

COST B21 Physiological Modelling of MR Image Formation

MINUTES of the 5th MANAGEMENT COMMITTEE MEETING

VENUE

**Technical University of Łódź
Łódź, Poland**

8th October 2005

PRESENT

AUSTRIA	Markus BARTH S TRATTNIG
CANADA	R VIVANCO
CZECH REPUBLIC	Monika DEZORTOVA Milan HAJEK Daniel JIRAK (invited)
CYPRUS	George GREGORIOU
FRANCE	J. DE CERTAINES (Repr. J. CHAMBRON) H BENOIT-CATTIN
GERMANY	Jürgen REICHENBACH Lothar SCHAD
HUNGARY	Tamas JARDANHAZY
ITALY	Alberto SPISNI Nicola CULEDDU
NORWAY	Arvid LUNDERVOLD
POLAND	Andrzej MATERKA Michal STRZELECKI
SLOVAKIA	Dusan DOBROTA
SLOVENIA	Stanislav KOVACIC
SPAIN	Andres SANTOS
SWITZERLAND	Gabor SZEKELY
UNITED KINGDOM	Richard LERSKI Maria PETROU

EXCUSED: Ewald MOSER (AT), Pavle ANDJUS (CS), Christakis CONSTANDINIDES (CY), Anders KARLSSON (DK), Hans STODKILDE-JORGENSEN (DK), M. DESCO (ES), J. CHAMBRON (FR), Sandra MEME (FR), Sven LONCARIC (HR), Marotti MILENKO (HR), Joseph MOLNAR (HU), Arunas LUKOSEVICIUS (LT), Arimantas TAMASAUSKAS (LT), O. HARALDSETH (NO), B. CARSTOCEA (RO), A. STAICU (RO), Vladimir MLYNARIK (SK), Alan EVANS (CA), Richard BAUMGARTNER (CA), Roger DOMMISSE (BE).

List of the Management Committee members given in Annex 1

1) Welcome to Participants

The participants were all welcomed to Lodz by the Chair of the Meeting Richard Lerski.

2) Adoption of the Agenda

Point 12 was absorbed into agenda item 11.

3) Adoption of the Minutes of the last meeting held in Szeged (19 March)

The minutes of the 4th MC meeting held in Szeged were adopted (see Annex 5).

4) Presentation of the delegations

A Canadian representative was present for the first time and was welcomed. The Chairman noted that two new countries were listed as having nominated members of the Management Committee, viz. Serbia and Montenegro and Latvia. So far, however, they had not attended.

5) Status of the COST B21 Action

No information on the budget remaining for 2005 or that for 2006 was available.

6) Report from the Chair: Budget status

The Chair is hopeful about the available budget and advises the MC to continue with all meeting planning.

The chair also reported that the expenditure on the Dundee meeting is being audited. Care must be taken to keep to the reimbursement rules.

7) Non-COST Participation

The Non-COST participation of Canada was again noted.

8) Short Term Scientific Missions

Olsen to Surrey – performed; Kovalev to Jena performed; Deistung to Lodz performed; Sance to Bergen planned.

The Chairman advised the committee to apply for STSMs as soon as possible for both budgetary and administrative reasons.

9) Dissemination: Publications and web site

The Management Committee had previously approved the publication of the book “Texture analysis for MR imaging”.

The status of the book is as follows:

- 1) Chapters 1- 6 are ready for the final revisions
- 2) Chapter 7 and 8 are under progress
- 3) Chapter 9 (basic MR) will be finished after all chapters are ready
- 4) Editorial group is working with these members: Milan Hajek, Dick Lerski, Andrzej Materka and Monika Dezortova. The group is in touch by e-mail and will meet together at the end of the year in Dundee to finish paper work concerned to book production and to finalize several chapters.
- 5) To decrease the expenses on the book, it was agreed not to have royalties

The book can be ready for publisher in time previously discussed – February 2006.

It also approved to have the publisher:

MED4PUBLISHING .S.R.O., Prague, Czech Republic which made the cheapest offer at the price of EURO 30 per copy (VAT and postage for distribution included). The MC approved that a total number of 600 copies should be ordered in bulk from the publisher. The total amount of money for the bulk buying of the copies is EURO 18,000. Richard Lerski reminded MC members to provide the distribution lists for the textbook in their countries in Order to have the final form of the target readers list asap.

Andres Santos demonstrated the current web-site to MC members who were reminded to submit presentations and other relevant materials for inclusion. A Barclay in Dundee regularly forwarded materials (e.g. agenda) for inclusion.

10) Update on work plan

WG1 – see Annex 2.

WG2 – see Annex 3.

