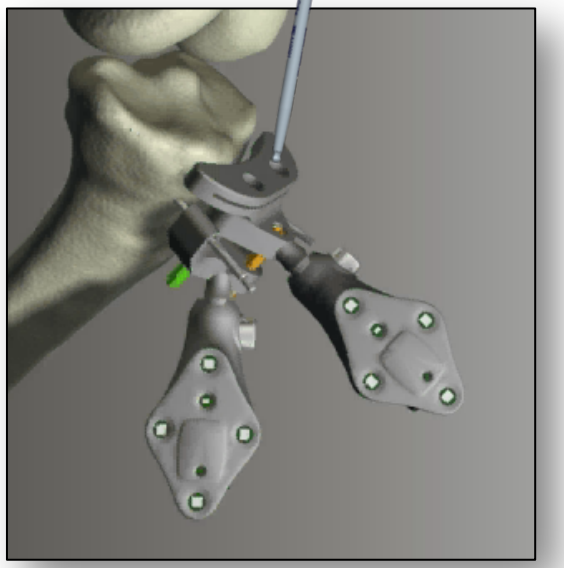
Forecast of knee and hip prosthesis from 2005 to 2030 (USA) [Kurtz 2007]



Forecast of knee and hip revisions from 2005 to 2030 (USA) [Kurtz 2007]

Blue Ortho Smart Screw Driver





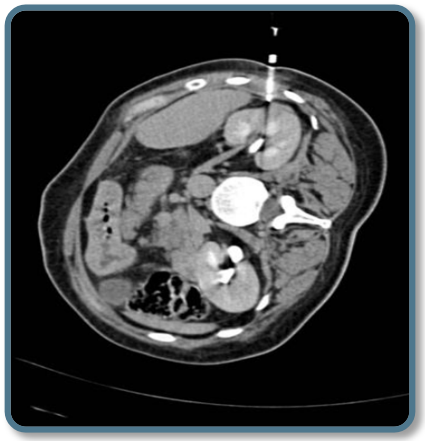
BLUE ORTHO PATENTS

IMACTIS : CT Interventional Radiology

- Interventional Radiology procedures are commonly performed directly during CT examinations (biopsies, drains, tumor ablation, injections, …) but the **accuracy, safety, X-ray exposure, and time are challenging**.
- Difficulties and issues include:
  - Manual determination of the entry point
  - False trajectories, Inaccurate orientation of the needle , difficult positioning in double obliquity
  - Multiple CT exams and iterations, and excessive xray exposure
  - Additional time for complex cases

