

# iCMR in Electrophysiology

effective integration of technology

Marco Götte

HagaTeaching Hospital, The Hague,

The Netherlands

# Team

**PhD students:** A.W.M. van der Graaf<sup>1</sup>, P. Bhagirath<sup>1</sup>, E.A. van Dongen<sup>1</sup>

**Physicist:** J. de Hooge<sup>1</sup>

**Electrophysiologists:** V.J.H.M. van Driel<sup>1</sup>, H. Ramanna<sup>1</sup>, N.M.S. de Groot<sup>2</sup>

**Imaging:** S. Ghoerbien<sup>1</sup>, M.J.W. Götte<sup>1</sup>

**Technical Collaboration:** R. Karim<sup>3</sup>, J. Schwitter<sup>4</sup>

<sup>1</sup>Dept. of Cardiology, Haga Teaching Hospital, The Hague,

<sup>2</sup>Dept. Of Cardiology, Erasmus Medical Center, Rotterdam, The Netherlands.

<sup>3</sup>Division of Imaging Sciences and Biomedical Engineering, King's College London, United Kingdom

<sup>4</sup>Department of Cardiology, University Hospital Lausanne, CHUV, Lausanne, Switzerland

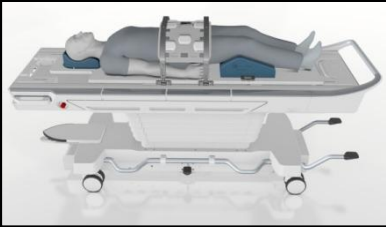
# Requirements for iCMR – EP

## Advances in Arrhythmia and Electrophysiology

### Interventional Cardiac Magnetic Resonance Imaging in Electrophysiology Advances Toward Clinical Translation

Pranav Bhagirath, MD; Maurits van der Graaf, MD; Rashed Karim, PhD;  
Kawal Rhode, BSc, PhD; Christopher Piorkowski, MD; Reza Razavi, MD, FRCP;  
Juerg Schwitter, MD, PhD; Marco Götte, MD, PhD

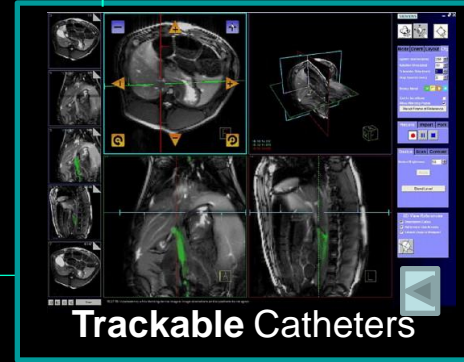
# Interventional Cardiac MRI



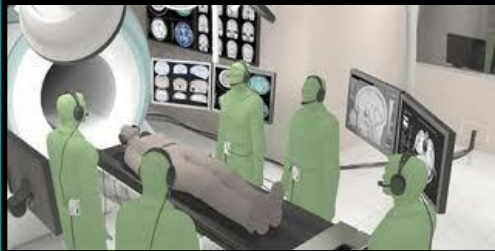
**Anesthesia Equipment**  
Integrated with  
Dockable Table



**MRI Conditional  
Instruments**



**Trackable Catheters**



**Multi Team  
Communication  
Tools**

**Data  
Integration**



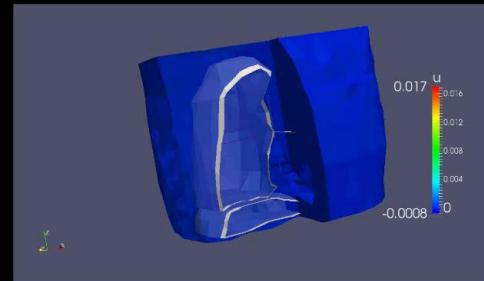
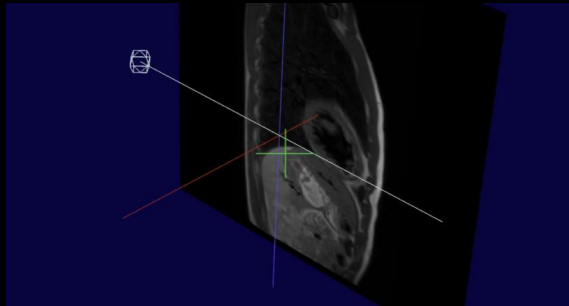
**Software Dashboard**



