CCP-EM Working Group 1 2026 Minutes

Virtual Meeting on Friday 1 May 10:30-12:00

Present: Tom Burnley (chair), Maya Topf, Giulia Zanetti, Colin Palmer, Rangana Warshamanage, Martyn Winn, Jola Mirecka, Matthew Iadanza, Alex Konstantinov, Maud Dumous, James Streetley, David Ingham, Gea van de Kerkhof, Sjors Scheres, Rastislav Turanyi, Michelle Darrow, Kyle Morris, Richard Collins, Natasha Lukayanova, Peijun Zhang, Abhinav Koramangalath Vadakkepat, Pamela Williams, Sony Malhotra, Jola Mirecka, Paula da Fonseca, Ste Muench, Lauren Giles (minutes)

Welcome to new members:

Tom welcomes and thanks all for attending. Tom gives an overview of the Executive group, chairs and CCP-EM working group 1, along with the structure that ccp-em falls under in STFC. Tom also mentions CCP-vEM, which are also based at RAL and that CCP-EM supports CCP-vEM in the same way CCP4 supported CCP-EM.

The key funding for CCP-EM is from the MRC who provide the core grant. This was renewed last year, awarded in June 2025 and started in March 2026.

Overview of CCP-EM software:

Colin Palmer gives an overview of recent Doppio developments, updates that are currently being worked on and asked for feedback on other future potential developments. Colin also gives an overview of other, non-Doppio software developments including data reduction and compression and RELION acceleration.

Colin mentions that a CCP-EM Software User Panel is being set up with thanks to TJ Ragan to collect this kind of feedback on a more regular basis.

Tom states that the main aim of the next Doppio developments is to increase the usage of the tools now. By the end of this MRC grant (5 years time) we need to demonstrate that a significant portion of depositions come from our software. CCP-EM need to decide what tools to focus on and prioritise.

Sjors states that it takes users a lot of energy to change software. Need to offer users new things in Doppio that they cannot do in Relion – picking of tomograms would be useful, graphical interface of latent spaces in different softwares. Automated deposition of metadata that comes with processing of images could become attractive way into Doppio for a lot of users.

Tom explains that one of the reasons CCP-EM are interested in improving metadata deposition is to make it more complete. Kyle M has reported that there has been a drop

in quality/richness/correctness of metadata deposition over time. Automated deposition could help solve that problem. Also, CCP-EM are not trying to aim for fully automated deposition at first, however if it fills in 50-60% of the data, that could save users a lot of time. Sjors agrees this is an important development and urges them to place some urgency on this development.

Kyle asks how CCP-EM are going to monitor which software within the pipeline is being used, and if this is in the deposition, is there a way to ensure the software is properly cited? Kyle suggests that another incentive to move to Doppio – can you connect to other things e.g. sample preparation? That data is carried over, and then even more data is deposited. Matt adds that functionality is already there, it's just a question of getting the data formatted correctly. Kyle asks which things to connect to is most valuable to a user, to incentivize them to use Doppio? Tom adds that CCP-EM want to finish this work in the next few weeks and don't want to gatekeep this functionality but rather make Doppio an exemplar for other software to adopt.

Giulia highlights that something like ArtiaX is missing from the tomography pipeline / subtomogram averaging. Specifically, work is required to support ArtiaX has it doesn't read output coordinates from Relion. Are there any plans for including visualisation software for particle poses? Colin queries whether it would be better to include ArtiaX, or make something new? Giulia replies that ArtiaX is great, but when loading coordinates from particle picking, it doesn't read them properly. Not to suggest that CCP-EM should write conversion scripts for everything, but something that can feed into ArtiaX without problems would be useful. Colin adds that creating a basic version (based on the current image carousel functionality in Doppio) would be an easy win, to offer an option that can be used. May not be a fully featured option but is a small and necessary step towards that. Tom suggests that a web-based equivalent of Napari would be ideal. Need to find a tool like that or make one, potentially extending Mol*.

Tom asks all to contact CCP-EM if they are aware of a clear consensus about which of these picking tools are universally used, and we can potentially expand the collaboration and make the software part of the suite. Peijun replies that everyone seems to use a different tool. She's observed 70% of people using cryoSPARC and says the challenge for Doppio to be accepted by users is to compete with cryoSPARC. Rich says that his lab has about 2/3 1/3 split between CryoSPARC and Relion/Doppio use.

Kyle suggests cryoET CETS data standard (Working partners CZII - EMDB - EMPIAR - CCP-EM - Scipion) as a possible underlying solution for driving these technologies and visualisations. Utz at CZII wrote ArtiaX in ChimeraX. We have the collaboration with CZII due to the above project. We should bring Giulia's questions to the project as a use case. We could ask David S at Mol* about using CETS to drive web-based visualisation and liaise with him to enable picking functionality.

Sjors suggests waiting to see what happens with cryoET data standards that is being worked on, before deciding to develop own tool.

