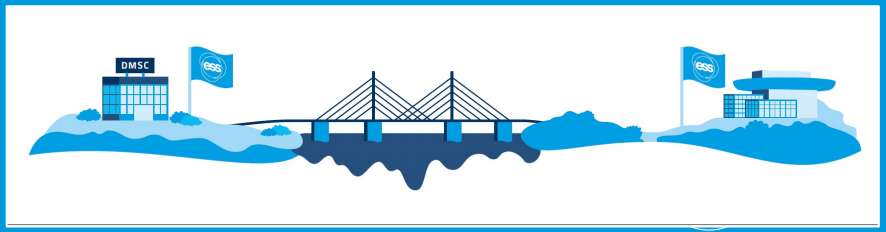
SCIENCE DIRECTOR REPORT
SAC.33



2003
European design of ESS completed

2009
Decision to site ESS in Lund

2012
ESS design update phase complete

2014
Construction starts on green field site

2019
Start of initial operations phase

2025
Beam on target

2027–2028
User program up and running

News:

Neutron Scattering Systems joins the Science Directorate

The reorganisation of the Science Directorate, aiming at preparing ESS for user operations and science delivery, was implemented as from July 1st with the move of the NSS Division from the Technical to the Science Directorate

The Scientific Support Division has been (re)established

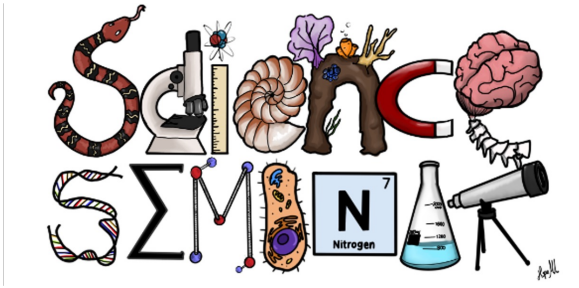
Bringing together the scope of sample preparation and sample environment for the wide range of scientific applications envisaged in the user program. We welcome Hanna Wacklin-Knecht as Head of the Division.

Together with the recent establishment of three new instrument divisions and the Research Coordination Office, these changes bring all the instrument projects and instrument scientists together with laboratories, sample environment, data management and software centre (DMSC) and the user office, enabling the development of a science-oriented culture and a robust organisation for welcoming users in steady-state operations.

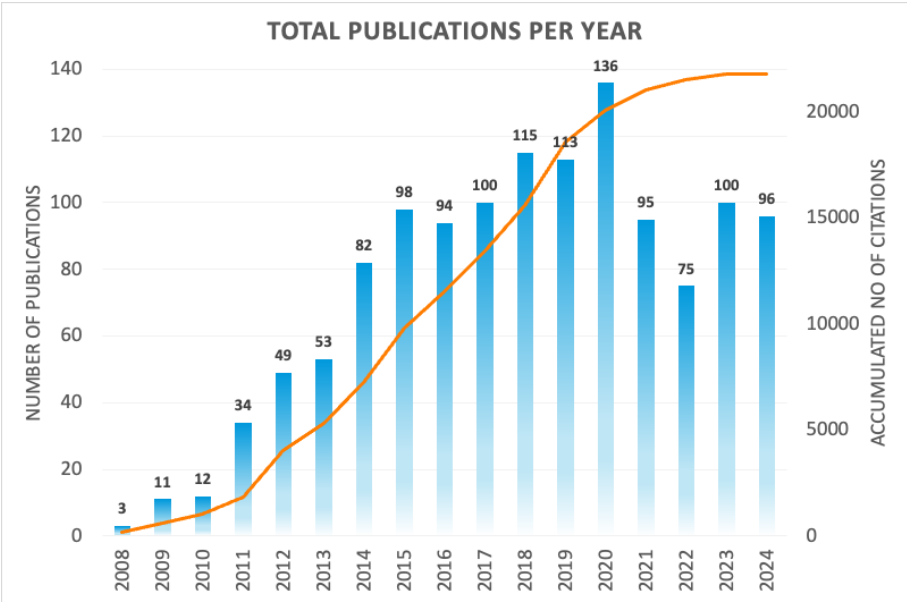
The Science Directorate is in charge of completing and commissioning the instruments and delivering science and the user programme

- Science Directorate
  - Research Coordination Office
  - 
    Diffraction and Imaging
    - BEER
    - DREAM
    - HEIMDAL
    - MAGIC
    - ODIN
    - TBL
  - 
    Large Scale Structures
    - ESTIA
    - FREIA
    - LOKI
    - NMX
    - SKADI
  - 
    Spectroscopy
    - BIFROST
    - CSPEC
    - MIRACLES
    - T-REX
    - VESPA
  - 
    Data Management and Software Center
    - Administration
    - Data Analysis and Modelling
    - Data Systems
    - Scientific Information Management Systems
    - INSTRUMENT DATA SCIENTISTS
  - 
    Scientific Support
    - Chemistry and Life Science
    - Materials Science and Physics
  - 
    Neutron Scattering Systems
    - Chopper
    - Detector
    - ECDC
    - Motion Control and Automation
    - NSS Planning and Coordination
    - Technical Projects

Scientific activities



- Good attendance to internal seminars, conferences, experiments at other facilities while giving priority to delivery of instruments and support
- Increasing number of scientists on-site
- Deuteration laboratories on-site and promoting internal science
- Kick off meeting in June with ILL for MeOP station
- Successful organisation of several conferences and two early science workshops
- Science away days on 13-14th May
- Representation at national user meeting
- Update website/scientists' webpages

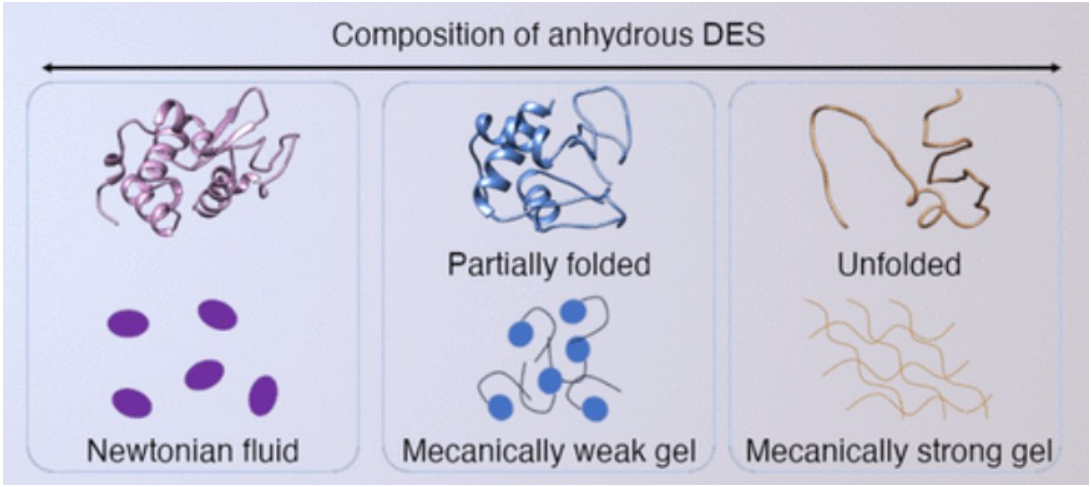


Stabilization of Non-Native Folds and Programmable Protein Gelation in Compositionally Designed Deep Eutectic Solvents

Soft Matter Research

Deep eutectic solvents (DESs) can stabilise non-native protein conformations and control the protein folding state offering a method to manipulate protein behaviour.

This study uses the test proteins bovine serum albumin and lysozyme to demonstrate that different conformations can be stabilised by systematically adjusting the ratio of the components in binary and ternary DESs.



These stable protein conformations can trigger the formation of supramolecular gels, termed eutectogels, with properties linked to the protein folding state.

The findings present a new framework for understanding protein behaviour in non-aqueous environments and provide a platfom for programmable protein assembly.

