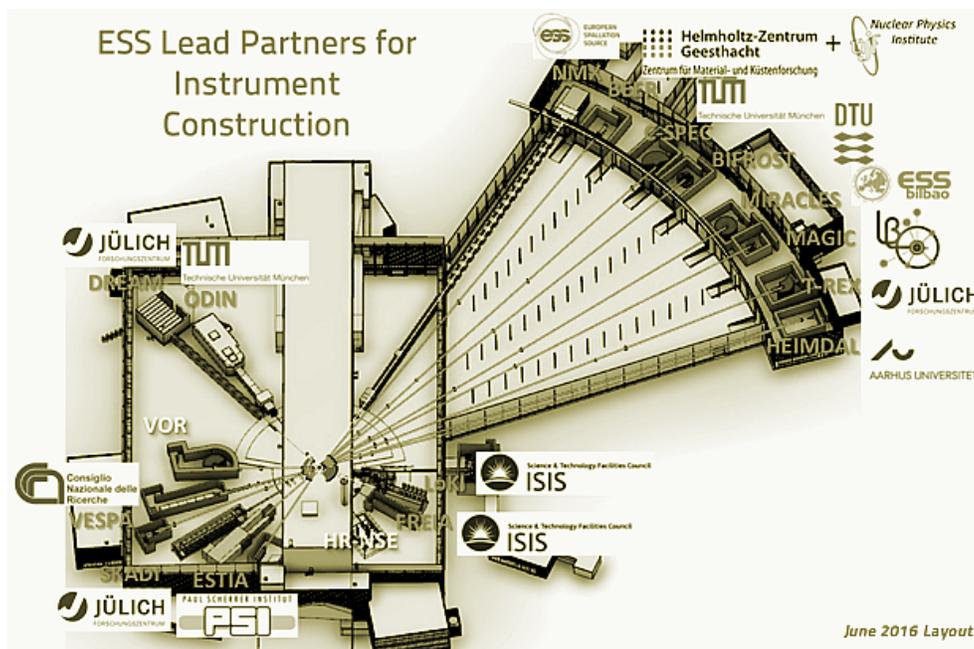


# Instruments Scope Endorsed by SAC, with Concern for Upgrade Follow-Through Emphasised

NOV 24, 2016

**Scientific Advisory Committee.** The November SAC meeting gave definition to the scope, cost and schedule for instruments in development at ESS, establishing the path to commissioning.

COPENHAGEN—At [the February IKON meeting](#) in Düsseldorf, [Andreas Schreyer](#), the newly arrived Science Director for the European Spallation Source (ESS), set out the goals for the coming year: align the scope and budget for all 16 instruments in the construction budget; realign the entire Neutron Scattering Systems (NSS) budget; and develop a realistic schedule for instrument construction, including a recommendation for which instruments would come online first. The ultimate goal to present to the ESS Council at their year-end meeting a clear way forward to achieve early scientific success at ESS while remaining within the NSS ringed-fence budget.



The results of the nine months of study, compromise, and value engineering required to achieve these goals were presented earlier this month at the [Scientific Advisory](#)

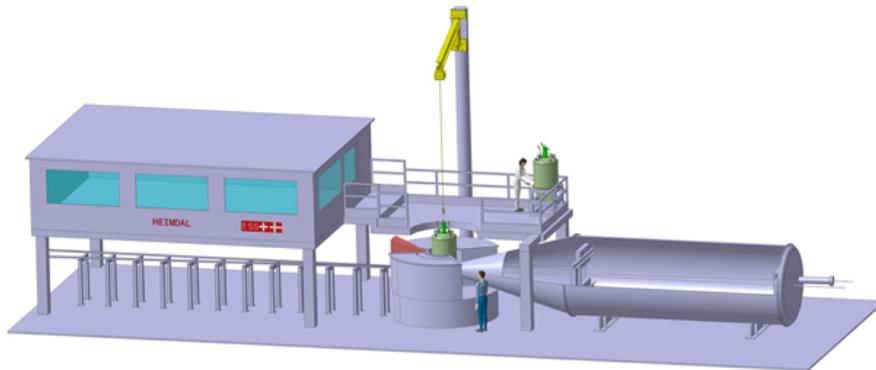


[Committee \(SAC\)](#) two-day meeting in Copenhagen. The Committee's support for the NSS proposals has cleared the path for Schreyer's presentation to Council at their December 5 and 6 meeting in Bilbao, Spain.

'This SAC meeting was important, and very good,' said Schreyer. 'It was comprehensive, covering all instrument projects as well as the proposed moderator configuration, the bunker project, and the Operations cost review. There were sessions scheduled late into the evening and the discussions were constructive. The SAC complimented us on the quality of preparations for the meeting.'

