

CCP SyneRBI 2nd Steering Panel Meeting

15 February 2021. Held by Zoom

Participants

SyneRBI Cols and CoSeC support: (in alphabetical order)

David Atkinson (DA) *UCL*, Matthias Ehrhardt (ME) *Bath*, Gemma Fardell (GF) *STFC*, Julian Matthews (JM) *Manchester*, Evgueni Ovtchinnikov (EO) *STFC*, Evangelos Papoutsellis (EvP) and *STFC*, Edoardo Pasca (EP) *STFC*, Andrew Reader (AJR) *KCL*, Kris Thielemans (KT) *UCL*, Harry Tsoumpas (ChT) *Leeds*

External: (in arbitrary order)

Brian Hutton *UCL*, Christoph Kolbitsch *PTB*, Jorge Cardoso *KCL*, Daniel Lesnic *Leeds*, Edwin van Beek *Edinburgh*, Jamie McClelland *UCL*, Jeff Fessler *Univ Michigan*, Lefteris Livieratos *KCL*, Martin Turner *Manchester*, Ross Maxwell *Newcastle*, Simon Arridge *UCL*, Simon Doran *ICR*, Zahi Fayad *Mount Sinai NY*, Ciprian Catana *MGH Boston*, Dave Cash *UCL*, Johannes Mayer *PTB*, Craig Buckley *Siemens Healthineers*, Nikos Dikaios *Academy of Athens*, Anna Barnes *UCLH*

Apologies received:

Alex Frangi *Leeds*, Jakob Jørgensen *Tech Univ Denmark*

Minutes: Hazera Begum *UCL*, Evgueni Ovtchinnikov *STFC*

Minutes content

These minutes only record comments and suggestions during the meeting. Information available on the slides is not repeated here.

Overview

[SyneRBI](#)

KT gave a brief reminder CCP SyneRBI,

[CCP SyneRBI structure](#)

KT gave an overview of CCP SyneRBI aims: Networking and community (bringing together expertise and training the next generation), open source software, translation of software towards biomedical researchers.

KT described SyneRBI organisational structure: executive committee, steering panes and external advisors. He announced that Christoph Kolbitsch (PTB) will join the Executive Committee as guest, due to his extensive input into our CCP.

KT proposes to create an official process to become affiliated organisation and institutions. Requires Letter of Support and substantial commitment (follow examples of commitments). This will be approved by Executive Committee.

Daniel Lesnic asked why all companies were not included and where the line should be drawn. KT response was to be open and transparent about affiliations and to be open to new collaborations. The suggested process will be put on the website.

Awards

KT then went into the Awards section, reminding people about the awards, including what we consider for assigning the awards.

Gold: Johannes Mayer

For his contributions to SIRF for improved MR handling, for creating educational material and for excellent teaching at our training

Bronze: Ashley Gillman, Claire Delplancke

For their contributions to the CCP community and to the second SIRF paper

KT also thanks CoSeC staff, in particular Evgueni and Edo, and Richard Brown (previous PDRA at UCL on the Software Flagship grant) for their many contributions.

CCP SyneRBI: workpackage status and future

CCP PETMR and Software flagship extensions

KT updated the SP on no-cost extensions obtained for CCP PETMR and its associated Software Flagship grant. CCP PETMR extended until March 2021. Software Flagship until 15 May 2021 (Ander Biguri, Kjell Erlandsson), improved support for GE PET data, Motion correction for dynamic PET/MR data.

WP1: Networking activities and Community Engagement

WP 1.1 Bringing together expertise and WP1.2 Training (AJR)

See slides starting at slide 18

Comments regarding seminar series:

AJR described WP 1.1 – online seminars due to the current circumstances and face-to-face will become available when possible.

Simon Doran found recording seminars a great development.

ChT asked whether the symposium be in the UK and standalone or together with a conference. AR responded that it will be in the UK.

Attendees to email AJR suggestions of what should feature in the playlist collection. EP mentions covering basics and also more research oriented matter. Edwin van Beek suggests clinical applications to demonstrate how this work is changing the way we do PET-MRI.

JMC found that monthly seminars sound reasonable. KT suggested monthly seminars may be difficult to keep up with over a 5-year period in which AJR suggested “seasons” of seminars, Edwin van Beek: 4/year is plenty, Brain Hutton: distinguish content as to appeal beyond the many available seminars

WP 1.2 Training (AJR)

See slides starting at slide 22

Course before Fully3D discussed:

EP asked if there is a specialised training session on getting the software build on a user machine in week 1. AJR responded, we need to discuss what can be covered live in week 1 and what should be pre-recorded.

Simon Doran made a comment regarding cloud-based computing. KT confirmed that the plan is to use Azure certainly for start-up but help attendees to set-up software to have the ability to run once Azure is no longer available.

WP1.3 Dissemination and outreach (ChT)

See slides starting at slide 25

Harry happy to receive communication directly to him.