Sanchez-Fernandez, A., **Poon, J.-F., Leung, A. E.**, Prévost, S. F., & Dicko, C. Stabilization of Non-Native Folds and Programmable Protein Gelation in Compositionally Designed Deep Eutectic Solvents. *ACS Nano* **18**, 18314–18326 (2024). https://doi.org/10.1021/acsnano.4c01950

Impact of additive hydrophilicity on mixed dye-nonionic surfactant micelles: micelle morphology and dye localization

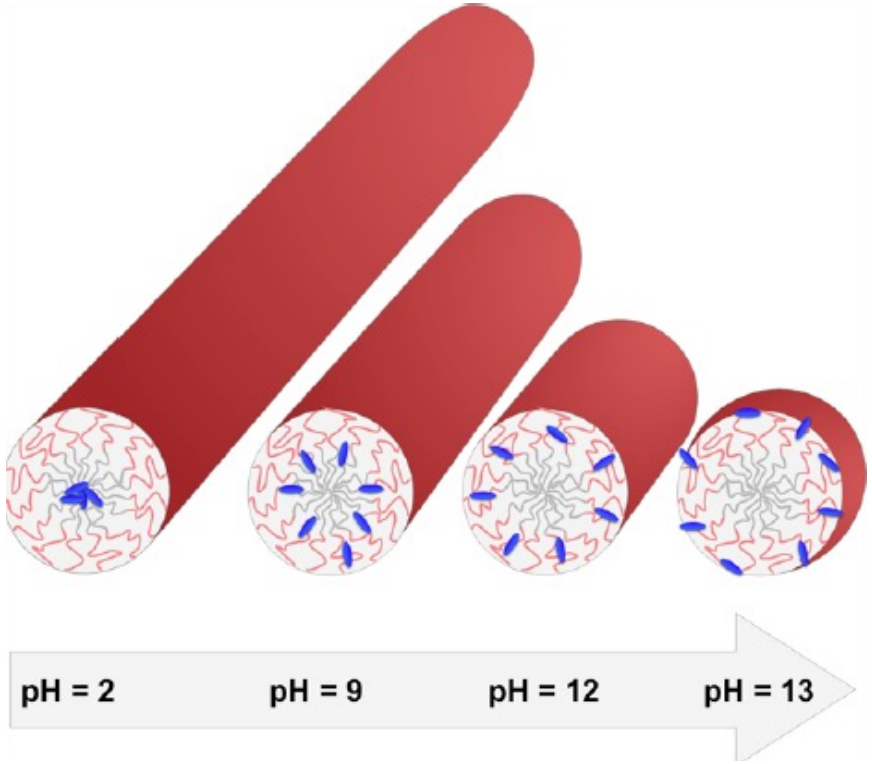
Chemistry research

Study of the effect of the additive dye ‘blue’ on the non-ionic surfactant micelles formed by $C_{12}E_5$. Blue becomes more hydrophilic as the pH is increased.

The micelle structures were studied using SANS and ^1H NMR.

Increasing the pH causes micelle morphology changes from elongated, rod-like structures to more spherical forms.
The localization of blue changes with the hydrophobic, low pH blue deep in the micellar care and the more hydrophilic high pH blue residing at the outer regions of the micelles.

Researchers propose insights for dye solubilization and micelle delivery systems.



Müller, W., Sroka, W., Schweins, R., Nöcker, B., **Poon, J.-F.**, & Huber, K. Impact of additive hydrophilicity on mixed dye-nonionic surfactant micelles: micelle morphology and dye localization. Langmuir 40, 8872–8885 (2024). https://doi.org/10.1021/acs.langmuir.4c00012.

Magnetic structure and magnetoelectric properties of the spin-flop phase in $LiFePO_4$

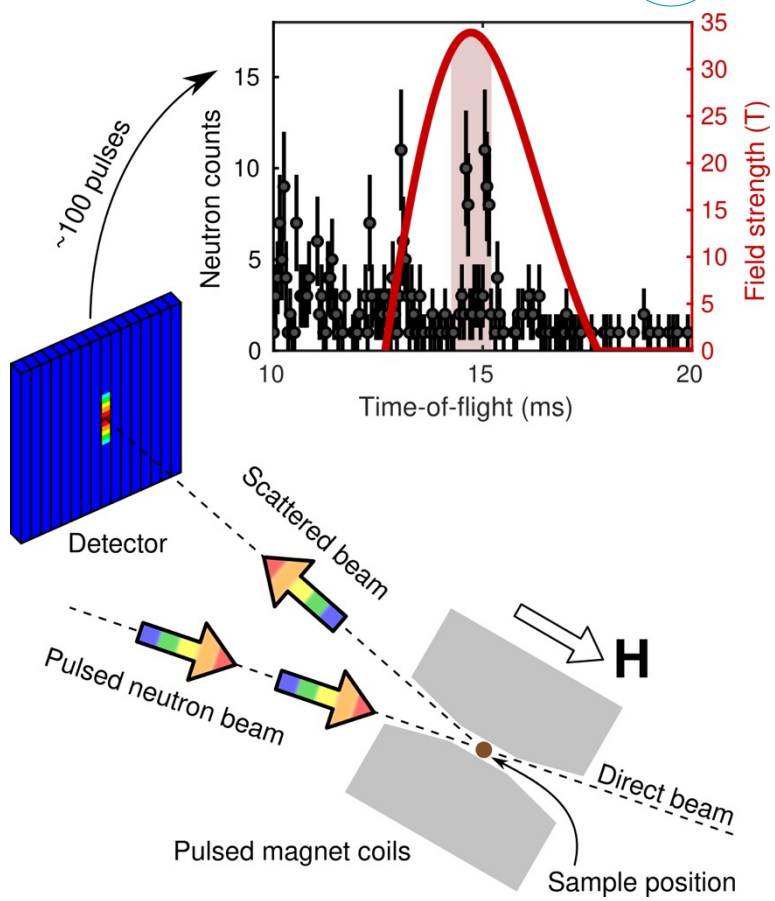
Magnetism Research

The study focuses on understanding the spin-flop transition that occurs in the magnetoelectric material $LiFePO_4$ when a critical magnetic field of 31 T is applied.

At the critical field, the spin orientation in the material changes from being aligned primarily along the b-axis to reorienting towards the a-axis, suggesting a spin-flop transition.

Pulsed-field neutron diffraction and electric polarization are critical to understand the magnetic and magnetoelectric behaviour of materials like $LiFePO_4$ under extreme conditions.

Multiferroic and magnetoelectric materials have potential applications in low-power consumption logic devices and skyrmion-based technologies.



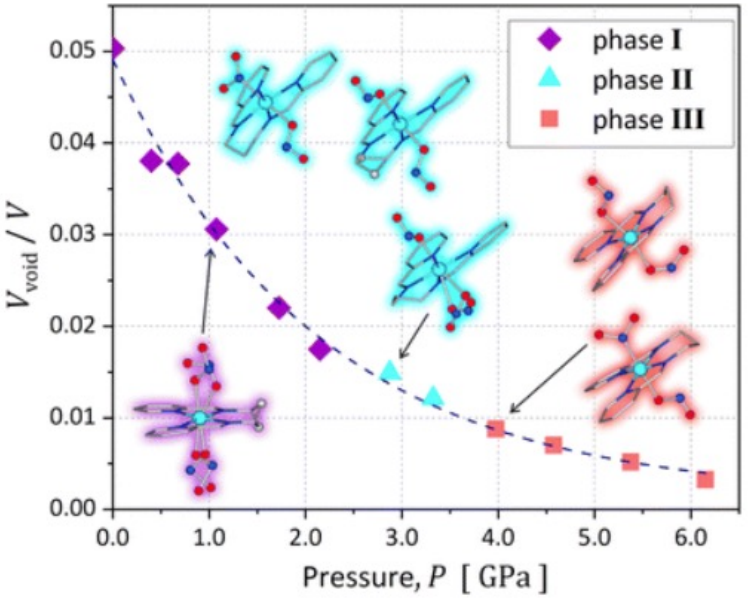
Citation: Holm-Janas, S., Akaki, M., Fogh, E., Kihara, T., Le, M. D., Forino, P. C., Nikitin, S. E., Fennell, T., Painganoor, A., Vaknin, D., Watanabe, M., Christensen, N. B., Nojiri, H., & **Toft-Petersen, R**. Magnetic structure and magnetoelectric properties of the spin-flop phase in LiFePO4. Phys. Rev. B 109, 174413 (2024). https://doi.org/10.1103/PhysRevB.109.174413.

