

## NMI3: Five Years of Successful Collaboration in Europe

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**F**or the last five years, collaboration between European neutron and muon facilities has been centred around the NMI3 project – the Integrated Infrastructure Initiative (I3) for Neutron Scattering and Muon Spectroscopy. This project has recently finished, so it is timely to look back at NMI3's successes (many) and its failures (few).

EU support for research is distributed through 'Framework Programmes' (FP), each typically lasting 5 years. European neutron and muon facilities have been successfully involved since their earliest days. Construction of the ISIS muon facility started with the help of EU funding from FP1 in 1985. Kurt Clausen ran one of the very first EU Access programmes at Risø starting in FP3 in 1991. By 1993 five other neutron and muon facilities were also offering EU funded access. Mike Johnson (ISIS) coordinated ENNI, the first neutron related research and technical development project in FP3, then XENNI in FP4 and TECHNI in FP5; there were six other RTD projects in FP4 and five in FP5. The major facilities were brought together in 'Networking Activities' through 'Round Tables'; the Neutron Round Table was one of the first to be established, coordinated by Charles de Novion (LLB) in FP3 and then Kurt Clausen in FP4 and FP5.

In FP6 all of the neutron and muon facility related activities were grouped into a single project – NMI3. The EU took this approach for several reasons – to decrease the number of



Julie Bellingham, NMI3 Project Manager, rests her weary head on the NMI3 annual report. (Picture courtesy of ISIS).

separate small projects they had to manage (generously transferring this work to the participants!), to transfer the responsibility for prioritising between projects in the same area, and to 'institutionalise' the degree of collaboration. Although agreement between the many partners on priorities and budgets was not at first easy, as soon as the project got underway it was clear that it was going to be a great success. Indeed this is the view of all the I3 projects, which is by no means the normal case for EU research programmes! NMI3 was the second largest I3 project, with 21 M€ funding. As well as the European partners, a lot of effort was made to reach out internationally, with 'observers' from different regions attending meetings and participating in some of the activities.

'Access to facilities' was the largest part of NMI3. This allowed EU researchers a level of use (formally

less than 20% but in practice often higher) of all the European neutron and muon facilities except ILL (their decision). EU funding through 'user fees' supported the facilities to provide this access and improve the level of services offered to users, who received travel and subsistence support. It is fair to say that this programme, building on its predecessors in earlier FP, has been enormously successful – 1348 experiments were supported totalling 7309 instrument days with 1719 unique users, 43% of whom were first time users of the facility visited. This clearly demonstrates the strength in depth of European neutron scattering and muon spectroscopy, and its increasing mobility, and has been the 'seed' for an increasing number of smaller countries joining the ILL.

There were eight Joint Research Activities (JRA) in NMI3. Six of these are reported on in more detail in the following articles. The two that are not (simply due to lack of space) were DLAB – development of methods and protocols for deuterating



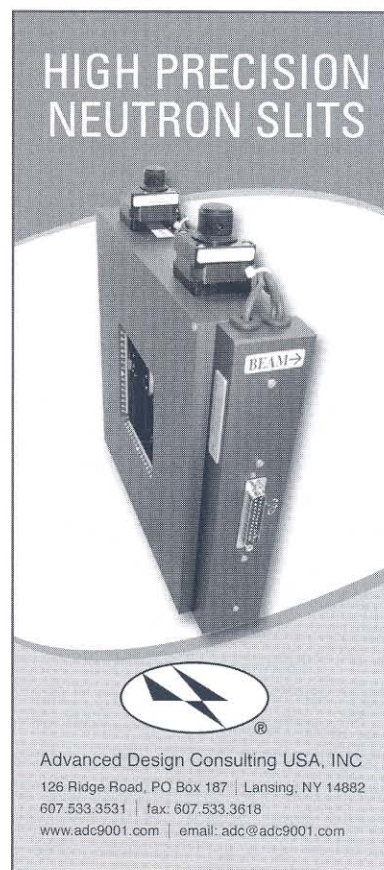
Ana Claver, NMI3 Information Services Manager, collecting more pictures for the European Neutron/Muon Portal (Picture courtesy of NMI3).

