

## Report from CCPi for the Period 06/06/16 to 22/11/16

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<http://www.ccp.ac.uk/>

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### 1. Background

The CCP in Tomographic Imaging is progressing and increasing in activities since the last 6-month report, 6 June 2016. It has delivered new versions of the core code modules (compiled with new versions of underlining software) and links to an open source framework (using python code based on 'savu'<sup>1</sup>) is on-going. There has been minimal activity developing the lab based framework but this will be addressed with a new recruit (see below).

The CCPi prioritises the areas of reconstruction and quantitative analysis with software; and now also the pre and post processing stages. The aim is to provide the UK tomography community with a toolbox of algorithms based around a framework structure that will increase the quality and level of information.

Key networking items include the assistance for RSE (Research Software Engineers) via hand-holding, training and software deposits (CCPForge etc), as well as supporting the integration of new iterative methods within the toolkits. There has been some change in the core staffing; with **Srikanth Nagella and Ron Fowler** cross linking with related projects and a new recruit is being interviewed to fill the current underspend from the last two years. **Martin Turner** has continued the secretariat position, and with **Erica Yang** they have been scoping for new projects.

There is growing links with the CCP PETMR network that employs similar iterative solutions.

### 2. Highlights for the Current Reporting Period

#### Software Highlights:

1. Embed framework: launch of new Neutron tomography beamline at ISIS/IMAT is requiring new framework with bespoke hardware/software solutions.
2. Embed framework: DLS has a system requiring continual work with the open source python framework (savu, developed initially for Diamond Light Source beamlines)
3. Quantitative code from the community has been added and others updated when library/application versions change (continual testing facility is now integrated and will connect to the CCPBuild proposal from CCPForge); and pre-processing stage operations have been added inc. hacking lab based machines and "beamhardening correction" software.
4. EPSRC Flagship proposal submitted, involving ResearchCoIs across RAL and Manchester.

#### Networking Highlights: It has been a busy six months:

1. Six seminars involving software show-and-tell events and the main ToScA (Tomography for Scientific Advancement) symposium were organised and coordinated (**att 103** at the seminars and **att ~120** at the symposium; included seven CCPi posters and a talk)
2. There have been eight visitor exchanges defined as short-term fellows receiving small amounts of travel/subsistence money.

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<sup>1</sup> <https://github.com/DiamondLightSource/Savu>

3. Two UoM summer students have carried out code development for spiral reconstruction (Yngve M. Moe; Ryan Lloyd) – funded by CCPi.
4. Five Public Engagement events: >1000 members of the public attended CCPi-vis events including the Daresbury Open Day and the Manchester Science Festival.
5. Link/advertise six training courses (with 105 places) across the network, mainly for materials science visualisation.
6. One conference paper published at Eurographics UK, as well as the seven posters at ToScA.
7. We now have 313 members (40 new members) on the email list.
8. Data archives in use zenodo<sup>2</sup>/dropbox<sup>3</sup>

### 3. Workshops and New Opportunities

A programme of events is planned including continuation of the activities in previous years, but notable are:

- Workshop planned for the new SCD recruit arrival: Q2 2017: Focussing with DLS support on the “savu” system within a lab based framework (coordinated by Bill Lionheart).
- Next main conference ToScA 2017 and a new summer ToScA event in the USA are to be coordinated and supported.
- EU COST Extrema and PSI workshops are being supported – there is a future grant proposed with EU COST being prepared to extend the current programme.
- Ongoing new request for links with BSI (British Standards Institute)/ SHRI (Sir Henry Royce Institute)/ NCI (National Computational Infrastructure) Australia
- **Code opportunities** include supporting Hamish Carr at Leeds (Contour Tree code within Kitware toolkit), Valeriy Titarenko at Manchester (original reconstruction code at DLS), Andrea Borsic for MIRAN code, Brain Bay for Volume Correlation code and further guidance for the TIGRE code base at the University of Bath (GPU based reconstruction code).
- **Other project proposals** include; DLS/NCI collaboration for visiting researcher (Drishti integration), Summer School in Bath, Workshop at EGU2017, Royal Society Special Issue and a new IoP Journal launch.
- Use of Software Testing structure and producing EPSRC case studies from codes.

Work is also planned for CCPi to be represented at CIUK (December 2016), Eurographics UK (August 2017) and a further set of public engagement activities.

### 4. Issues and Problems

One key issue was the length of time for recruitment that is ongoing for staff to fulfil their required role within SFC/SCD. This is being resolved thanks to Erica Yang’s involvement.

There is a continual need to foster inter- and intra-networking between the two groups (CCPi and CCP PETMR); the developers group and the user community. Other connections have been proposed but not always reached their potential (CCP5/CCP\_EM, Advanced Radiotherapy Network+, etc)

**Other Items:** New refreshed website and details of highlight for this period are at:

<http://tyne.dl.ac.uk/twiki/bin/view/Visualisation/CCPiTomo>

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<sup>2</sup> <https://zenodo.org/communities/ccpi/>

<sup>3</sup> <https://www.dropbox.com/sh/ga8q1a4r4t8j57h/AABn9n8W3BML5JeX7637du9ua?dl=0>

Report from CCPI to the CCP Steering Panel

Ed Martin J. Turner 24/11/2016