Pressure-induced single-crystal-to-single-crystal nitrite ligand isomerisation accompanied by a piezochromic effect

High Pressure Chemistry Research

The study presents a novel approach to pressure-induced structural transformations in a rare di-exo-nitrito nickel(II) complex.

The system experiences two distinct phase transitions between 0 and 6.2 GPa, resulting in a colour shift from yellow to orange to red. These phase transitions are linked to the isomerization of nitrite ligands, a process typically induced by light or temperature changes rather than mechanical pressure.



By applying high pressure, the researchers demonstrate a unique linkage isomerism in the complex, a phenomenon not previously reported for nitro-to-nitrito transformations.

This work offers significant insight into stimuli-responsive materials and their potential applications, such as sensors and optoelectronic switches.

Potempa, K., **Paliwoda, D.**, Jarzembska, K. N., Kamiński, R., Krówczyński, A., Borowski, P., Hanfland, M. Pressure-induced single-crystal-to-single-crystal nitrite ligand isomerisation accompanied by a piezochromic effect. Chem. Commun. 60, 9194–9197 (2024). DOI: 10.1039/d4cc02898h.

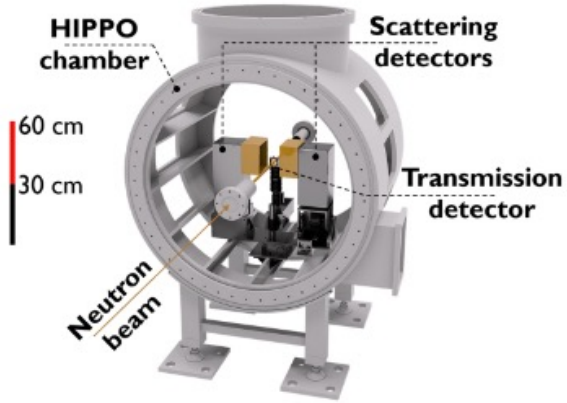
Demonstration of neutron time-of-flight diffraction with an event-mode imaging detector

Novel Detector Systems

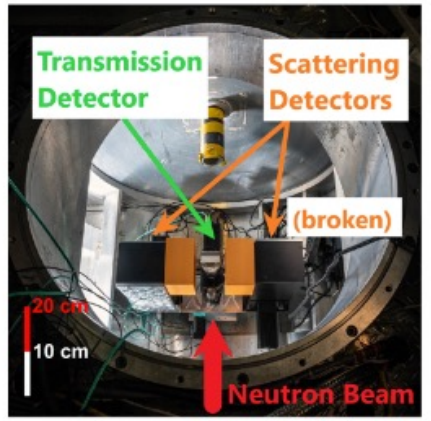
A novel neutron time-of-flight diffraction system using an event-mode imaging detector based on the Timepix3 technology has been developed.

The scarcity and cost of ^{3}He gas motivated this research. Event-mode imaging systems allow for more flexible and cost-effective data acquisition, and in this study its performance is benchmarked against conventional systems using a silicon powder diffraction experiment conducted at the HIPPO beamline at Los Alamos National Laboratory.

The new imaging detector provides comparable resolution to traditional systems while reducing costs and simplifying hardware requirements. The study shows good agreement between the experimental data, Rietveld analysis, and Monte Carlo simulations using the McStas code, indicating that the system can achieve sufficient resolution for low- to medium-resolution diffraction experiments



(a)



(b)

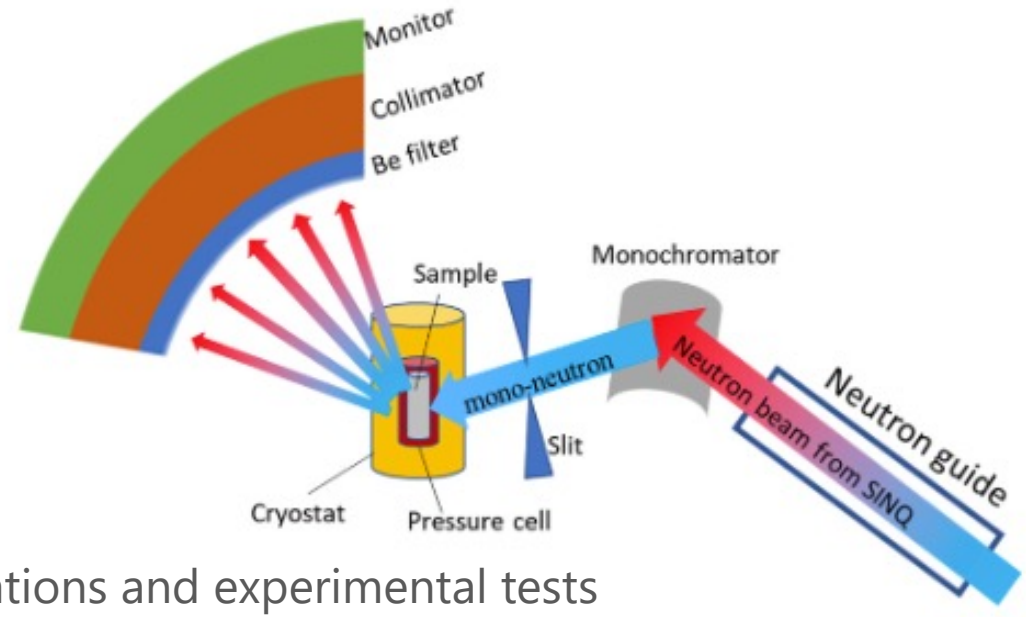
Jäger, T. T., Losko, A. S., Wolfertz, A., **Schmidt, S**., **Bertelsen, M.,** Khaplanov, A., Agnew, S. R., Funama, F., **Morgano, M.**, Roth, M., Gochanour, J. R., Long, A. M., Lutterotti, L. & Vogel, S. C. Demonstration of neutron time-of-flight diffraction with an event-mode imaging detector. J. Appl. Cryst. 57, 1107–1114 (2024). https://doi.org/10.1107/S1600576724004448.

Sourcing and reducing sample environment background in low-temperature high-pressure neutron scattering experiments

Sample Environment Design

High background noise in problematic in low-temperature high-pressure neutron scattering experiments.

Using Monte Carlo simulations, authors demonstrate how the pressure cell contributes to significant background noise and introduce a compact radial collimator close to the sample to reduce it.



The design and performance were evaluated both through simulations and experimental tests conducted at the CAMEA instrument at the Swiss Neutron Source (SINQ). Background noise from the cell was reduced, but additional noise was added by the CRC. The authors hypothesise that using higher concentrations of $^{10}B_4C$ in the CRC construction would further reduce background noise.