biological macromolecules, coordinated by Trevor Forsyth (ILL) – and MUONS – development of techniques and instrumentation for muon spectroscopy, coordinated by Cesare Bucci (U. Parma) until his retirement and then by Philip King (ISIS). The overall success of the JRA, within the NMI3 project, has been that they provide a framework and a timescale for technical collaborations and a helpful amount of funding to support them, though the large part of the total cost still comes from the partners.

Networking activities were coordinated by Helmut Schober with assistance from Laurence Tellier (ILL). As well as NMI3 meetings, support has been given to 36 workshops relating to applications of neutron scattering and muon spectroscopy. A major activity has been in training through support for the attendance of 409 separate participants at 34 different schools, ranging from general to specialised, theoretical to hands-on. This type and level of activity is clearly vital to sustain and diversify the user community. Looking to the future, NMI3 has funded 10 different foresight studies,

the majority in collaboration with the USA. This has now resulted in a book series, to be published by Springer, with the first two volumes (Neutron Applications in Earth, Energy and Environmental Sciences; Imaging and Neutrons) due out towards the end of 2008.

The European Neutron/Muon Portal (<http://neutron.neutron-eu.net> <http://muon.neutron-eu.net>) has been absolutely central to the success of NMI3, for which full credit must be given to Ana Claver at Jülich (with excellent technical support from Max Belushkin). Originally set up just before NMI3 started, with funding from the previous Round Table, it has now grown to be an enormous repository of information. As well as providing the web sites for the individual NMI3 activities, the Portal also hosts the European Neutron Scattering Association, the International Society for Muon Spectroscopy (Europe), the European Spallation Source and the I3-Network. The documentation store includes relevant reports and links and a database of relevant books; a picture gallery is under development. The Neutron Pathfinder provides a



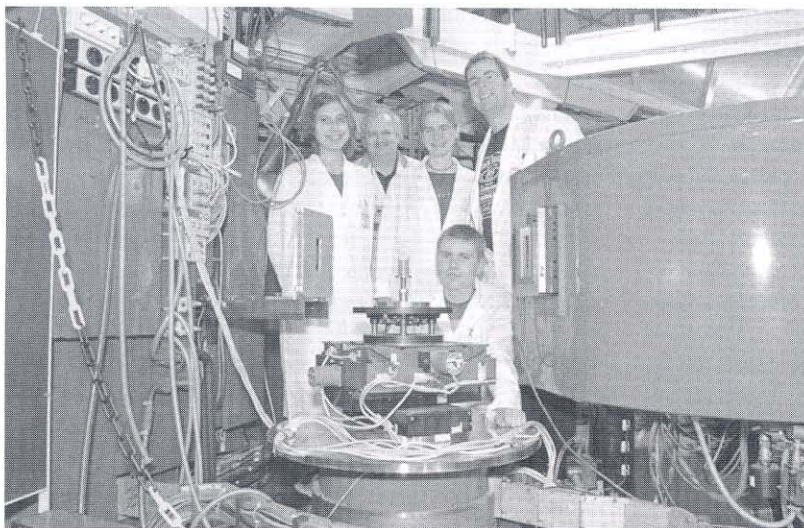
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one-stop database of all the neutron/muon instrumentation in Europe and is being developed to include a 'science entry point' to guide potential new users.

This correspondents report would not be complete without thanks to Julie Bellingham, the NMI3 project manager (with assistance from Rowan White and, more recently, Lindsey Hobson). Julie has acted as the interface between the partners and the full weight of bureaucracy in Brussels – and still emerged smiling. She also very rapidly took the full weight of the project organisation off the coordinator – for which I am very grateful.

