STAP Meeting March 2023 - Imaging and Engineering

06-07 March 2023

Charge and Recap of previous meeting

STAP March 2023 - Imaging and Engineering

AGENDA

Monday, 6 March

08:45 → 09:15 WELCOME

- 08:45 **Arrival and Coffee** — 15m
- 09:00 **Charge for the STAP and Recap of ACTIONS from previous STAP meetings** — 15m
  Speaker: Robin Woracek (European Spallation Source ERIC)

09:15 → 09:45 ESS Update — 30m
Speaker: Andrew Jackson (European Spallation Source ERIC)

09:45 → 10:05 Welcome from Science Director & And the Road towards First Science — 20m
Speaker: Giovanna Fragneto (European Spallation Source ERIC)

10:05 → 12:15 BEER Instrument Update
Convener: Sven Vogel

- 10:05 **Actions since the last STAP** — 10m
  Comments and information about taken actions related to the last STAP report.
- 10:15 **Update on Schedule & Progress** — 45m
- 11:00 **Update on BEER detector** — 45m
  Speaker: Joerg Burmester
- 11:45 **Discussion BEER - Instrument** — 30m

12:15 → 12:45 BEER - DMSC Update
Convener: Sven Vogel

- 12:15 **Status BEER data reduction and analysis** — 10m
  Speaker: Soeren Schmidt (ESS)
- 12:25 **Discussion BEER - DMSC** — 20m
  Speaker: Soeren Schmidt (ESS)

12:45 → 13:45 Lunch

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13:45 → 15:30 Closed Session STAP — 1h 45m
(ESS Scientists meeting at that time)

15:30 → 16:00 Coffee

16:00 → 17:30 TBL Instrument Update

- 16:00 **TBL Overview** — 45m
  Speakers: Robin Woracek (European Spallation Source ERIC), Thawatchart Chulapakorn (Lunds universitet Bg (SEK))
- 16:45 **Discussion TBL** — 45m

19:00 → 22:00 Dinner

Hos Talevski i Stadsparken
https://www.stadsparkscafeet.se/

STAP March 2023 - Imaging and Engineering

AGENDA

Tuesday, 7 March

08:30 → 09:00 **Arrival and Coffee**

09:00 → 10:15 **ODIN Instrument Update**

Convener: Sven Vogel

- 09:00 **Actions since the last STAP** — 15m
- 09:15 **Update on Schedule & Progress** — 30m
- 09:45 **Discussion ODIN - Instrument** — 30m

10:15 → 10:45 **ODIN - Polarization Update**

- 10:15 **Status Polarization for ODIN** — 15m
  Speakers: Alexander Backs (Lunds universitet Bg (SEK)), Damian Martin Rodriguez (European Spallation Source ERIC), Wai Tung Lee (European Spallation Source ERIC)
- 10:30 **Discussion ODIN - Polarization** — 15m

10:45 → 11:45 **ODIN - DMSC Update**

Convener: Sven Vogel

- 10:45 **Status ODIN data reduction/analysis & Timepix Detector Update** — 25m
  Speaker: Soeren Schmidt (ESS)
- 11:10 **Status of Camera detectors (ECDC, ICS)** — 15m
  Speaker: Tobias Richter (European Spallation Source ERIC)
- 11:25 **Discussion ODIN - DMSC** — 20m

11:45 → 12:45 **Lunch**

11:45 → 12:45 **Lunch**

12:45 → 15:00 **Site Tour**

- 12:45 **Safety Induction** — 15m
  Speakers: Manuel Morgano (European Spallation Source ERIC), Premek Beran (European Spallation Source ERIC)
- 13:00 **YMIR** — 30m
  Speakers: Jonas Petersson (European Spallation Source ERIC), Manuel Morgano (European Spallation Source ERIC), Tobias Richter (European Spallation Source ERIC)
- 13:30 **Instrument Halls** — 1h 5m
- 14:35 **Stress rig** — 25m
  Speaker: Caroline Curfs (European Spallation Source ERIC)

