AMDB: Anatomical Model Database

A Web-enabled Collaborative Environment for Sharing and Reusing Cardiovascular Anatomical Models

Eric Kerfoot[1], Daniele Gianni, Steve McKeever, and Nicolas Smith
eric.kerfoot@kcl.ac.uk
Dept. of Biomedical Engineering
King's College London

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Overview

- Context
- Motivation
- Needs
- AMDB main characteristics and demo
- Collaboration over the investigative process

Context

- Cardiovascular anatomical models represent an entire research area
- The production of an anatomical model requires considerable investments in terms of human resources and scientific equipment
- Need for achieving economy of scale in the production and use of anatomical models
- In a cardiovascular investigation, anatomical models are only a part of the data produced and used. Others are:
  - Cardiac images
  - Cellular models (representing the cardiac functional aspects)
  - Publications describing models, experiences, uses, etc.
  - Simulation experiments (anatomical + cellular models + input parameters)
  - Clinical data, etc.

Motivation

Cardiovascular disease is responsible for 2 million deaths per annum in Europe alone, and is a primary cause of mortality globally [1]

New methods and tools are needed to:

1) lower the cost of such investigations to provide better services to a wider population

2) allow patient-specific investigations and treatments by means of quantitative heart models

Software tools for sharing and reuse cardiovascular anatomical models can contribute to achieve 1) and 2).

[1] The World Health Organization, Fact sheet N°317. January 2011, http://www.who.int

Needs

From the cardiovascular community, we have identified the following needs:

- foundational
- control
- monitoring
- communication
- integrative

Introducing AMDB

Anatomical Model Database (AMDB) is an online collaborative environment for sharing and reuse anatomical models, in particular cardiovascular ones

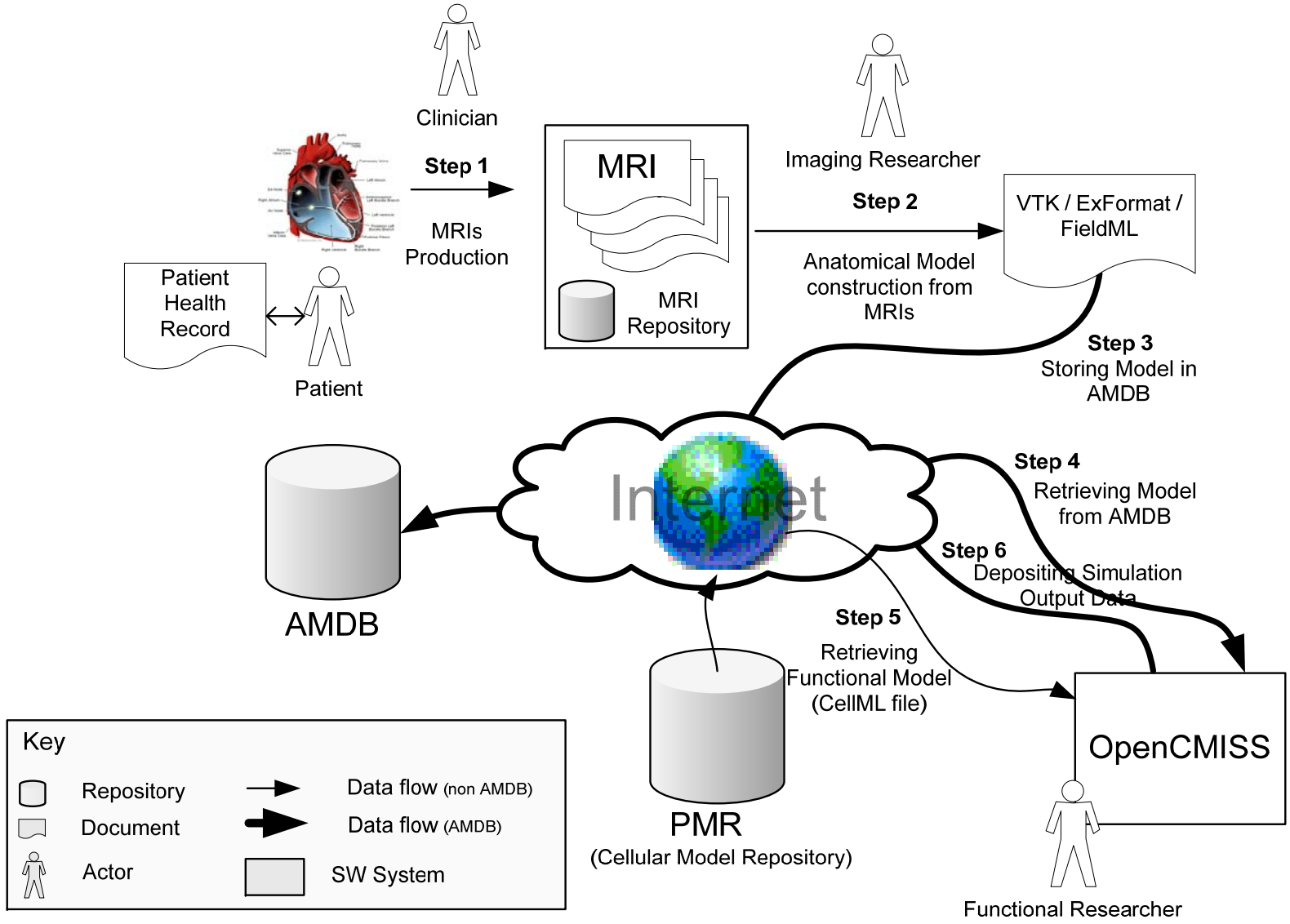
AMDB addresses the identified needs by:

- providing means for model sharing, search, upload, download, curation and commenting
- linking anatomical models to publications, and to cellular models embedded in simulation of cardiac functions
- using rendering engine for interactive graphical 3D visualisation
- classifying models using the Foundation Model of Anatomy ontology
- exporting models in popular and interoperable data formats
- enabling model benchmarking

Introducing AMDB

AMDB currently stores dozens of models from leading groups, including Auckland Bioengineering Institute, King's College London, INRIA, Oxford University, Philips, Sheffield University, Universitat Pompeu Fabra, Amsterdam Medical Centre, Leeds University, University College London, Medical University of Graz, Karlsruher Institut fur Technologie, Simula Research Laboratory, Siemens, etc.

Collaboration over the Investigative Process



References

http://amdb.isd.kcl.ac.uk/

Dr. Eric Kerfoot, AMDB Admin

amdb_admin@kcl.ac.uk

Dept. of Biomedical Engineering

King's College London

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