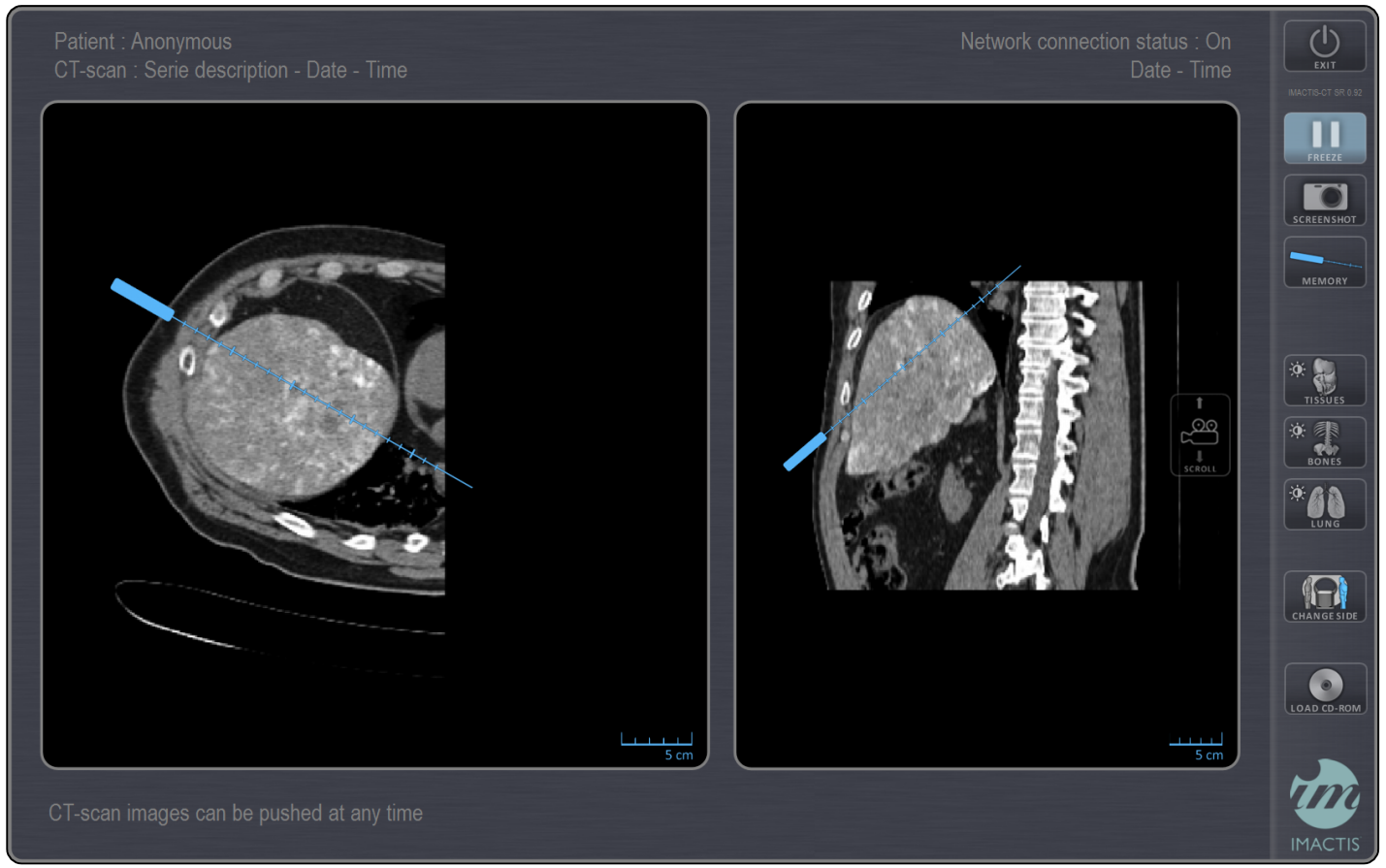
Entry point determination with **laser, pen and ruler**

Trying to adjust the angle…



False trajectory: needle points to the kidney which is **not the target. Restart from scratch !**

Example: Radiotherapy of a liver tumor



PROBLEM:

Single-obliquity trajectory performed in the transverse plane ???

Needle may puncture the lung !!!

SOLUTION: With guidance, the radiologist can choose an ascending trajectory in double obliquity and **reduce the overall risk**.