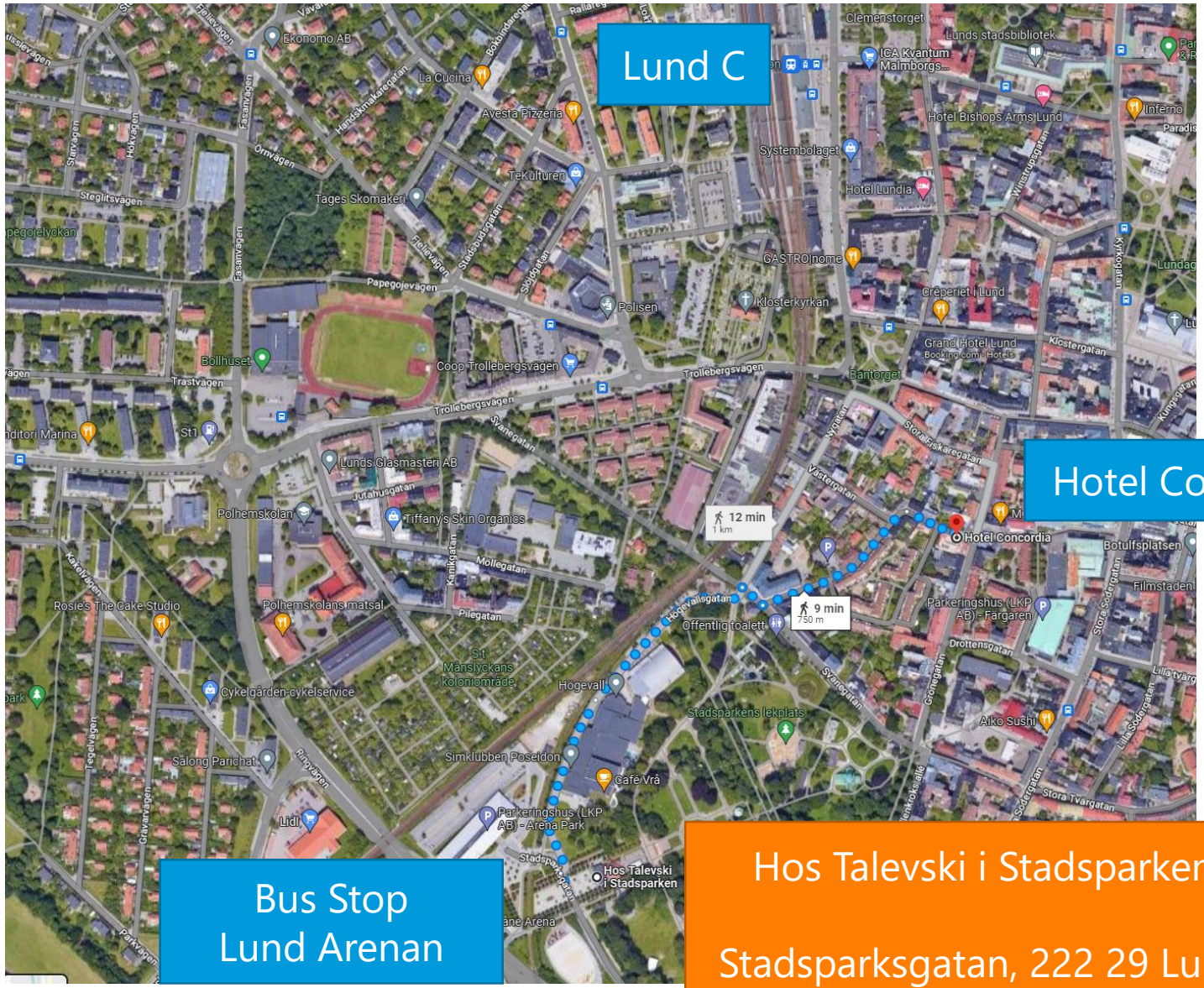
15:00 → 15:30 **Coffee**

15:30 → 16:15 **Discussion on Site Tour (Sample environment lab etc.)** — 45m

16:15 → 17:15 **Closed Session STAP** — 1h

STAP March 2023 - Imaging and Engineering

Dinner Monday



166

17:42 ab Lund Centralstation

2 min

Zu Kalender hinzufügen

17:42 **Lunds Centralstation**
Bangatan 1, 222 21 Lund

17:42 **Lund Centralstation**

166 Staffanstorp Önsvala
5 min (2 Zwischenstopps)

17:47 **Lund Arenan**

Zu Fuß
ca. 2 min,140 m

17:49 **Hos Talevski i Stadsparken**
Stadsparksgatan, 222 29 Lund

STAP March 2023 - Imaging and Engineering

CHARGE

This is the first in-person STAP meeting since pre-pandemic. The main purpose of the meeting is to keep the STAP informed and up-to-date of the current status of the instrument projects and related activities, and for the STAP to give advice on the specific topics on the agenda of the meeting.

For the instrument teams:

- Prepare presentations concerning the instrument status and progress in advance of the meeting.
- Consider specific topics as raised in previous STAP meetings.
- Identify hot topics and raise them at the meeting.

For NSS management:

- Organize the meeting.
- Update the STAP on ESS progress and the current schedule.

