15HLT05 1st Progress Meeting
2017-03-27 – 2017-03-28
Delft University of Technology, Delft

Participants:

Christian Poelma, Sita Drost (TUD)
Tobias Schaeffter, Judith Lehnert, Björn Brinkmann, Stephan Rosendahl, Ludwig Büermann (PTB)
Géraldine Ebrard, Loïc Coquelin (LNE)
Trevor Esward, Nadia Smith (NPL)
Gertjan Kok, Nikola Pelevic (VSL)
Antti Kosunen, Teemu Siiskonen (STUK)
Mika Kortesniemi (HUS, UH)
Amedeo Chiribiri, Xenios Milidonis (KCL)
Janne Saarinen (TUCH)
Myles Capstick (ZMT)

Excused: -

Meeting Minutes

Round-Table: All project members introduced themselves and indicated their area of work.

State of recruitment: All recruiting is either concluded or on schedule. Judith Lehnert (KCL), Sita Drost (TUD) and Xenios Milidonis (KCL) have been recruited to work on the project and introduced themselves at the meeting. NPL expects to get additional hands via microstudentships.

Project planning: The system of focussing on activities for the next 9 months, using intermediate meetings in WPs organised by WP leaders, was confirmed. Reporting targets are one month prior to MSU requirements.

ownCloud: All present project members reported having functional access to the ownCloud repository set up for the project. Requests for new accounts or assistance with problems should be addressed at Björn Brinkmann (PTB).

Work packages:

WP1: Physical Standards & Imaging – KCL
A presentation on the current state of the physical standards was given by Amedeo Chiribiri (KCL). Following a cost/benefit analysis, work on the physiological flow pump has concluded (A1.1.1). During testing, a problem with non-homogenous distribution of contrast agent in the prototype was discovered. The focus will be on solving this issue and the spatially varying flow. Calibration measurements are postponed until then. KCL & VSL are working in tandem to fix the mixing problem. The multi-site study can be considered afterwards. There was an unexpected relation between tube length and flow variation (non-proportional), which fell short of the aim of 20% variation. Going forward, this will be addressed with a ring dispenser and is time-critical. ZMT will provide a slice for measuring the phantom area. There is time pressure on TUD's part to perform measurements, which were targeted for April/May and are expected to take several days at least. This will be mitigated by initial set-ups using the current prototype so the measurement protocols will already be established

for when all problems have been addressed. KCL will coordinate the efforts on the calibration measurements. Furthermore, the single-site study gave unsuitable results and needs to be redone.

Presentations on cloud:
Perfusion\01 meetings\2017-03-27 - 2017-03-28 Progress Meeting 1 (Delft)\Presentation
WP1 Amedeo Chiribiri - EMPIR 09 - WP1 - Investigators meeting March 2017.pptx (Amedeo)
WP1 ZMT_15HLT05_Delft20170327.pdf (Myles)
WP1 PM-TUD_VSL-work_v1.pptx (Nikola & Gertjan)

Actions:

- **AP Myles, Nikola:** change in length of tubes (both simulated & produced) **until 14-Apr-2017**
- **AP Myles, Nikola:** entry ring diffuser needs to be discussed & implemented **until 14-Apr-2017**
- **AP Xenios:** measurements with ink to check distribution in the prototype **until 21-Apr-2017**
- **AP Gertjan:** prototype area measurements (slice provided by ZMT) **until 14-Apr-2017**
- **AP Christian:** set-up & measurement protocols using current prototype in preparation of calibration measurements **until 14-Apr-2017**
- **AP Amedeo:** renewed single-site study **until 28-Apr-2017**
- **AP Björn:** organisation of web meetings w/ Sita, Myles, Xenios (& Amedeo), Gertjan and/or Nikola **6-Apr-2017 & 18-Apr-2017**

Next meetings: Web, 6-Apr-2017 & 18-Apr-2017

WP2: Data Analysis and Uncertainty Analysis – NPL
Trevor gave a presentation on the progress of WP 2. Loïc gave a presentation on MBF quantification by DCE-MRI perfusion listing the main sources of uncertainty. Judith gave a presentation on the development of the statistical model for myocardial perfusion. A training session on quantitative PET imaging led by TURKU PEY Centre for WP 2 members was held via skype on 16-Mar-2017. Activity on task 2.1 has concluded, with the report shared on the project cloud. Loïc and Géraldine presented an overview of key uncertainty budget issues in perfusion quantification followed by a live demonstration of current software for deconvolution methods for quantifying perfusion using simulated data. Judith presented an introduction to the statistical modelling that will be needed in the next tasks of the work package. Attention was drawn to the data analysis workshop at NPL in May. So far, the main response has been from the UK, and project members were asked to help invite further participants.