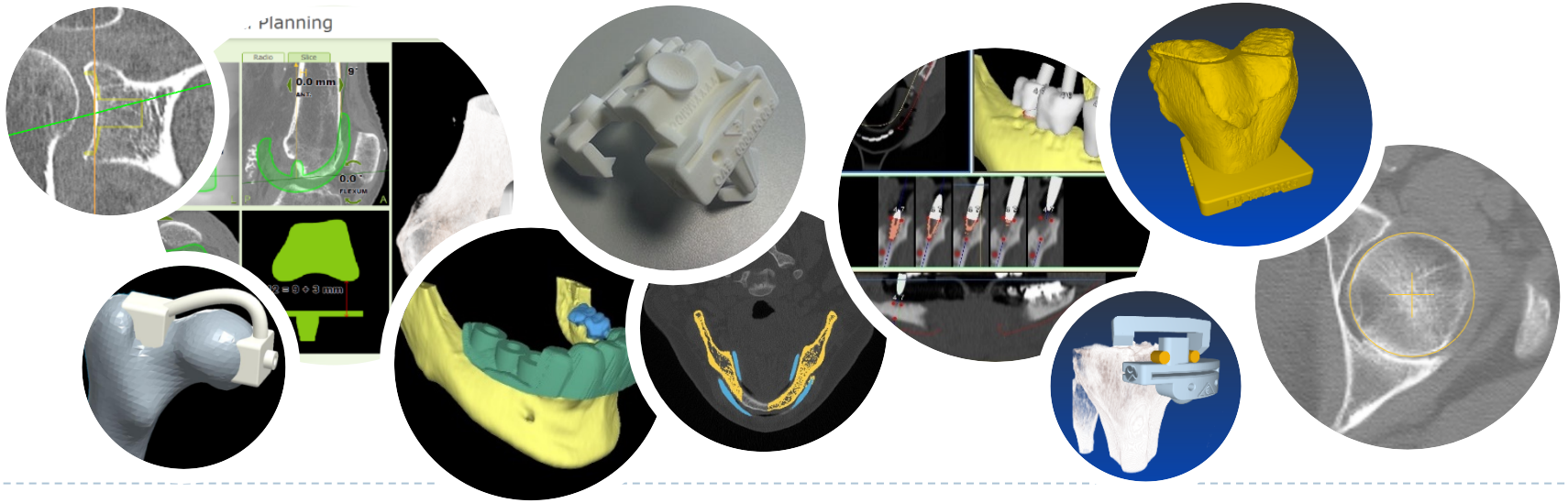
IMACTIS : CT Interventional Radiology

See Video

PATENTED TECHNOLOGY

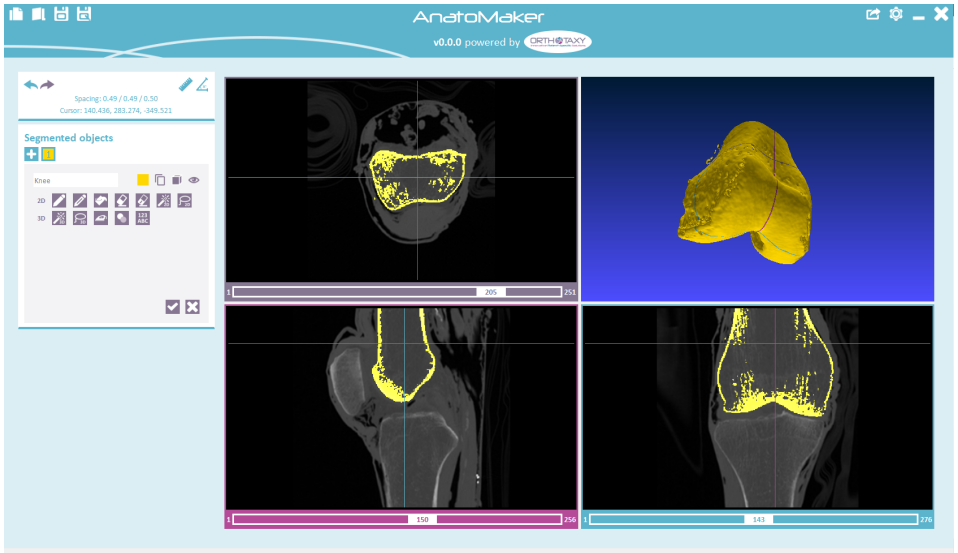
Orthotaxy Overview

- Medical Image Processing, Surface & Volume modeling
- CAD and manufacturing of Patient-Specific Surgical guides
- ISO 13485 certified
- ORTHOTAXY can **develop medical grade software (CE/FDA) from research lab prototypes** (business model: you pay for the development, it remains your IP)



e.g. Modular Segmentation Software

- Loads all types of medical exam: CT, MRI, etc.
- **Smart Tools** for manual segmentation of anatomical structures
- Export CAD files of anatomical structures: STL, STEP, etc.