STAP March 2023 - Imaging and Engineering

CHARGE

For the STAP:

- Comment on the progress of the instrument projects in the context of their schedule.
- Comment on progress of software developments as well as detector DAQ.
- Comment on TBL plans for beam characterization.
- Comment on polarization project for ODIN as well as on impressions from site tour, including status of sample environment support.
- Provide feedback on the progress of the instrument class and any management actions that are needed to support the instrument projects.
- The findings and recommendations should be formulated in a written report (bullet points are sufficient).
- The STAP chair will be invited to the SAC meeting taking place 27-28 April 2023.

For all:

- Discuss and agree on format of next STAP meeting.

- RECAP

Scientific and Technical Advisory Panel (STAP) Report for BEER and ODIN October 25, 2022

Panel Members:
Sven Vogel (Chair), LANSCE, USA
Javier Santisteban, CNEA, Argentina
Stephen Hall, Lund University, Sweden
Mark Daymond, Queens University, Canada

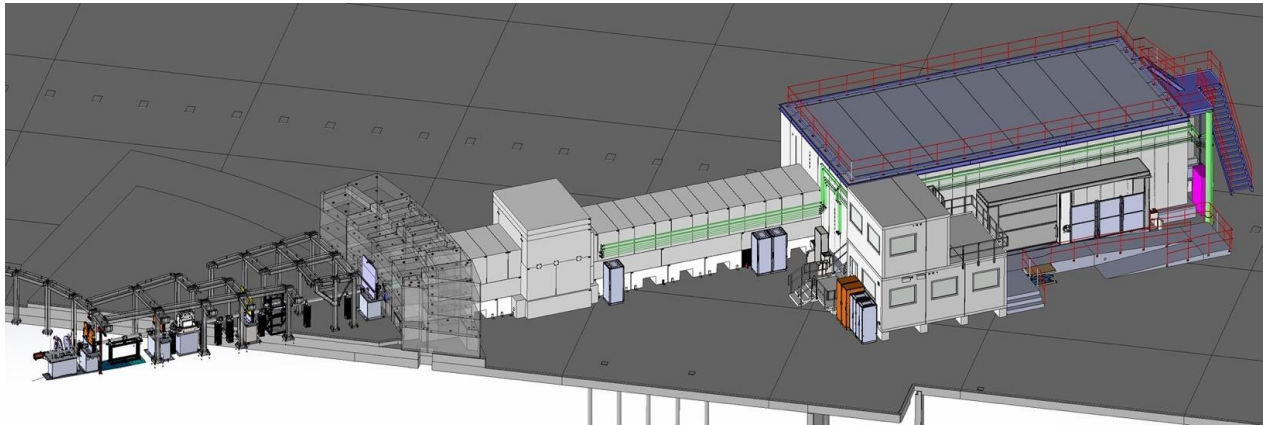
Absent:
Francesco Grazzi, CNR, Italy
Nikolay Kardjilov, HZB, Germany

Zoom meeting with all four STAP members and representatives of ESS, Hereon & NPI, TUM & PSI participating

- RECAP

ODIN: On track

- Installation on track, TG3 scheduled for January 2023, final TG5 planned July 2023
  - Far before beam-on-target
  - Allows more time to test detector integration, motion control etc.
- All big-ticket items except cave are under contract ⇒ much less issues with inflation
  - The cave supplier Mirrotron requested a cost increase due to higher material, transportation costs and energy costs increase in the coming winter. There are discussions ongoing with ESS and TUM, and depending on the outcome may or may not delay the manufacture and installation in 2023 with possible snowball effects on other installations.
- ODIN team asks for clearer scope definition & active participation of ESS in the FAT/SAT process regarding the cave concrete structure.
- Smaller issues (team anticipates to find solutions)
  - Hutch was handed over to ODIN team without possibility to test electrical installation.
  - Unclear effects and requirements of grounding of choppers may lead to electrical noise, requires retrofitting with insulators
  - Slight deformation of guide systems was identified, solution identified on the BIFROST beamline
  - Issue of inability to operate motion control from inside the cave to align samples etc. was raised ⇒ ability is crucial, and the issue appears to be solved since STAP meeting
  - Modality of having T_0 signal available (e.g. inside the cave) may not be readily supported. This is a must have for e.g. testing of novel radiography detectors, conduct stroboscopic studies or use user-provided equipment
- ODIN team heavily involved in YMIR test beam line as well as TimePix3 detector developments at TUM
- X-ray source for X-ray CT to be installed in hutch
  - Will allow testing of data streams without TOF
  - Will require functioning PSS before beam-on-target