WG3 – see Annex 4

11) Agreement of next Meetings

- A training meeting on MAZDA (already agreed) will be held on December 9-10 2005 in Brussels to facilitate transport.
- The possibility of holding a meeting in Canada was discussed and the chair would discuss this with the COST office.
- The 6th meeting of the Management Committee of COST B21 will be held in either Rennes, London or Prague on 17-18th March 2006 in conjunction with a joint meeting of all 3 working groups.
- The 7th meeting of the Management Committee of COST B21 will be held in either Sardinia or Parma on 6-7 October 2006 in conjunction with a joint meeting of all 3 working groups.

12) Any other competent business

There was no other business discussed.

Dr. Richard LERSKI
CHAIR
COST ACTION B21

Mihail PASCU
SCIENCE OFFICER
COST ACTION B21

8 October 2005

COST ACTION B21

“Physiological Modelling of MR Image Formation”

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WORKING GROUP 1

2005-2006 Plans

Objectives of WG 1:

- To progress developments in physiologic MRI to maximize diagnostic information.
- To carefully study the optimal MR data collection strategies for the interpretation of tissue structure and physiology.
- To carefully investigate the dependency of all variables (diffusion, perfusion, BOLD etc.) studied in phantoms, animal and humans.

Goals:

- To design and test reliable and accurate test objects and/or animal models that allow the detailed assessment of physiological analysis methods in MRI.
- To simulate tissue-like properties, i.e. NMR relaxation times, diffusion, perfusion etc.
- To test the developed physiological imaging under a range of different MRI measuring sequences and imaging conditions on different scanners throughout the consortium to determine their stability and utility.
- To gain a deeper insight into the physics of MR signal formation in living tissues.
- To provide methods to glean information about biological structures below the achievable MRI resolution (~ mm).

Where do we stand?

- Development and construction of physiological test objects capillary phantoms (Jena, Vienna), perfusion phantom (Heidelberg), diffusion tensor phantom (Heidelberg), susceptibility phantom (Heidelberg) ...
- Development of pulse sequences and imaging protocols multi-echo gradient-echo sequence (Jena, Vienna), spin-echo, gradient-echo sequence (Heidelberg), dynamic 3D perfusion sequences (Trondheim), DCE-MRI (Rennes) ...
- Testing of different techniques: diffusion, perfusion, BOLD.... SWI (Jena, Vienna), Perfusion (Bergen, Trondheim), BOLD-related Imaging (Heidelberg), ²³Na Imaging (Vienna, Heidelberg) ...
- Animal studies
Mouse model (Aarhus), mouse and rat (Trondheim, Bergen), high-resolution neuro-imaging (Antwerp, Belgium) ...

WORKING GROUP 2

2005-06 Plans

- ☐ Image analysis (WG3 database)
- ☐ Study of software platforms (MaZda, SCOPIRA)
- ☐ Image registration (ITK, VTK?)
- ☐ Vessel segmentation – Marek Kocinski, Andreas Deistung
- ☐ Vessel trees modelling, verification (Arvid Lundervold, Marek Kocinski)
- ☐ MRI simulation
- ☐ Documentation
- ☐ Participation in modelling project
- ☐ MaZda training in Brussels

WORKING GROUP 3

2005-2006 Plans

2D-3D brain and liver data bases for evaluation of MRI post processing methods under construction.

1.5T

Brain - T Jardanhazy, Szeged (H), D Dobrota, Martin (SK), L R Schad, Heidelberg (D), J R Reichenbach, Jena (D)
 Liver - D Dobrota, Martin (SK), M Hajek, Prague (CZ), R A Lerski, Dundee (UK)

3T

Brain - A Lundervold, Bergen (NO), J de Certaines, Rennes (F)
 Liver - J de Certaines, Rennes (F)

Examples: 3D 3T Liver

- 7 patients (RENNES (F))
 - 3 FO (no fibrosis, METAVIR)
 - 2 F1 (1st grade of fibrosis)
 - 2 F4 (cirrhosis)
 - (1 patient with and without Gd-DOTA)
- Acquisition 2x2x4 mm but image reconstruction in 2x2x2 mm
- GE T1w (thrive): TR=2.8, TE=1.4, Flip angle: 10°

3D 3T Brain

- patients (RENNES (F)):
 - 3 glioblastomas (gbm): pre+post Gd-DOTA
 - 2 meningiomas (m): 1 pre and 1 pre+post
 - 1 hemangioblastoma (hmb): pre
 - 1 neurocytoma (nc): pre+post
 - 1 oligoastrocytoma gr II (oall): pre

**3D T1w TR=9.9 ms, TE=4.6 ms, flip angle = 8°
 1x1x1 mm³, parallel imaging**