Ma, Z., Lass, J., Mazzone, D. G., Simutis, G., Thürsam, S., Fennell, T., Pomjakushina, E., Bartkowiak, M., Nikitin, S., **Bertelsen, M.**, **Willendrup, P.**, Filges, U., Klauser, C. Sourcing and reducing sample environment background in low-temperature high-pressure neutron scattering experiments. Nucl. Instrum. Methods Phys. Res. A 1066, 169634 (2024). https://doi.org/10.1016/j.nima.2024.169634

Progress on preparing for scientific activities with ESS neutron instruments and support facilities

News from DMSC

- Server room lease with COBIS extended of one year; considering proposal to move it to DTU
- EU funding for supporting Ncrystal development (6 PM)
- EU funding for supporting AI assisted search for federated data portal (24 PM → permanent position in SIMS)
- Post Doc (24 PM) recruited to work on ISIS' Shapespyer (funding from Chalmers)
- Funding from DAPHNE for SciCat development
- 2 new recruitments in DST + 2 new student workers
- EasyScience developer (consultant) accepted offer from elsewhere
- Publications, invited talks, co-supervision of BSc, MSc, and PhD students

Putting everything together

Started to run automated end-to-end testing for data pipeline

DMSC lunch room

Each square represents a test of an interface between two components delivered by two different groups (ECDC, DST, SIMS, DRAM)

DMSC STAP (next week)

Demo of data pipeline for Tranche 1 instruments:

- Proposal submission
- Remote access to data and software via VISA
- Data reduction
- Data analysis
- Data storage and retrieval

Instrument Data Scientists

Managed to replace ‘lost’ IDSs and new ones are in the pipeline

Instrument Data Scientist	Technique	Instrument(s)	Affiliation
Aaron Finke (new-ish)	NMX	NMX	AU
Nicoló Paracini (new)	Reflectometry	ESTIA, FREIA	UCPH
Oliver Hammond (new)	SANS	LOKI, SKADI	
Søren Schmidt	Imaging	ODIN	DTU
Céline Durniak	(Powder) Diffraction	DREAM, …	
Gregory Tucker	Spectroscopy	BIFROST, CSPEC, …	

Recruitment of **1 IDS for Diffraction & Imaging** and **1 IDS for Spectroscopy** approved for supporting later instruments

Will use existing resources (Aaron & Andrew S) for supporting MAGIC until new IDS in place

Working on getting all IDSs affiliated with a university

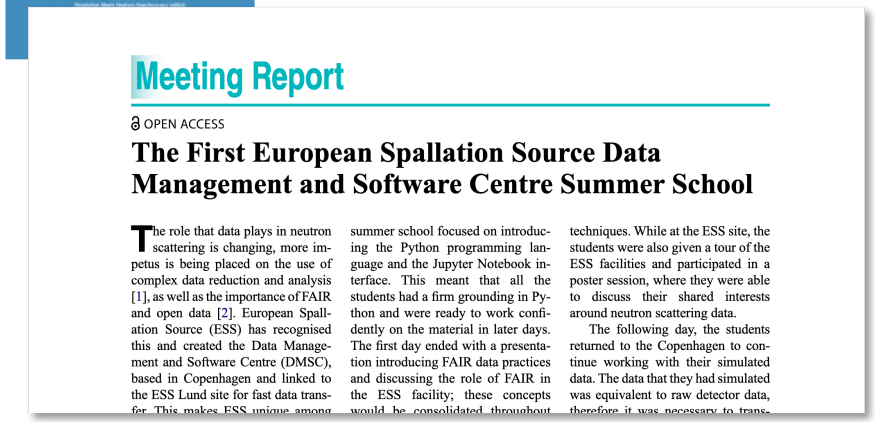
2nd DMSC Summer School (Sept 2024)

Data pipeline & FAIR data

Tivoli Copenhagen

Sponsors:

Neutron News



Meeting Report

OPEN ACCESS

The First European Spallation Source Data Management and Software Centre Summer School

The role that data plays in neutron scattering is changing, more impetus is being placed on the use of complex data reduction and analysis [1], as well as the importance of FAIR and open data [2]. European Spallation Source (ESS) has recognised this and created the Data Management and Software Centre (DMSC), based in Copenhagen and linked to the ESS Lund site for fast data transfer. This makes ESS unique among summer school focused on introducing the Python programming language and the Jupyter Notebook interface. This meant that all the students had a firm grounding in Python and were ready to work confidently on the material in later days. The first day ended with a presentation introducing FAIR data practices and discussing the role of FAIR in the ESS facility; these concepts would be consolidated throughout techniques. While at the ESS site, the students were also given a tour of the ESS facilities and participated in a poster session, where they were able to discuss their shared interests around neutron scattering data.

The following day, the students returned to the Copenhagen to continue working with their simulated data. The data that they had simulated was equivalent to raw detector data, therefore it was necessary to trans-

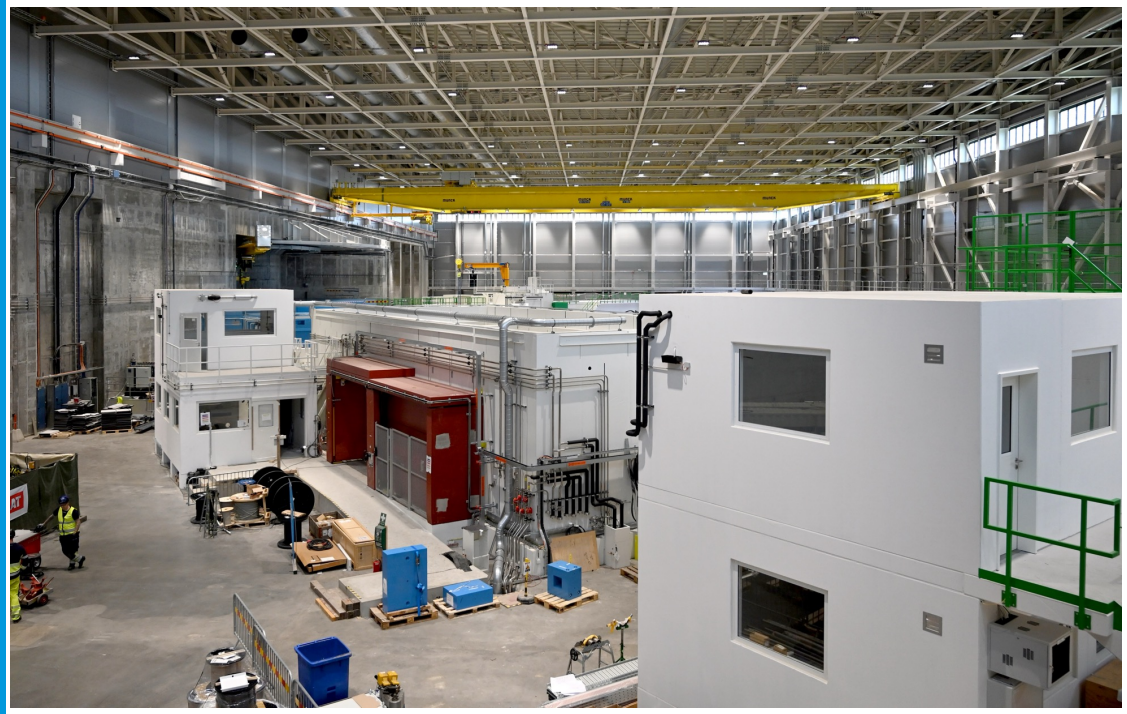
Neutron News, 35:1, 2-4,
DOI: 10.1080/10448632.2024.2331387

Progress in instrument building by NSS

NEUTRON SHIELDING BUNKER

The installation of roof elements to the bunker has started in the east sector, over the ESTIA and SKADI beamlines in the D01 hall. The plan is to continue with the south sector (DREAM and ODIN instruments), then the north sector (LOKI, FREIA) and last the west sector for the long instrument beamlines.

Experimental hall 1



Experimental hall 2

Experimental hall 3

E01 side

Current NSS Issues (for BOT)

- Cranes not fully functional

Issues with bunker cranes from day one, but lately we also have issues with the hall crane. ESS Facility Managment working on solution, and supporting with temporary cranes. Need to work in Operation (shut downs)

- **Resources:**

  - **Resignations** of key/critical resources, takes time to backfill. Both for Instrument projects and for Common Projects / Technical WPs.

  - **Difficult to recruit engineers lately** (lack of good applicants), but improving

  - **Parallell work** - Resources needed both for T1 and T2T3

- T1 Energisation & Cold Commissioning

Take much longer time than expected to get energisation for Instruments, and T1 instruments cannot proceed with local testing / sub-system cold commissioning. Assigned dedicated resource to coordinate this.

- Documentation for T1 TG5/SAR

A lot of documentation effort needed. Responsibility with IK partners, for completion of TG5 (but also with NSS internal WPs). Have set up TG5 task force that coordinates the work needed regarding TG5 documents.