### Instrument Scope-Setting Results

At the heart of the Committee meeting, held November 9 and 10, were the results of the ESS instrument scope-setting meetings held primarily in October, with a handful completed earlier in the year. These were small meetings between the instrument teams and NSS. Each instrument began with a proposed scope, budget and schedule that were then negotiated to a point of mutual satisfaction. Additionally, an upgrade path to full scope was agreed.



Rendering of the ESS powder diffractometer HEIMDAL, a collaboration between Denmark (Aarhus University), Switzerland (PSI) and Norway (IFE). IMAGE: HEIMDAL instrument proposal

'I'm happy to say that we reached an agreement with most of the teams on the day of the meeting, and in the remaining cases after further discussions,' said Schreyer. 'More importantly, the agreed scope for every instrument means that it will be best-in-class on day one.'

The key compromise advanced at the Committee meeting was that in order to build [all 16 instruments](#), one of these needed to be moved out of the construction budget into the initial operations budget. This would mean a later start for the 16th instrument but a nonetheless on-time commissioning date. This arrangement, argued Schreyer, would allow NSS to meet its excellence and schedule goals on budget 'without sending anyone home.'

The SAC fully supported the proposal, which will now advance to the Council.



### **Focus Moves to Operations Funding, Sample Environment and DMSC**

The Committee was keen to note, however, that sufficient funding of the instrument upgrades from the Operations budget was essential to their recommendation of the suite—as were a few scope adjustments they recommend to include in the construction budget.

The SAC, co-chaired by Sylvia McLean of the University of Oxford and Andreas Meyer of Germany's Institute of Materials Physics in Space, called attention to a number of instruments that are expected to be not only world-leading but truly unique. These instruments, the SAC demonstrated, will open up new fields of science only through features that are now relegated to the instrument's upgrade path.



ESS Scientific Advisory Committee outgoing co-chairs, Sylvia McLean (l) and Andreas Meyer. PHOTOS: Univ. of Oxford (l), DLR

The SAC also made clear that as instrument scope has now become better defined, a redoubled focus on the integration of instrument sample environments and data handling and analysis should now become a top priority at ESS. 'The ultimate success of the ESS,' noted the SAC, 'is contingent upon both of these competences in addition to best-in-class instrumentation.'

### **Instrument Commissioning Order Established**

Though subject to change as the realities of instrument construction emerge, the first eight instruments are expected to be [LOKI](#), [ESTIA](#), [DREAM](#), [MAGIC](#), [BEER](#), [ODIN](#), [C-SPEC](#) and [BIFROST](#). These are schedule to be operational by August 2023. The remaining seven instruments to be included in the construction budget are [SKADI](#), [FREIA](#), [HEIMDAL](#), [NMX](#), [T-REX](#), [MIRACLES](#), and [VESPA](#), expected to go online in 2024 and 2025.

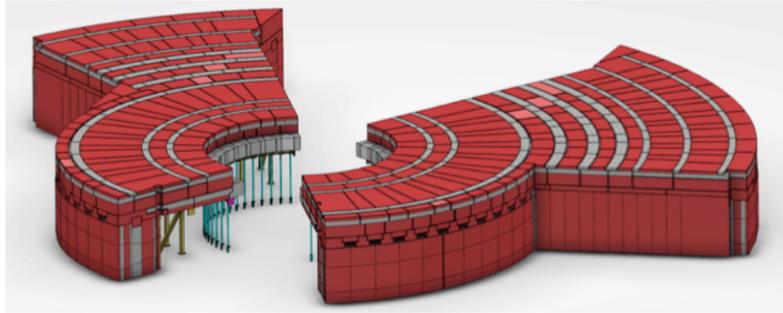
It will be decided in 2018 whether the 16th instrument, proposed to be constructed with the early operations budget, will be [VOR](#) or an as yet undefined neutron spin-echo instrument. ESS remains committed to the principle of eventually building both of these.

### **Progress on In-Kind, Moderator, Bunker**



The SAC also heard an ESS project update from Director General John Womersley and an update from NSS Deputy Director Shane Kennedy on the extensive progress made on in-kind contributions (IKCs).

'In-kind contributions sit at 97% of the total instrument budget," said Kennedy, 'and I think that is quite an achievement.'



ESS Plan Layout model of bunker design in progress. IMAGE: ESS

Kennedy continued with technical updates on the instrument layout, Bunker project, safety planning, and the ESS proposal to initially use only [one moderator](#) rather than two. Schreyer also presented the SAC with a summary of the [October Operations cost review](#).

The SAC expressed support for the single moderator configuration, a change that allows ESS to use the location of the second moderator for future innovative upgrades to the Target Station without compromising instrument performance. The SAC also was pleased with the ESS initiative to prioritise the Bunker project by bringing it entirely in-house.

The meeting represented a transition point for the SAC, as half of the Committee has completed their tenure, including co-chairs McLain and Meyer. The group were thanked for their significant contributions to the project.

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