**Patient Safety**

# Progress in 2014

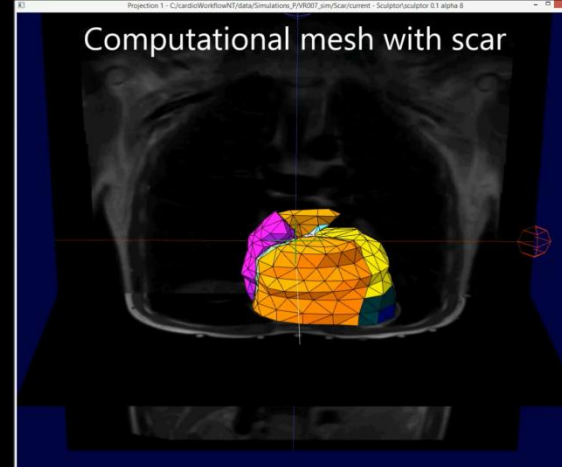
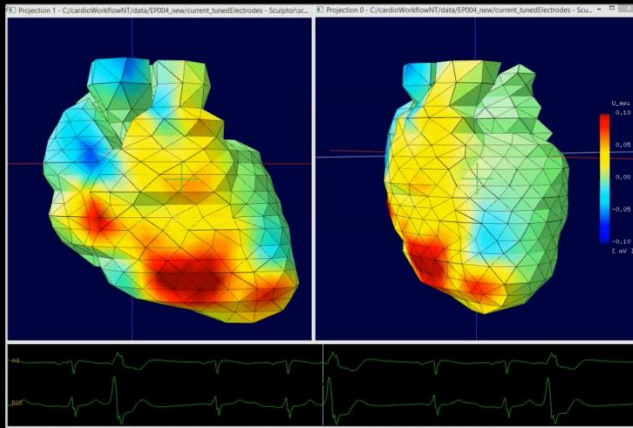
- In house development Inverse Potential Mapping method
  - Whole-heart computational Meshing
  - Finite Element Method - based
  - Robust Forward and Inverse algorithms





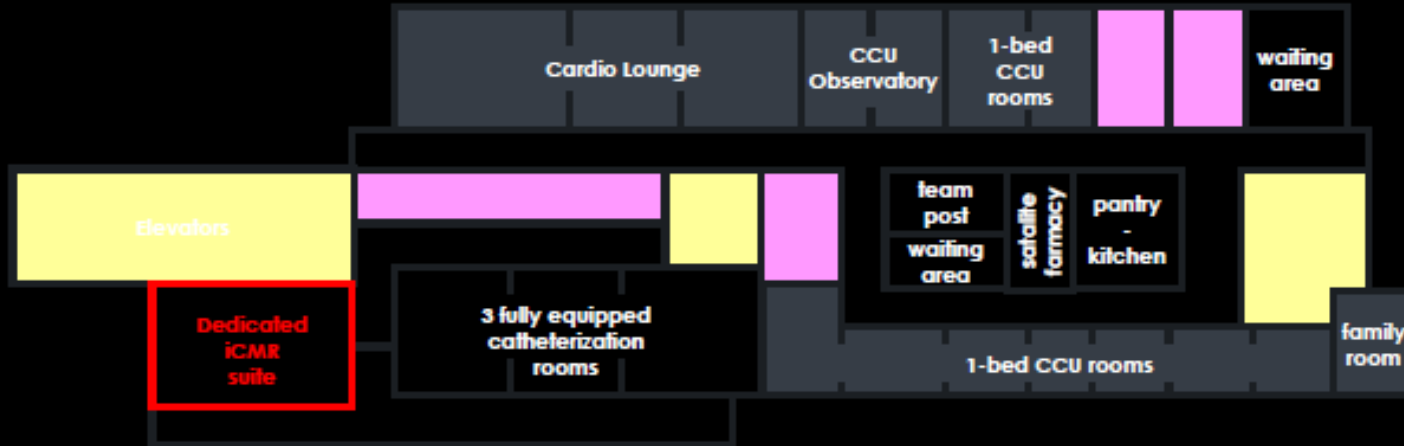
# Progress in 2014

- Integration of geometry, electrical and tissue characteristics in EP lab



# Future steps 2015

- Preparation for a dedicated iCMR scanner





# Future steps

- iCMR for EP platform
  - International Collaboration
  - Industrial Participation
  - Accelerated Innovation