ICB24

FOCUS ON T2-T3 REPLANNING: ways to improve chances to maintain the replanned schedule via additional resources from NSS and improved engagement from in-kind partners were discussed

24th INSTRUMENT COLLABORATION BOARD MEETING (September 25-26, 2024)

Day 1, September 25

10.30 – 11.00	Arrival		
11.00 – 12.00	Facility Tour of D and E Experimental Halls	60’	(Rob Connatser)
12.00 – 13.00	Lunch	60’	
13.00 – 13.30	**Closed session**	**30’**	(Sean Langridge)
13.30 – 13.45	**Organizational Part**	**15’**	
	• Welcome	5’	(Sean Langridge)
	• 1) Approval of Minutes and Agenda 2) Review of Action Items 3) Organization of ICB 23 Report	10’	(Sean Langridge)
13.45 – 15.00	**Project Update**	**1h 15’**	
	• Welcome / DG comments	10’	(Helmut Schober)
	• Overall Project Update	15’	(Andrew Kimber)
	• Welcome from Science	10’	(Giovanna Fragneto)
	• NSS Project Update	25’	(Rob Connatser)
	• Discussion	15’	
15.00 – 15.30	Break	30’	
15.30 – 17.50	**T2-T3 Replanning**	**2h 20’**	
	• T2-T3 Replanning	20’	(Susanna Domeij)
	• Discussion: What will we do differently to ensure we hold to the replanning?	80’	(Sean Langridge)
	• NSS Proposals	10’	(Rob Connatser)
	• TG5 Process Update	30’	(Andrew Jackson /Zoom)
17.50 – 18.00	**Summary and Close Out of Day 1**	**10’**	(Sean Langridge)
19.00	Dinner		

24th INSTRUMENT COLLABORATION BOARD MEETING (September 25-26, 2024)

Day 2, September 26

08.30 – 09.00	**Closed session**	**30’**	(Sean Langridge)
09.00 – 10.20	**T1 Project Update**	**1h 20’**	
	• T1 Schedule Update	20’	(Sofie Ossowski)
	• Cost follow up/budget - including resources to TG5	10’	(Sofie Ossowski)
	• IK Update and Action Item from ICB23/IKRC Response to Knowledge Transfer	30’	(Mark Robinson)
	• Discussion	20’	
10.20 – 10.50	Break	30’	
10.50 – 11.50	**Instruments Lessons Learned**	**60’**	
	• Lessons learned: ODIN	25’	(Wiebke Lohstroh /Zoom)
	• Lessons learned: DREAM	25’	(FZJ/tbd)
	• Discussion	10’	
11.50 – 12.55	**DMSC & Detectors**	**1h 05’**	
	• Detector, Beam Monitor Update & Firmware issue	45’	(Kevin Fissum)
	• DMSC Update	20’	(Thomas Holm Rod)
12.55 – 13.20	**Summary and Close Out Day 2**	**25’**	
	• General Discussion & Topics for Future ICBs	25’	(Sean Langridge)
13.20 – 14.00	Lunch	40’	
14.00	**Official End of ICB24**		

Post-BOT planning
Status November 2024

PAC.14

ANDREAS JANSSON - OLIVER KIRSTEIN

BOT and beyond planning

Early Operations ESS-0420218 (rev4)

EUROPEAN SPALLATION SOURCE

Document Type	Report
Document Number	ESS-0420218
Date	Mar 22, 2024
Revision	4
State	Released
Confidentiality Level	Internal
Page	1 (10)

EARLY OPERATIONS OF ESS AND PREREQUISITES FOR FIRST SCIENTIFIC RESULTS

	Name	Role/Title
Owner	Helmut Schober	Director General
Author	Andreas Jansson	Global Test and Commissioning Coordinator
Author	Oliver Kirstein	Science Project Leader
Reviewer	Carlo Bocchetta	Operations and Infrastructure Director
Reviewer	Kevin Jones	Technical Director
Reviewer	Giovanna Fragneto	Science Director
Approver	Helmut Schober	Director General

UNCONTROLLED COPY. ESS-0420218, Rev. 4, Released, 2024-03-22, Internal, 1 file, , page (1/10)
https://chess.esss.lu.se/enovia/link/ESS-0420218.4/21308.51166.47626.29601

Template: Report (ESS-0060987 Rev: 4, Active date: Feb 20, 2020)

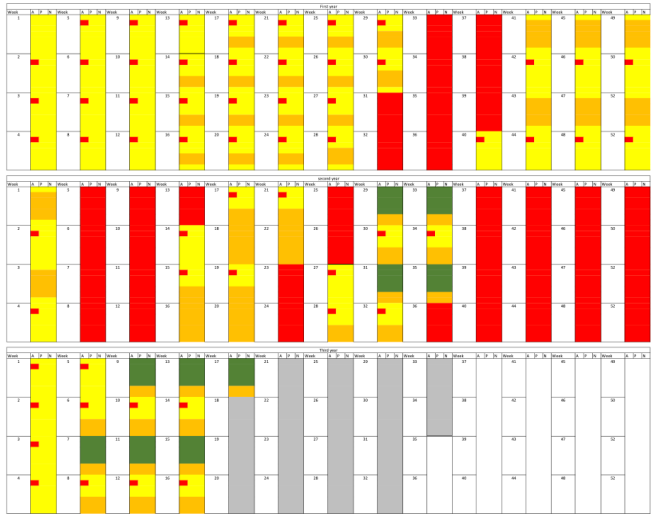
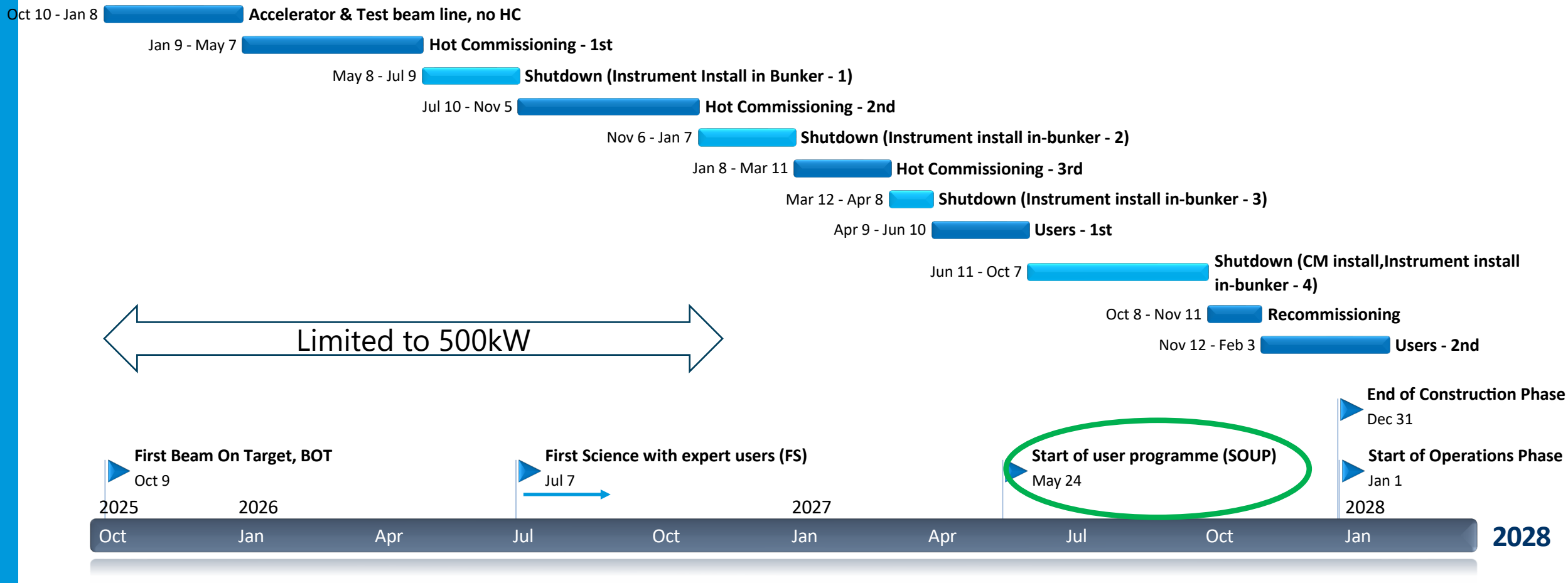