James says going back to deposition, how is the EM harvest working, where does the metadata come from and will it work for data from other microscopes/facilities. Tom replies that we want to try to do this quickly via DLS/TFS, but it should be an exemplar for doing this across the community. David follows on from James' comment to say if there's anything JEOL can do to support on deposition of data from microscope, please get in contact. Coming from role of facility manager re adoption of Doppio, one of the biggest problems was just knowing about it for many users, particularly in the US. What strategy is there for getting the word out, other than more citations?

Michelle says, as a slight aside to those who are involved in the cryoEM data standards project, it would be good to perhaps put out an intermediate update to the community (maybe just an indication of the purpose of the work rather than focusing on the outcomes). Michelle was a part of the initial workshop at EBI and my understanding was that there was a working group formed out of this that was led by Helen Saibel and Steve Ludke. It sounds like a different approach is now being taken but hasn't been communicated well to the group that was part of the initial conversation or to the wider community. Tom replies that this is the implementation of the data standard that was discussed in that working group which followed the workshop at EBI and acknowledges the need to update the community with progress.

Rich mentions one issue is perceived speed relative to CryoSPARC but note perceived due to differences in processing strategies and default parametrisation. The other issue my users are mentioning is integrated solution for initial data assessment and binning out sub optimal data interactively and easily. Binning low resolution records, CTF oddities, inaccurate defocus, binning thick ice, binning any data with indications of crystal ice. Tom says that CCP-EM are quantifying rel of these tools in benchmarking.

Training:

Tom gives an overview of recent CCP-EM workshops. As group and number of collaborations grow, the number of workshops we are involved in has grown.

All to get in touch with CCP-EM if they are aware of somewhere that would like a workshop or host one at their institute.

Spring Symposia 2026 / 2027:

Tom gives an overview of the spring symposium from last week, plans for 2027.

Had six selected talks in 2026 (more than previously) due to high quality of submissions, Tom encourages all that would like to talk to submit abstracts for 2027.

Tom puts out call for volunteers/nominations for scientific organizers for 2027. Need people who are in touch with the methods community and are aware of the most exciting new developments and examples of applications of these new methods.

Peijun asks if there is a way to display all posters at once, as there is very little time for people to look at them all. Tom replies that it's possible, but all posters will have to be pushed back for the evenings. Or, posters can be put in other rooms, but if that's the case you won't get the footfall. Tom agrees to try to have posters up for the duration of the event. Tom suggests we could have another street food buffet for the 2nd night, rather than a formal dinner, allowing more space to display the posters. Ste agrees that could work well, as the best bit of the symposium is the networking, and this would allow more time for that.

David suggests that if all posters are in one room, need an incentive to draw people into that room. Or could have people submit a digital copy and have them rotating every 10 mins on big screens in different areas. Tom says we could, however, people may not want to stand and watch that many posters. Logistically it's also quite hard to do but we could do it as best effort, if delegates send it 2 weeks in advance it goes on the display board. Will investigate cost/feasibility with venue.

Ste suggests that the reason for lower in-person attendance is that most students can only attend one conference every three years, and have a budget of £1000, which makes international conferences difficult. Also stress that often to get a travel grant/bursary/approval, most students need to present their work hence importance of posters and selected abstracts.

Kyle says he had the feeling that there was more international reach with the speakers, maybe also the delegates, which was positive. Kyle doesn't feel that the commercialization/sponsorship was too much at all and instead is solid appraisal of the value of the meeting and the reach it has.

James agrees the symposium is not too commercial. It's an equipment heavy technique, and it's important to touch base. James adds that it was good that Thermo Fisher's talk was in the lunch break and optional format. Tom stressed that sponsorship doesn't offer presentations in the main scientific program and that we've considered a session of sponsored talks but feel that is too commercial. No objections from the audience.

James suggests the reason for drop in attendance was that the conference did get more expensive, as budgets are tightening. Tom stresses that CCP-EM doesn't make a profit on the conference and cost of running the conference does go up. Halls

accommodation does offer a less expensive option. Kyle suggests we include some pictures of Rutland Halls to registration, so delegates know what to expect.

Giulia suggests it's potentially useful to decide the next organizers more than a year before the next conference and start sending invites earlier in advance. Particularly for the few VIP speakers. Tom suggests we extend call for organizers for 2028 as well. We usually send invitations 9 months in advance, however if we can do this earlier it would be good.

AOB:

None.

Tom gives closing remarks. All to invited to email CCP-EM (ccpem@stfc.ac.uk) with anything else to add.

Actions:

All to contact if they are aware of a clear consensus about universally used tools that could/should be included in the software suite.

Guilia to contact CCP-EM if they are aware of a clear consensus about which particle picking tool is universally used.

Tom to contact James and David re deposition.

Lauren to collect feedback in symposium survey on the poster sessions – would delegates rather have them displayed for the entirety of the event?

Tom to discuss with tomography data standards group giving an progress update to community.

All to get in touch if they are aware of somewhere that would like a CCP-EM workshop at their institutes.