Introduction & Update

Welcome!

- 2 STAP meetings per year, synchronised with SAC meetings
- Reporting to SAC meeting
- Instrument STAPS are 1 physical and one video (or paper)
- We will continue with 2 F2F meetings per year.

- In October we have been asked to provide detailed information and demonstration of all software from the reflectometry stap (the reflectometry stap would like a joint meeting)

- Andrew and I think this would be beneficial for all instrument class staps

Charge for this meeting

We request advice and feedback on progress at DSMC as specifically advice for the following areas.

Is the plan to continue consolidation of core frameworks in 2020 the correct way to proceed?

ESS will track high level milestones for integration progress and software development for individual instruments.

Have we identified suitable milestones and workflow.

Is our definition of the instrument data scientists suitable for the current phase of the project?

How should we expect and grow the nature of the role to change over time?

Is the strategy to develop draft data reduction workflows before hot commissioning acceptable?

DMSC has requested that all instrument scientists have a reasonable knowledge of python (Training programmes are in place).
What methods can we leverage to avoid a build-up of unmaintainable code. What experiences from other facilities can we learn from.

Planning for the ESS initial operations budget at the lower level of 810M (2013 Euro) has impacted the DMSC in respect of both budget and schedule.

Are there any areas of DMSC scope that appear critically under resourced as a result?

Can the STAP comment on the suitability of the following areas for in-kind in the initial operations period.

In-kind for data reduction.

In-kind Instrument data scientists for hot commissioning.

How could we make the October meeting successful your thoughts would be appreciated.

ESS Update

Organisation

- Re-organisation completed:
  - Staff from Neutron Instruments Division in the Science Directorate have transferred to new Instrument Scientists Group within NSS Project Division in the Technical Directorate.
  - Chopper Group, Experimental Control & Data Curation Group, & Detector Group all moved from Science Directorate to NSS Project Division in the Technical Directorate alongside new Instrument Scientists Group.
  - NSS Project Division has also Technical Projects Group (engineering), and Planning and Coordination Group
  - ECDC is funded from initial operations
  - Organisation will change during hot commissioning as instruments are operated (and hot commissioned) by Science Directorate.
- Andrew Jackson replaces Ken Andersen who has moved to SNS
  - Group Leader for Instrument Scientists Group
  - Also represents instrument scientists and instrument operations within the Science Management Team (SMT – the team of division heads within the Science Directorate)
  - At least 20% of instrument scientists time is still allocated to research, outreach and community development to ensure adequate preparation for early science and start of user operations.

ESS Update

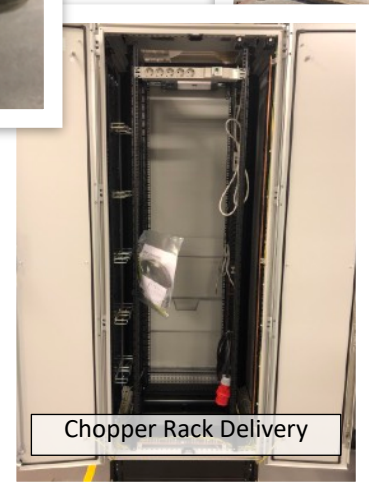
NSS Common Projects

- Bunker
  - R6 brackets being installed (supports for inner edge of bunker roo
  - West wall being manufactured
- Common Shielding
  - Manufacture of shielding underway
  - First deliveries and installations
- Choppers
  - Agreements with instruments
  - First delivery of equipment for building racks
- Beam Monitors
  - Progress on development of V-foil monitors
  - Ongoing discussions with instrument teams


R6 brackets


CSPEC guide shielding base


Bunker West Wall sections


Chopper Rack Delivery

ESS Update

Construction and Installation Activities

- Buildings
  - D building structures are going up
  - D03 roof trusses on
  - D01 support wall frame erected
- Labs
  - Installation work on labs in E buildings has started. Successfully negotiated out of hours/unsocial hours work regime for supervisory staff to maximise work time of contractors. SAD team are on a rotation of supervision duties to cover the extended working day.
- Instruments
  - NMX : cave being installed
  - CSPEC : guide shielding base installed
  - BIFROST : control hutch installed