Figure 2. Tentative post-BOT weekly shift schedule indicating the distribution of shifts allocated to different activities. 24/7 operation with 3 shifts/day are assumed. Yellow indicates accelerator commissioning, orange indicates dedicated beam for instrument hot commissioning, green indicates user operation, and red indicates maintenance stop or shutdown

Layout: Classic Schedule Layout AJ | Filter All: * Activities not completed

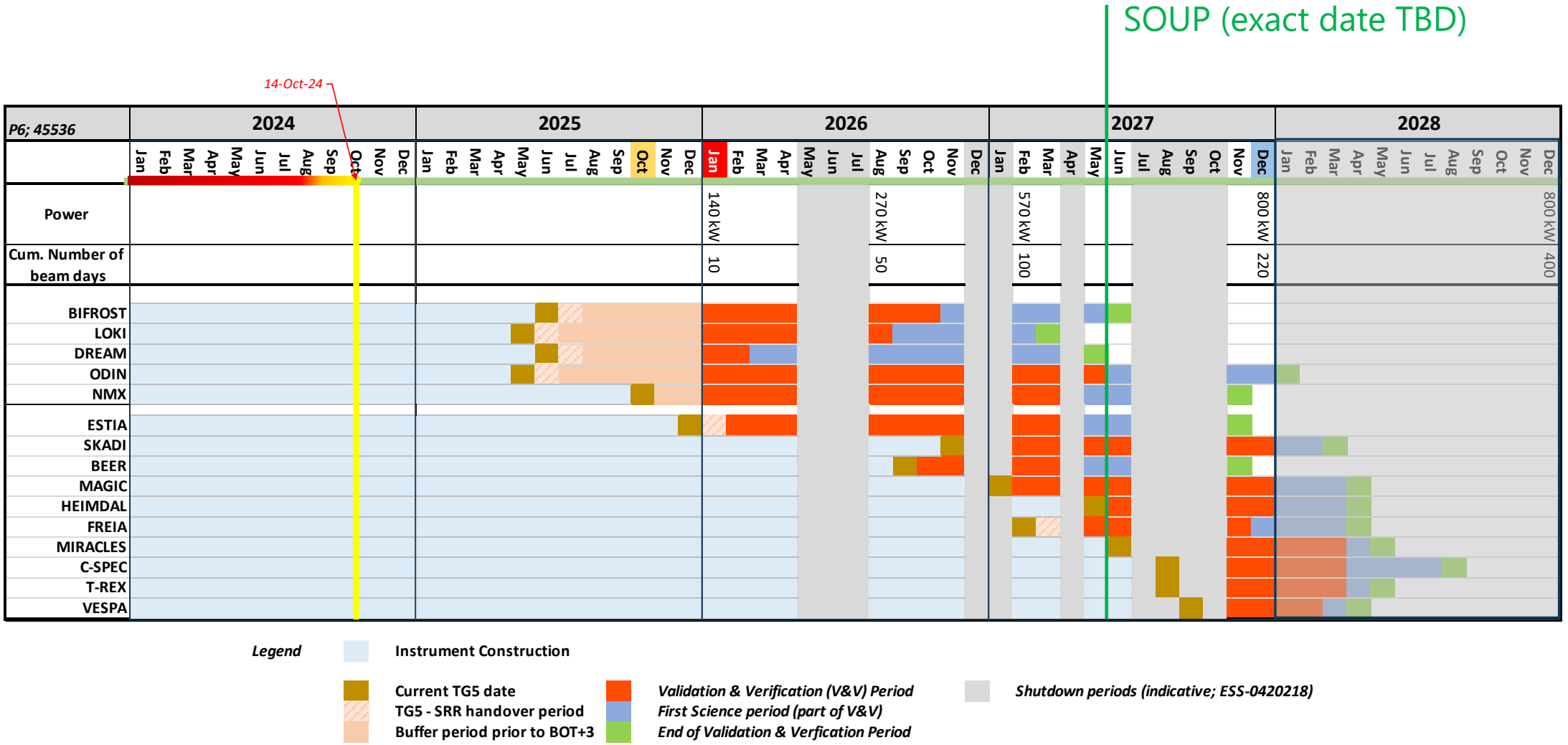
#	Activity ID	Activity Name	Activity % Complete	Start	Finish
531		Infrastructure Operations & Maintenance		29-Aug-25	31-Dec-27
532	OID-A3214280	Accelerator & Test beam line, no HC	0%	29-Aug-25	05-Nov-25
533	OID-A3214290	Hot Commissioning - 1st	0%	06-Nov-25	04-Mar-26
534	OID-A3214300	Shutdown (Instrument Install in Bunker - 1)	0%	05-Mar-26	24-Apr-26
535	OID-A3214310	Hot Commissioning - 2nd	0%	27-Apr-26	17-Sep-26
536	OID-A3214320	Shutdown (Instrument install in-bunker - 2)	0%	18-Sep-26	04-Nov-26
537	OID-A3214330	Hot Commissioning - 3rd	0%	05-Nov-26	21-Dec-26
538	OID-A3214340	Shutdown (Instrument install in-bunker - 3)	0%	22-Dec-26	03-Feb-27
539	OID-A3214350	Users - 1st	0%	04-Feb-27	31-Mar-27
540	OID-A3214360	Shutdown (CM install,Instrument install in-bunker - 4)	0%	01-Apr-27	23-Aug-27
541	OID-A3214370	Recommissioning	0%	24-Aug-27	17-Sep-27
542	OID-A3214380	Users - 2nd	0%	20-Sep-27	19-Nov-27

Ramp-up; current forecasted dates



Instrument V&V schedule

Updated with NSS' TG5 replanning activities



Science Away Days 2024

FOCUS ON FIRST SCIENCE:
MORE FROM INSTRUMENT
DIVISION LEADER PRESENTATIONS

Created by Carina Lobley, last modified by Ulrika Hammarlund on May 15, 2024

The Science Directorate recently convened for a science away day at the Sundsgården Hotell & Konferens, Rydebäck, located on the coast just south of Helsingborg. On the 13th and 14th of May, members of the directorate came together to celebrate their collective achievements, prepare for the work ahead, and forge connections within the recently restructured science directorate.

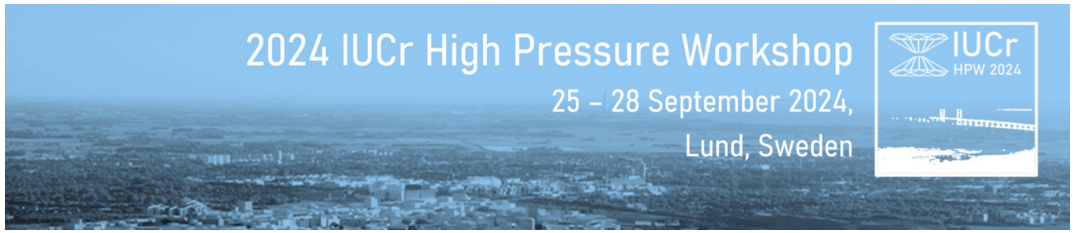
Unlike previous years' science days, which spotlighted the work of PhD students and postdocs collaborating with the ESS, this year's event took a different approach, focusing inwards on the teams responsible for delivering science at ESS.

The event's programme provided insights into ESS instruments and sample environments and thoughts about the science to come. A series of keynote presentations covered both scientific and technical topics. Additionally, there was time focused on the DMSC presenting the many developments that will support users to understand the data collected. Perhaps most importantly, we also took time to reflect and discuss – identifying ways to work together and common challenges to address in the coming months.

What remains is to extend heartfelt appreciation to all those involved in planning and executing Science Away Days 2024 – a successful event all round, weather included!