Presentations on cloud:
Perfusion\01 meetings\2017-03-27 - 2017-03-28 Progress Meeting 1 (Delft)\Presentation
WP2 presentation_Delft_Mar2017_tje_v1.pptx (Trevor)
WP2 Ebrard_and_Coquelin_JRP_PerfusImaging_First_Progress_Meeting_Delft_03_2017.pptx (Géraldine & Loïc)
WP2 Judith Lehnert Delft.pdf (Judith)

Actions:

- **AP Amedeo, Trevor:** data availability & access, set-up visit by Amedeo and Xenios to NPL together with teleconference with the rest of WP2
- **AP Géraldine, Loïc:** uncertainty identification & evaluation of critical items
- **AP All:** advertise May workshop and notify NPL of attendance
- **AP Tobias, Amedeo:** read task 2.1 report
- **AP Trevor:** organise and circulate a draft of PMB paper
- **AP Ludwig:** identify PTB contact to assist WP2 in finding suitable non-mathematics journals and conferences for their work

WP3: Personalised Dosimetry – PTB

Ludwig gave a presentation of WP3's current status and next steps, such as testing the complete dose distribution measurement procedure under complete clinical conditions. Stephan gave a presentation highlighting the development of the mobile measuring equipment and of first results of the determination of photon spectra & equivalent x-ray filters. The suitability of the COBRA method has been demonstrated. Work on the equipment for equivalent source determination has basically concluded (A3.1.1). Next steps for Task 3.1 are to test and verify the mobile equipment by comparison of measured (PTB) and calculated (ImpactMC, STUK) dose data. Going forward to Task 3.2, the next steps are patient scans, image segmentation (impactMC), mc-simulation, and 3d dose distribution assessment. An anthropomorphic phantom will be used instead of the patient. The aim is to be able to compare calculated with measured dose data.

Presentations on cloud:

Perfusion\01 meetings\2017-03-27 - 2017-03-28 Progress Meeting 1 (Delft)\Presentation
WP3 progress_and_next_steps-03-2017_Bueermann.pdf (Ludwig)
WP3 170328_ProgressMeeting_WP3_Rosendahl.pdf (Stephan)

Actions:

- **AP Teemu:** ImpactMC simulations of dose data measured by PTB until **Nov 2017**
- **AP Stephan:** minor debugging of software for fast analysis **until 30-June-2017**
- **AP Stephan:** optimisation & extension of existing software (e.g. for additional materials)
- **AP Stephan:** error analysis **ongoing**
- **AP Stephan:** validation of method by continuous testing & comparison w/ simulations **ongoing 01-Jan-2017 through 31-May-2018**
- **AP Ludwig, Stephan, Mika, Teemu:** meeting in Helsinki to plan measurements at HUS until **31-Oct-2017**
- **AP Mika:** radiation dose measurements at selected CT scanners Jan-2018 until **01-Sep-2018**
- **AP Ludwig:** verification of dose estimation procedure Jan-2018 until **30-Sep-2018**

WP4: Creating Impact – TUCH

The plan was discussed to integrate the advisory board meeting or input with the data analysis workshop at NPL. Several other conferences were mentioned for targeting by project partners: Dresden Sep-2017, Brasil Nov-2017, Vienna Dec-2017, in 2018 IDOS-IAEA, AAPM, ECR, DGMP, in 2019 AAPM, ECR, DGMP. HUS plans an impact workshop for 2018 and has already assigned one person to work on it. The webinar series (Task 4.2) was emphasised and responsibilities assigned. It was agreed to also issue an updated publishable summary for recruitment & promotional purposes. The project website was found to be inaccessible. Points of reporting both for technical and output & impact reporting were discussed and presented.

Material on cloud:

Perfusion\01 meetings\2017-03-27 - 2017-03-28 Progress Meeting 1 (Delft)\Presentation\reporting examples
EMPIR reporting technical.pdf (MSU)
EMPIR reporting impact & output.pdf (MSU)
WP3 deliverables bueerm 16-03-2017.docx (Ludwig)
WP3 tasks bueerm 16-03-2017.docx (Ludwig)

Actions:

- **AP Amedeo:** webinar perfusion physiology **until 30-Apr-2017**
- **AP Tobias, Mika T.:** webinar imaging **until 31-May-2017**
- **AP Ludwig:** webinar dosimetry **until 31-Jul-2017**
- **AP WPL, Björn:** technical reporting **until 14-Apr-2017**
- **AP WPL, Björn:** impact & output reporting **until 21-Apr-2017**

- **AP Björn:** fix website access until **11-May-2017**
- **AP Björn:** full period 1 reporting to MSU **28-Apr-2017**
- **AP Mika:** impact workshop at **ECMP 2018**

Next physical meeting:

- Zurich, 04-Dec-2017 & 05-Dec-2017