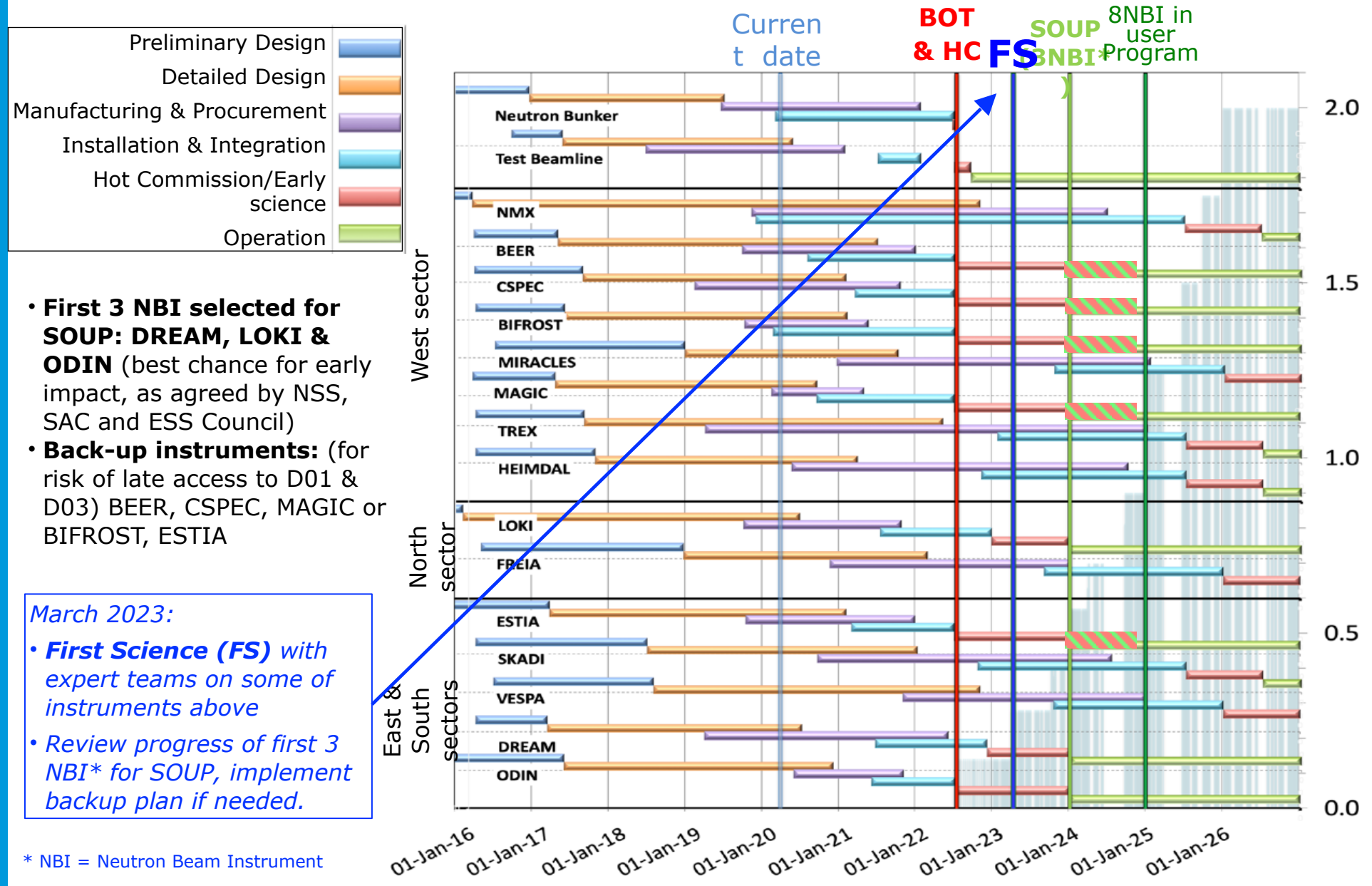

D03 frame & trusses


E04 Lab fitout


NMX Cave


BIFROST Hutch

Baseline schedule for Neutron Beam Instruments (NSS MS V4.3)