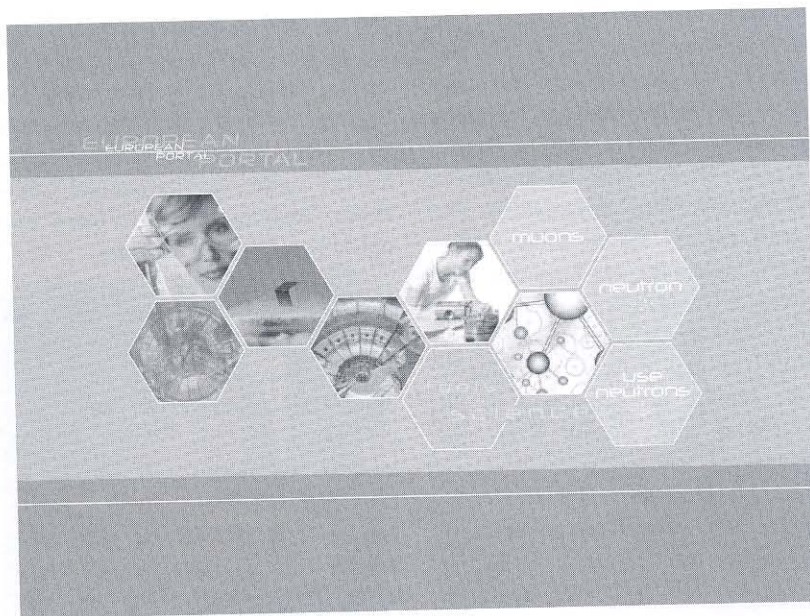
What of the failures (as promised in the introduction)? In truth, it is hard to think of many. During the course of the project two European facilities were closed (through no fault of NMI3!) – the FRJ-2 reactor



Hands-on training at the 2006 Neutron Scattering Laboratory Course in Jülich (Picture courtesy of FZJ).

at Julich in Germany and the R2 reactor at Studsvik in Sweden. However, the Julich activities were transferred to the Julich Centre for Neutron Science based at the FRM-II reactor in Munich, and the Reactor Institute Delft joined the access programme in place of Studsvik. Some of the JRA failed to achieve some of their aims – but if they had achieved them all then NMI3 would not have been ambitious enough. The main failure (with echoes of the current difficulties in the world economy) is that in the ‘good times’ we have failed to put in place our own sustainable systems for collaboration, even though we know it would be scientifically, technically and cost effective. Instead we have relied on the EU to do this for us and accepted the bureaucratic overhead they impose.

So, with this in mind, what does the future hold? In FP7 the Research Infrastructures budget is not as large as had been hoped. With big new activities such as Preparatory Phase projects for the 35 potential facilities on the ESFRI Road Map (including ESS), and ‘targeted’ I3 projects related to the FP7 Thematic Priorities such as ‘Health’ and ‘Energy’, there has been significant pressure on the budgets for the ‘traditional’ I3. A new NMI3 project has been funded for the next four years, coordinated by Helmut Schober, but with only 10 M€ funding the scope has had to be significantly reduced. This



The European Neutron/Muon Portal (Picture courtesy of NMI3).

has partly been achieved by a decision to support access for only two years, at a slightly lower level than in FP7, in the hope that ‘top-up’ funding might become available through the next call for proposals in 2009. However, a great deal of political pressure will be needed if this is to happen. A particular difficulty for the multi-disciplinary large facilities – neutrons/muons, synchrotrons and lasers – is that they are still presented/viewed as ‘physics’ and not significant for Thematic Priority research. So these facilities also face a ‘public education’ challenge. But,

as hinted at above, the biggest challenge is now to put in place our own collaborative framework, which should be global rather than just European.

The achievements of the NMI3 project, building on work in the previous FP, are obvious to see: significantly improved instruments and techniques at facilities; a large, healthy and diverse user community. For this I would like to thank all of the very many people who have participated, on behalf of the very many current and future users who will benefit.