ESS meetings organisation & first science brainstorm

- REFLECTOMETRY – SXNS & ORSO (Grenoble - Jul)
- NMX – ECM 34 – (Padova - Aug)
- IMAGING – NEUWAVE 12 (Lund – Sep)
- SANS - ECIS 2024 satellite – (Copenhagen - Sep)
- DIFFRACTION - IUCr High Pressure (Lund - Sep)
- **ILL/ESS USER MEETING** (Grenoble – Dec)
- FUNDAMENTAL & PARTICLE PHYSICS (Lund – Jan)



SISN – Adrien Perrichon
KFN – Sebastain Jatsch & Helmut Schober
JDN – Florence Porcher and GF
J-PARC Symposium – Sindra Petersson-Årskold

Research Coordination Office

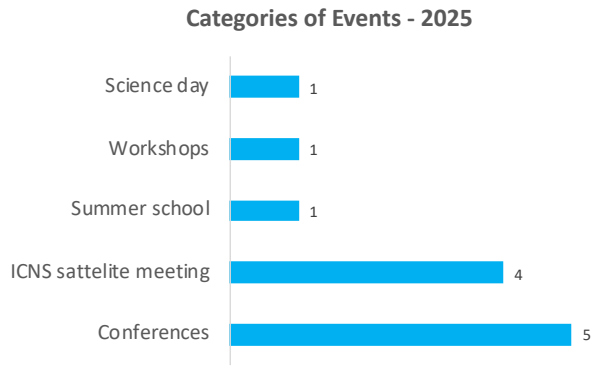
Ask us Anytime!

SERVICES TO USERS

- Preparation and Review of the ESS Scientific Evaluation and Access Policy
  - Discussion paper: National Balance
  - Discussion paper: Cost Model for Industry
- DEMAX call closed
  - 34 proposals received since Oct 2022

SERVICES TO SCIENTISTS

- Welcome to Raquel Costa!
- 12 ESS applications for sponsored events during 2025 in addition to ICNS
  - Review in progress and notifications in 2024
- Students programme: in preparation



Scientific Evaluation and Access Policy

COURTESY CARINA LOBLEY

Science Evaluation and Access Policy

Small iterative adjustments -> moving to convergence

- Altered wording to ensure the focus is on top-level research, technological development, innovation and challenge-based approach to societal challenges
- Clearly states the policy will be reviewed every 3 – 5 years
- Clarified policy publication strategy
- More relaxed wording around the possible uses of facility time for ESS staff
- Statement that excellence reviews may be asked to focus on scientific excellence, innovation or approach to a societal challenge or a combination
- Changed programmatic access – 3 year maximum duration, for proposals linked in a series, or connected by a science theme
- Made an allowance for transnational access programmes
- Link between the role of the ESS Scientist and the ESS Publication Policy is now more established
- Implementation of National Balance is more clearly stated

Science Evaluation and Access Policy

Additional Tasks

- Discussion paper on National Balance is under-preparation
- Discussion paper on The Cost Model for Industrial Access is under review

- These documents form the basis of the guidelines documents that will be used on a daily basis in the User Office to implement the Science Evaluation and Access Policy

Preparing for users' visit

Investigating possibilities for hosting users during the first years of ESS operation at Forskarhotellet and in a hotel that might be built in science village.

Investigating also possibilities to use canteen at Loop and to increase synergies with Linx that will move there in March next year

Discussions continuing between security officers, RCO and SIMS (responsible for user office software) to ensure a smooth welcome of users on site during and outside working hours

Research Coordination Office

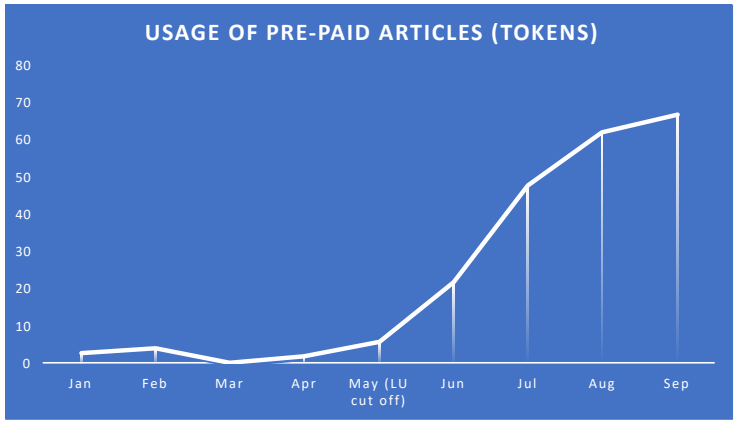
Ask us Anytime!

GRANTS

- Programme Management
  - New mobility programme between ESS and SNS, starting Jan 2025
- Grant Management
  - 2nd consortium meeting for FlexRICAN
- Presence at Lund EU days and ESSRI in Madrid

LIBRARY

- Use publications.ess.eu to find the latest articles published with ESS affiliation
  - Now with statistics on views and downloads
- Using tokens for 'seamless' pay per view access with several publishers



Steady State Operation review

Aim: present a budget for operation at Council in December
Target: <200M€ (including capital for upgrades) ~650 FTEs