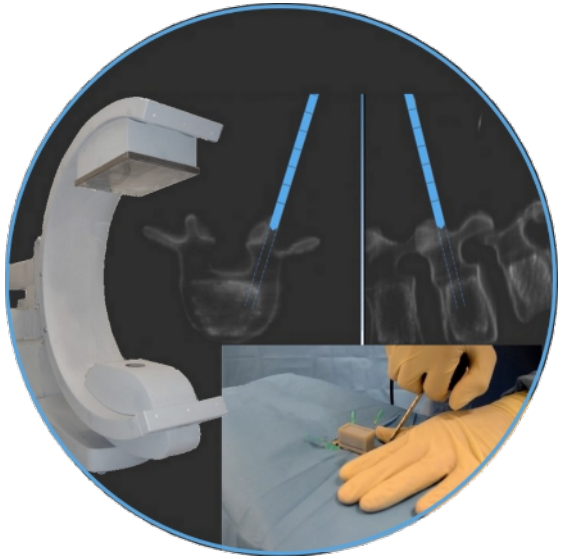
Then, **Print your 3D file**

- **CE** Marked / **FDA** in progress
- **Can be customized to specific needs**

please contact us: info@orthotaxy.com

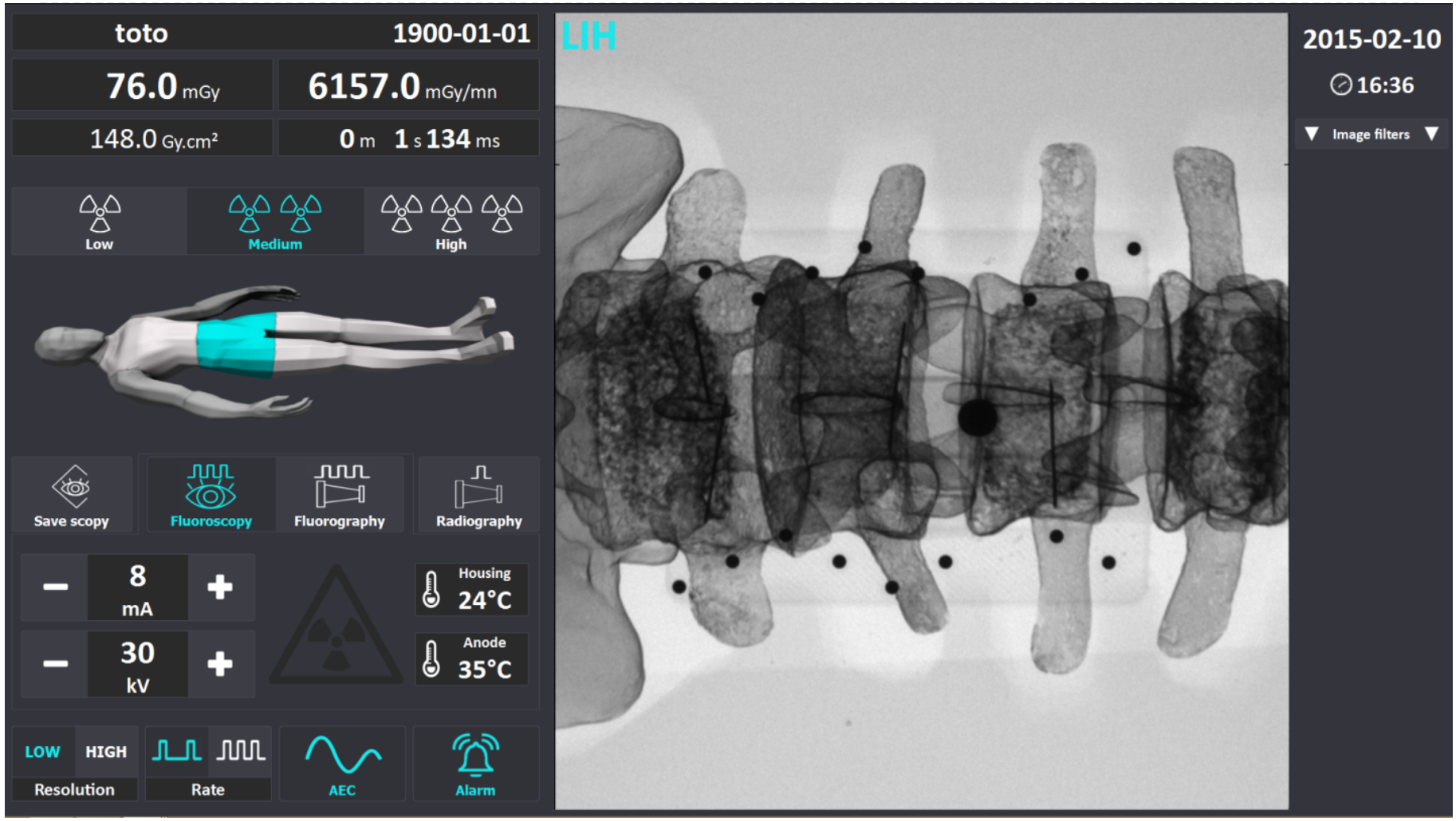
SURGIVISIO Platform

- A **unique platform integrating 2D/3D X-ray C-arm with navigation applications** and dedicated instruments
- Supports key innovations that offer **unrivalled performances** in accuracy, precision and ease of use



- SURGIVISIO is **focused on Spine** MIS
- SURGIVISIO is **open to collaborations** with surgeons / labs / industrial partners to develop **proprietary surgical applications on this platform**

SURGIVISIO Platform



please contact us: contact@surgivisio.com

Conclusion

- **MinMaxMedical Network** model:
- Fast growing network of hyper focused companies
- Contact us:
  send your CV to jobs@minmaxmedical.com
- **Success**

  = **unmet clinical needs**
  + **clear value proposition ($)**
  + **innovative technologies (IP)**
  + **alliances**
  + **passion, humility, talent**
  + **perseverance**