

# Real-time wireless MRI positioning device



- Automatic alignment of MRI images
- Combination of 2 complementary position sensors: optical tracking with 3D camera and pattern recognition on MRI images

## KEYWORDS

Real-time MRI  
3D optical tracking  
3D MRI tracking  
Data fusion

## PATENTS

EP14305255  
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## INVENTORS

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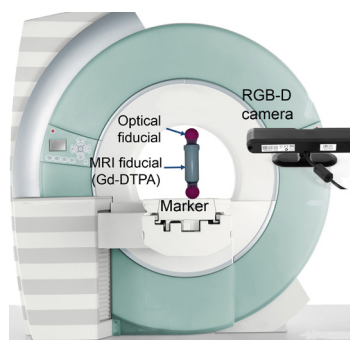
ICube  
(CNRS UNISTRA)



## TECHNOLOGY

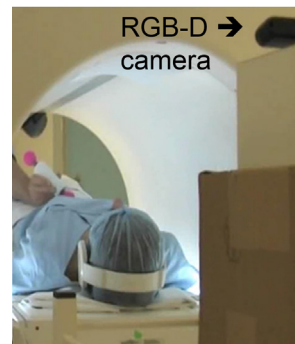
Our software automatically aligns the MR image planes on the tracked device during interventional MRI procedures, based on optical and MRI position sensors.

The MR images are analyzed to track MRI markers attached to the device and derive the device position and orientation (3D pose). In parallel, a 3D camera allows to similarly detect visual markers attached to the device, as in standard motion capture.



Data fusion allows for online automatic registration of camera reference frame to MRI reference frame.

Multi-sensor tracking improves reliability: when markers are not visible with one sensor, the other sensor remains to provide continuous tracking. Motion prediction improves the fluidity of MR image plane alignment.



## APPLICATIONS

- Interventional MRI: interactive percutaneous procedure planning  
tracking of needle (biopsy, thermal therapy)  
tracking of devices (robotic system, HIFU probe...)

## ADVANTAGES

- Online registration: straightforward installation; camera can be freely displaced to improve line-of-sight
- No active element in the marker: low cost, wireless, disposable or sterilizable
- Works with any interactive MRI sequence: no custom MRI sequence needed

## DEVELOPMENT STATUS

- Patent application pending
- Proof of concept done, ongoing development: improvement of design and algorithms

**Partnership:** Seeking partners to licence the patent

## CONTACT

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