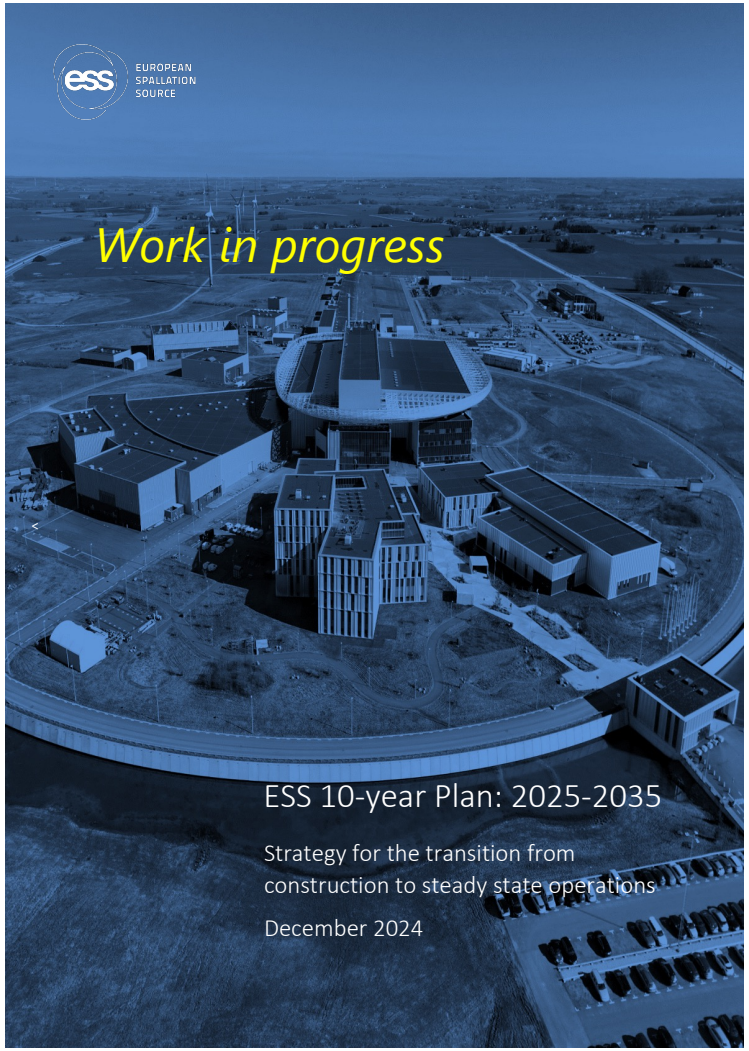
Review committee meetings since August

Top-down exercise starting from feedback from review of end of last year

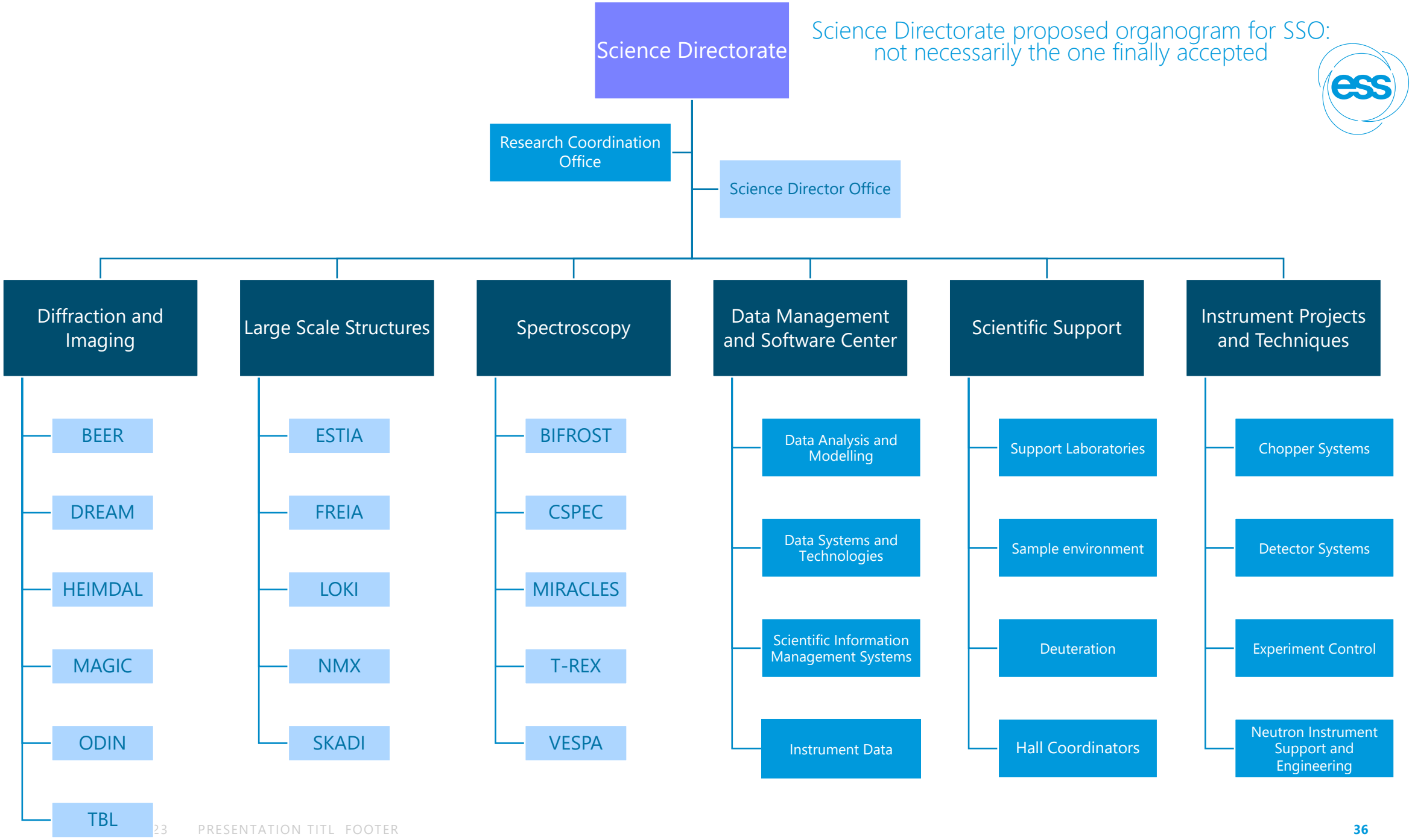
Final in person meeting of review committee 7th November

The scope parameters derived for the beginning of steady state operation are as follows:

- 15 public neutron scattering instruments in a fully supported user programme (we assume that by this time all these instruments are fully scoped),
- 200 days of scheduled neutron production for scientific experiments,
- 2 MW of proton beam power on target,
- 85-90% proton beam reliability for scheduled operation, with a goal of 95%,
- Full operation of technical support infrastructure in place at the end of 2027, and
- Management of the ESS site infrastructure that supports technical and user operation.



Science Directorate proposed organogram for SSO: not necessarily the one finally accepted



Ramp up to 22 instruments and 5MW by 2035 being included.

It is of great importance to bear in mind the future need for experimental capacity besides new capabilities. The success and efficient return of the large investment of many European countries into the facility will be ensured by making as many instruments as available by using all the available beamports. Neutron production will be efficiently exploited only if the vast majority of experiments will be successful and lead to publications or patents. In order to do so the facility must provide :

- A relevant number of ESS scientists to help realise user experiments, develop new capabilities, carry out research activities and outreach to the broader community. To fulfill this hey must be leading experts not only in the different neutron techniques but also in the different scientific fields covered by the ESS user program.
- Excellent technical support to limit downtime and remain at the forefront of technological development.
- Highly performing and reliable sample environments to access all necessary experimental conditions, from ambient to extreme, in-situ and in operando measurements.
- Safe and efficient sample preparation and characterization methods needed on ESS premises to limit experiment failure due to poor samples.
- Highly performing software for data reduction, background removal, data analysis, modelling.

Response to SAC.32 & STAPs recommendations Charge to SAC.33

GIOVANNA FRAGNETO

Response to SAC32 and STAPs recommendations

Instrument staffing

Detailed information on instrument staffing will be given by the heads of divisions. Staff turnover in DMSC is partially due to the move on a different site and was foreseen. Staff turnover in NSS is due to different factors and we are looking closely to the issue with human resources, a report will be presented later in the year.

Impact of replanning on first science

Not all 15 instruments will be able to deliver science by beginning of 2028 but all will have been hot commissioned by summer 2028

Bringing back spectroscopy STAP

NMX prototype detector concern

Fundamental and Particle Physics STAP question about ESS reference person

Temporarily activities will be part of spectroscopy division

Response to SAC32 and STAPs recommendations

Rescoping and benchmarking

Work has been done towards establishing a priority list for rescoping; all NSS resources are working towards completion of the current scope of the project therefore detailed costing and implementation is not possible for all projects; we will finalise the priority list as from document submitted to SAC and proceed stepwise to detailed planning.

User access policy

Implementation of members of council and SAC recommendation have led to a new version uploaded with SAC documents

SSO review

Readiness for first science

Instruments are being staffed and the instrument scientists hired at ESS are expected to do the hot commissioning of the instruments in collaboration with the lead scientists from in-kind partner institutions (where these do not coincide). ESS scientists will be heavily involved in first science and they are already active putting in place collaborations with the community (including partner institutions)

New instrument call

Details on progress made to be presented tomorrow.

Autumn STAPs – 22-23 October

Spectroscopy, Large Scale Structures, Diffraction

Purpose

The Science and Technical Advisory Panels (STAPs) are established to provide independent, expert advice and guidance on scientific, technical, and policy matters related to ESS's Science Directorate. The panel aims to ensure the highest standards of scientific and technical integrity, fostering innovation and facilitating the achievement of strategic goals.

Charge

- Comment on the information provided during the STAP common session.
- Comment on the progress of the instrument construction projects.
- Comment on the readiness of ESS software to support the user programme including controlling the instruments and enabling data reduction and analysis.
- Comments of the provision of appropriate sample environments for the instruments.
- Advise on the Science Directorate strategy towards first science and the user community.
- Advise on the progress towards selection of instruments 16-22 in science areas relating to your special interest.

Scientific Advisory Committee 24-25 Oct

Charge for the 33rd meeting of the ESS Scientific Advisory Committee

We would particularly like the SAC to advise on the following topics.

1. Rescoping of the First 15 Instruments

The task of rescoping the instrument projects continues and this is a crucial exercise to ensure that ESS will be competitive. We will present a list of rescoping and ask the SAC to provide feedback on our prioritisations.

2. Call for Instruments

Looking beyond the initial instrument suite, we are also preparing to open a call for the next batch of instruments. We thank the SAC for previous feedback on this topic, and we will present a more elaborate plan for the call. The SAC is asked to provide advice on this plan in context with the rescoping and finalization of the first 15.

3. First Science

Identifying which experiments should be the first to be performed on the first five instruments is key to being able to pronounce the ESS a success in the early years of operations. Several aspects are being considered and balanced against one another in this process: what is needed to gradually verify instrument performance; openness and inclusiveness to the community while at the same time remaining engaged with the in-kind partners; and rapid publishability of the results. The Heads of the instrument divisions will present how this is being addressed, and the SAC is invited to advise on how the process of planning First Science can be improved.

Thank you to the directorate staff for strong engagement and support to the project