CT update on special issue from synergistic symposium on Royal Society Philosophical Transaction A. 16 articles accepted (pending corrections). 5 articles from our CCP members. Expected publication: summer 2021.

WP2: Research software development

WP2.1. Code maintenance, optimisation and HPC (CoSeC)

See slides starting at slide 28.

EO gives status report on SIRF and outlook. Question about GPU PET Projector for time of flight, which is not available from NiftyPET.

Jeff Fessler asked about GPU TOF projectors – KT responded that NiftyPET does not provide this but asked to wait for next slide! (KU Leuven work)

WP2.2. Integration of/interfacing with Open Source Software packages (DA)

See slides starting at slide 31

DA integration with other OSS packages: CCPi CIL, NiftyPET, KU Leuven Georg Schramm TOF and non-TOF parallel (GPU) projectors (work just started).

KT mention that on-going support for NiftyReg may not be forthcoming.

WP2.3. Implementation of promising algorithms in the literature (ME)

See slides starting at slide 32

Implementation of promising algorithms in the literature. Update given: PDHG and SPDHG implemented via CIL, CIL FISTA for PET is being tested, backtracking line search for PET, hackathon in autumn. What algorithms that we should be focus on?

KT interested in LBFGS or LBFGS-B

Jamie McClelland: interested in low-rank motion models (like <https://onlinelibrary.wiley.com/doi/full/10.1002/mrm.28562>) for MR and CBCT data

WP2.4 Testing on simulated and acquired data (ChT, DA, JM, CoSeC)

See slides starting at slide 35

No updates yet

WP2.5 Software deployment (CoSeC)

See slides starting at slide 36.

WP3: Translation towards biomedical researchers

WP3.1 Software development for translation [DA, ChT, CoSeC]

See slides starting at slide 38

Report on meeting with UCLH: initial application on registration from DICOM.

Dave Cash is interested in static and dynamic PET recon of XNAT store data. Jamie R McClelland is happy to provide input on the XNAT integration. Simon Doran expresses [interest to use this within XNAT and confirms he will follow-up to the Executive Committee about a repository that contain a lot of raw data that this might be appropriate for.](#)

Dave Cash is interested in running his list mode data (stored on XNAT) from the PET/MR through SIRF for both static and dynamic recons

Simon Doran asked privately about SIRF's registration capabilities and if SimpleElastix or another alternative for NiftyReg is supported. Current answer is that we don't.

WP3.2 Validation (JM, DA, ChT, CoSeC)

See slides starting at slide 39

JM suggested that phrases are provided to help people with adding text to ethics applications.

Ross Maxwell confirmed he does not have any data at this time.

Anna Barnes asked if this would be raw data in which KT responded yes, we would need raw data.

Dave Cash suggested for volumetric MRI neuroimaging, there is more and more pressure to setup de-facing too ensure anonymisation before data sharing, and there is not yet an agreed upon method that removes the face while not affecting subsequent processing. However, KT did say this is not possible for raw data.

KT mentioned there are sites with freely available images already but as we want to investigate the effect of different image reconstruction algorithms, we need the raw data.

Jamie R McClelland states that you can put in REC application for creating a research database - see here: <https://www.hra.nhs.uk/planning-and-improving-research/policies-standards-legislation/research-tissue-banks-and-research-databases/> - but not sure if this allows for unrestricted sharing

Lefteris Livieratos mentioned if the data are anonymised and not traceable and are free of identifiers then it is possible to gain ethics approval, and often patients are agreeable.

Simon Doran: lawyers in a EU project expressed worry about (in practice probably unfeasible) de-identification including pattern matching activities.

Jorge Cardoso said that rules differ in EU states, but that in UK there is a concept of "motivated intruder".

Edwin van Beek said that there is a difference between truly anonymised data and pseudo-anonymised data of course and that he does not tend to have major issues with data sharing in clinical trials.

WP3.3 Training of biomedical researchers (JM, AJR, ChT)

See slides starting at slide 41.

Dave Cash talks about Health and Bioscience IDEAS

ChT mentioned the question is if we could input anything in the official NHS training scheme.

Edwin van Beek suggested that you may need to have interactive approach including MR physicists and radiologists. ISMRM also offers workshops. They will support but will also charge for attendance would allow larger international advertisement.

Lefteris Livieratos says that if we have a workshop/event in the making, I'm sure IPEM would be happy to advertise (and he's happy to suggest contacts).

Presentation by Dave Cash (UCL) on IDEAS grant (see slides)

CCPi status [Martin Turner]

CCPi is our "sister CCP", concentrating on tomography for material science, covering different modalities. We work closely with them on their Core Imaging Library (CIL), a Python library for advanced regularisation and optimisation. See slides, presented by Martin Turner.

From slide 49.

End

KT thanked everyone for their interest and attendance, and stressed that feedback by email or any means would be very welcome.

Edwin van Beek mentioned to not forget EARLY interaction with clinicians!