- **First 3 NBI selected for SOUP: DREAM, LOKI & ODIN** (best chance for early impact, as agreed by NSS, SAC and ESS Council)
- **Back-up instruments:** (for risk of late access to D01 & D03) BEER, CSPEC, MAGIC or BIFROST, ESTIA

March 2023:

- ***First Science (FS)** with expert teams on some of instruments above*
- *Review progress of first 3 NBI* for SOUP, implement backup plan if needed.*

* NBI = Neutron Beam Instrument

- ESS Major Milestones (BOT, FS, SOUP) have not changed since early 2018.
- NSS R-BOT currently has negative float of 8 weeks
- ESS is working to reduce this as far as possible
- Access to instrument areas is according to baseline.
  No delays foreseen.

ESS Update

Coronavirus

- We have been on work-from-home since 19th March
- Sweden does not have severe lockdown, so some ESS activity on site is continuing e.g. NMX cave installation, Accelerator installation
- We are continuing to perform reviews (CTV, IDR, Tollgates) as most of these were by correspondence/video conference in any case.
- Partner countries do have more severe controls in place – this is the major challenge for the instrument projects.
- Skanska continue to work at ~80% level, so CF timeline is not going to be severely affected yet.
- Weekly updated tracking of impacts due to coronavirus is taking place. Of note so far:
  - Lab installation stopped due to installation team returning to UK
  - Engineering and procurement significantly slowed in France
  - Production of equipment (Monolith vessel, target wheel, instrument vacuum vessels) stopped in Spain
  - Production of beamport inserts will be delayed in Germany

• Details are being collected across ESS to start the replanning required to mitigate Corona virus delays

Progress Schedule and planning

- High level milestone planning started (with Loki)

- We will capture key integration milestones across software areas. To allow development of analysis and reduction software.

- A detailed plan for installation for installation and integration is being made.
  - The strategy of integration along with installation seems to be acknowledged.
  - There is backloading of deliveries in some areas which is a concern for integration efforts & planning.

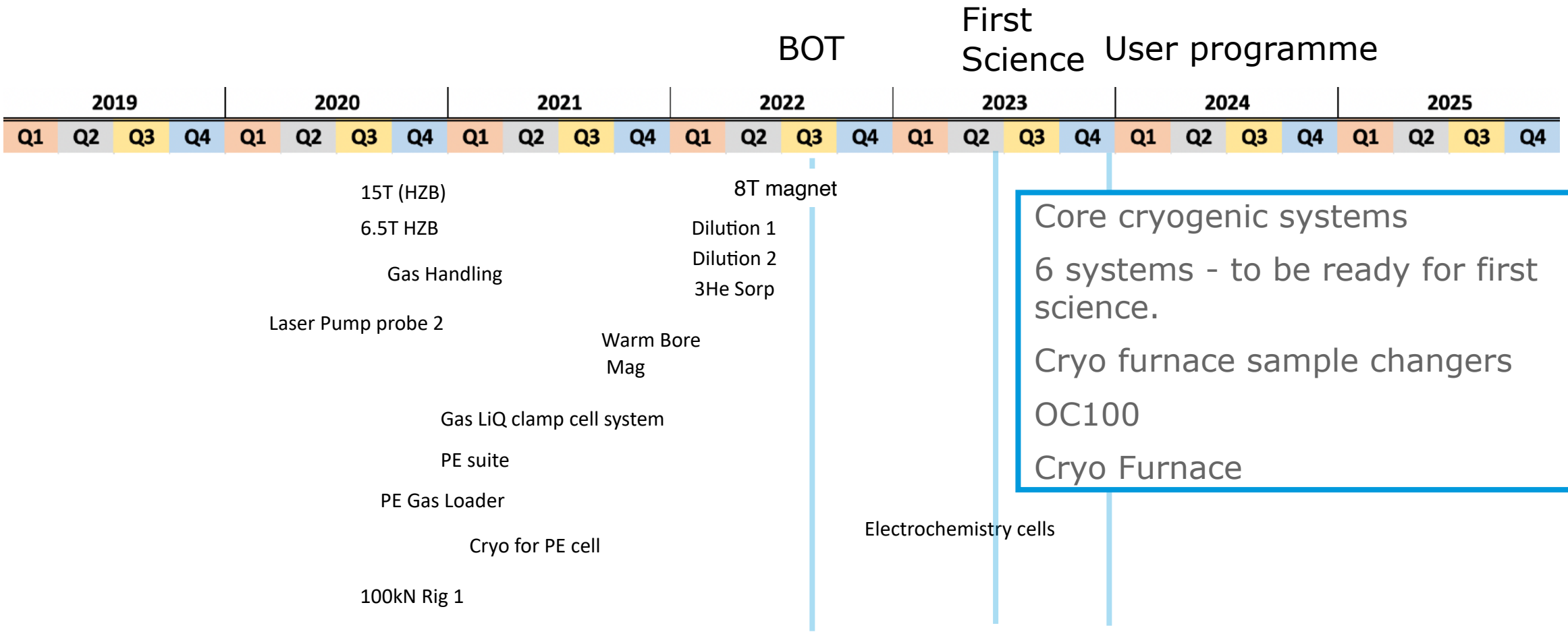
- A integrated plan for low level network and timing infrastructure is being developed.