- RECAP

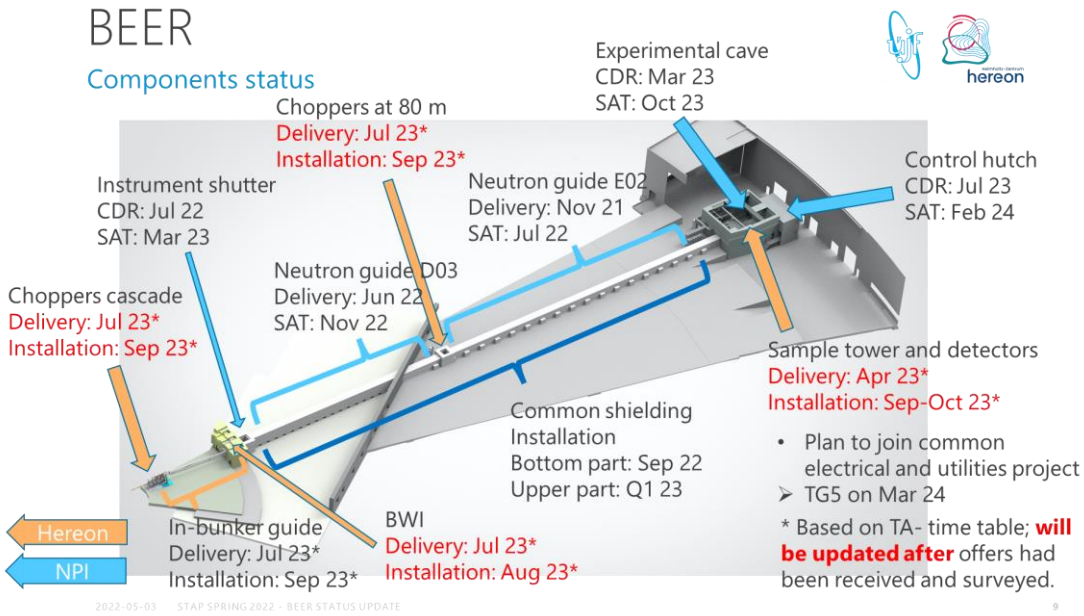
DMSC

- Test beamline YMIR/ECDC is working on optical CT together with Lund University
  - Implementing and testing data streaming (Kafka and NeXuS filewriter) and tomography recon, debugged network.
  - Tested positioning system, tracking sample position, great boost in sample tracking, 40 microns.
- Data from V20 test beamline also available to test with SciCat
- muhRec CT reconstruction software developer Anders Kaestner/PSI is single point of failure
  $\Rightarrow$ identified CT recon code coming with X-ray source as possible alternative. Investigating if platform can be modified to process TOF data
- BEER data reduction started and planned to be available for BOT

- RECAP

BEER: Detector and Inflation are Main Issues

- Cost overrun due to price increases, project meeting in June, decision in August
  - Cost book not changed
  - Choppers taken over by ESS chopper group
  - Signed contracts for shutter (NPI), bunker (Hereon) etc.
  - 6-axis robotic arm to be retendered
  - Kick off meetings for radial collimators, in bunker optics, guides, hexapod & rotary stage
  - Latest component is chopper, planned to be installed OCT 2024, comfortably before BOT
- Detector test at PSI was disappointing, detector decision postponed to end of 2022
  - Options: Hereon detector or commercial ^{3}He tubes
  - Commercial solution still viable for BOT
- Guides, support etc. getting installed, planned to be done by March
- Shutter on track
- Common shielding, cave and hutch slightly delayed



- RECAP

Charge for STAP

- **Comment on the progress of the instrument projects in the context of their schedule:**
  - ODIN appears on track to finish construction before BOT
  - Test of BEER detector at PSI was disappointing, need to make decision in 2022 about path forward
  - BEER has more open purchases than ODIN, therefore more affected by inflation
  - Common projects such as utilities & electricity are delayed (in part due to re-prioritization of resources towards target)
  - PSS staffing appears to be low; teams are concerned about integration with radiation safety ***after*** BOT
- **Comment on progress of software developments:**
  - Testing of imaging data streams including motion control, reconstruction software (CT) with optical imaging continues to show great progress
  - Tight connection of ODIN team with TImePix3 camera detector systems likely to improve quality of availably imaging detectors as well as potential alternative for BEER out of plane diffraction detectors
  - Path forward to integrate Losko TimePix3 detector in ESS time stamping identified, testing planned
  - BEER will now be online at the same time as ODIN, data reduction software on track to be ready
- **Provide feedback on the progress of the instrument class and any management actions that are needed to support the instrument projects:**
  - Delays caused by common projects such as utilities, electricity and PSS may delay start of operation
  - BEER & ODIN, like all beamlines, suffer from cost increases
  - ODIN team asks for clearer scope definition & active participation of ESS in the FAT/SAT process regarding the cave concrete structure
- **Discuss and agree on format of next STAP meeting:**
  - STAP hopes to meet in person March 6 & 7, 2023, to discuss commissioning, early science, software, test beamline etc.

Thank you for your valuable time and sharing your expertise!