The cross-community team

The nuclear physics consolidated grant funds a cross-community (CC) team of engineers and technicians with current expertise in mechanics, electronics and software, who supports the design, construction and exploitation of UK-led projects. The role and management of this CC team can be found here.

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The cross-community team and its role

The CC effort is currently distributed amongst the Nuclear Physics Groups at Daresbury Laboratory (NPG), The University of Liverpool and The University of Manchester. The importance of this body of expertise was first recognised by EPSRC who set up an engineering and instrumentation team to underpin the UK experimental programme. This was continued by STFC, endorsed by the NP Grant Panel (NPGP) in the consolidated grants rounds, by the support of a cross-community pool of engineers and technicians.

The 2019 STFC Nuclear Physics Programme Evaluation Report stated that CC teams are extremely valuable to the nuclear community and recognized that much of the high international reputation of the UK community as a partner of choice is dependent on the technical abilities of the cross-community staff in the design of new detectors and instrumentation and in their support of UK-led systems. At the 2023 Nuclear Physics consolidated grant round that followed, NPGP awarded the cross-community 3 FTEs of software engineers, 3.8 FTEs of electronics engineers, 4 FTEs of mechanical engineers and 1 FTE for a technician with target making and detector assembly expertise.

These teams are classed as core group infrastructure, as they underpin the UK nuclear physics experimental programme as outlined in the STFC roadmap. The CC team's role is indeed to ensure all groups have access to state-of-the-art expertise in all stages of a project (planning,

design, construction, implementation, and maintenance). By providing this expertise and continuity in large projects as well as during the delivery of projects not large enough to justify hiring specialists for short periods, the CC teams contribute greatly to the UK community's reputation at international experimental facilities.

CC expertise is currently provided in the key areas of:

- Mechanical design and engineering
- Detector and array design
- Computing hardware
- Electronics (High-speed analogue and digital pulse processing, digitisers and FPGAs)
- Software (data acquisition, GUI production, system integration, general support for universities and local facilities)
- Whole system design
- Project management and leadership
- Target preparation (a unique facility in the UK)
- Technical support.

Management of CC effort

The allocation of effort by the cross-community committee (CCC) takes into account the recommendations of the NPGP and the effort awarded to existing projects.

The procedure for the effort given to the consolidated grants is the following: Each institute in the community is asked by the NPGP to submit requests for cross-community effort for all its themes to the CCC prior to submission of the consolidated grants. This is usually 6 weeks after the official grant call. Requests are not for named staff but in the general areas of expertise (electronics, software and mechanical engineering and target-making/technical effort) and can include requests for new area of expertise (e.g.: AI, quantum computing). This information, along with knowledge of any existing ring-fenced effort on projects, is collated by the CCC and submitted to the NPGP prior to its deliberations. Following the allocations made to each theme by the NPGP the CCC agrees a resource plan taking into account the ranking of the themes. The general rule is that high-ranking themes are allocated the full effort requested and when required, medium ranking themes are allocated reduced effort and not necessarily when requested, and lower ranked themes only if effort is available. This is performed in consultation with the PIs in each institute to achieve a sensible solution.

In between consolidated grant rounds, PIs of new and usually small projects or R&D can still submit engineering effort requests to the CCC. The committee approval will depend mostly on the level of effort requested and the level of remaining effort granted by NPGP for new activities.

This procedure has worked successfully over several grants rounds.

Who to contact

For further information, visit the STFC nuclear physics cross community team website or contact the current chair of the CCC, Carlo Bruno, (carlo.bruno@ed.ac.uk).