-Much of this will be addressed / Revisited when the whole project re-baselines later this year.

- Capital investment planning is more detailed.

Integration challenges

Example from Sample Environment - Systems by SAT date



Resources.

Replanning for initial operations has been tough!

62PY reduction (for DMSC)

Deferral of modelling and simulation activities.

Deferral of data centre upgrades.

Pressure on User office development - suggested to be delayed

DMSC will ramp to 40 FTE (from 28) in 20-21

Changes to the last 8 instruments

- Hot commissioning is planned outside of the initial ops period.
- Resources limited to the IDS for reduction and analysis (0.5 FTE)

Capital investment remains funded ~6M

All instruments (inc DAQ and analysis hardware) will be installed up to the hot commissioning milestone in initial operations.

Resources II

Recruitment authority is an issue.

Weekly meetings with Directors to approve planned positions before recruitment can start.

- Especially for "soft areas” User office

This is slowing us down.

Contract effort may be a solution.

Impact

Your thoughts and comments please.

- The current initial operations resources for DMSC does not match having 8 instruments in hot commissioning simultaneously.
- We have communicated to the instrument teams some key concepts. (who are not all unto date with the initial ops story)
- Detailed data reduction workflows will be developed during hot commissioning. We will make draft DR workflows between now and HC.
- It is difficult to integrate what you cannot physically see. We would like deliveries of systems ahead of time if possible.
- Instrument teams not just the IDS need to know python - Some of the staps last week were worried about this.

Overall Progress since last STAP

In short - its Impressive & too much to detail here.

- Hardware move to Cph server room completed
- Development of a greater level of detail for capital investment for instruments (The capital investment budget remains ~6M euro for the period.
- Final experiment at V20 partially successful – was impacted by a shutter failure and closure of the source.
- Development and release of a lot of software for all science and DM areas (see separate reports for details)
- User office proposal system development and support for the second DEMAX proposal round.
- Development of the YMIR test infrastructure in the Utgaard lab.
- Start of user python training during IKON meeting (~25 participants)
- ECDC governance structure updated to new organization structure.
- Increased activities to compile an integrated schedule between DMSC and instrument teams/ NSS planners.

Instrument Data Scientists

Your thoughts and comments please.

Staff identified for Diffraction and SANS

Current recruitment for Imaging.

Expectations

Science domain expertise & software expertise 0.5 FTE per instrument.

Responsible for interface between instrument and DMSC.

Research active and local contact 20% of time.

What are your suggestions for:

Maximising the impact of these positions.

In the short term and long term.

2020 - 2021

Your thoughts and comments please.

- Recruit

- Continue development of core frameworks

- Fix all the gaps

  There are obviously quite a few, some software, some institutional i.e.

  User office workflows are being developed along with the software, gaps are being identified - sample safety.

  Responsibility for detailed design and installation of network / timing on each instrument.

- Replan for instrument first wave after ESS re-baselines

Thank you!

Aerial View of D01/D02/D03 February 14th 2020
https://dam.esss.lu.se