

NMX Project Status Overview

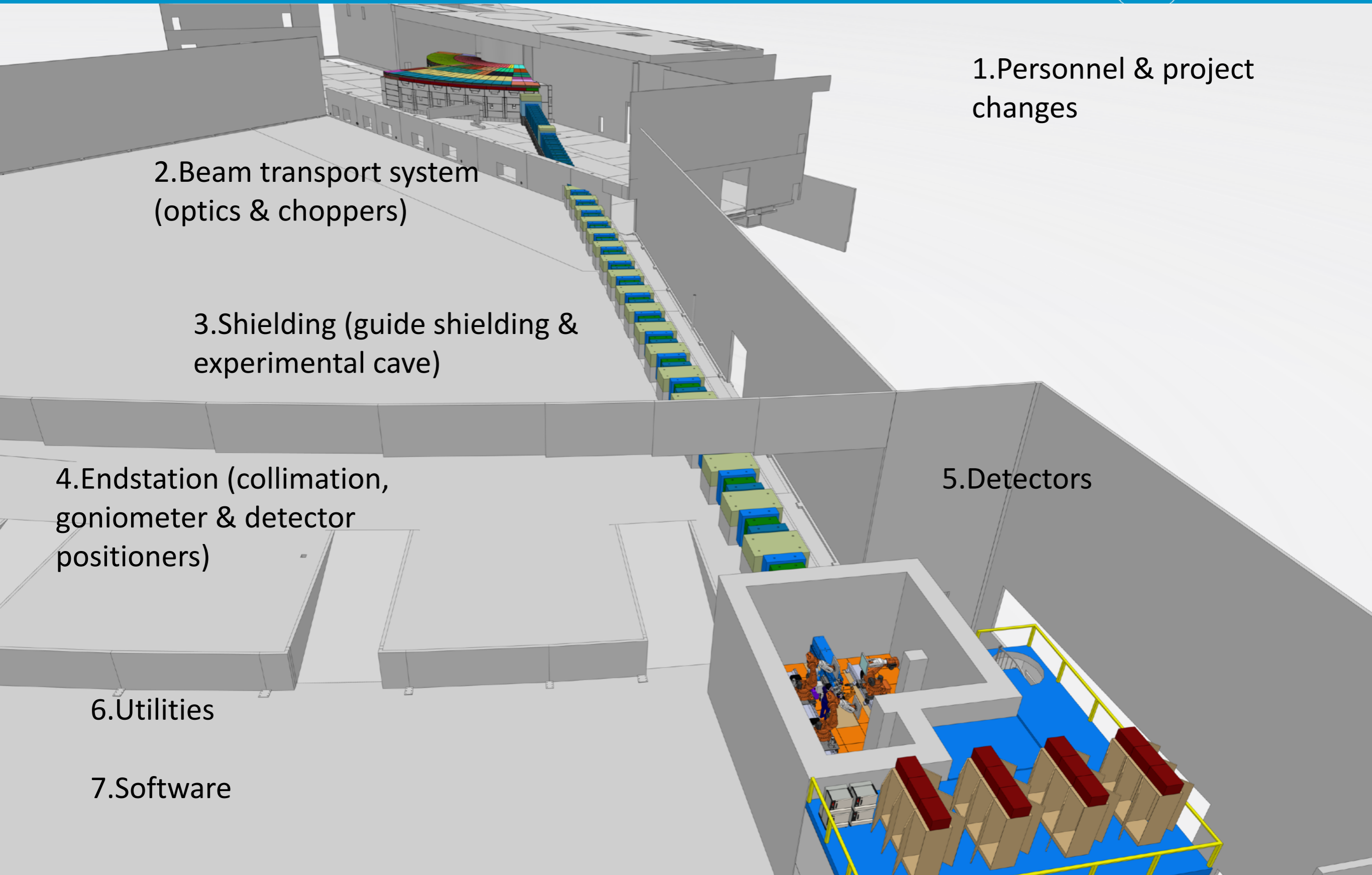
LSS STAP

2024-10-23

Esko Oksanen

Lead Scientist NMX

Outline – project status



1. Personnel & project changes

2. Beam transport system (optics & choppers)

3. Shielding (guide shielding & experimental cave)

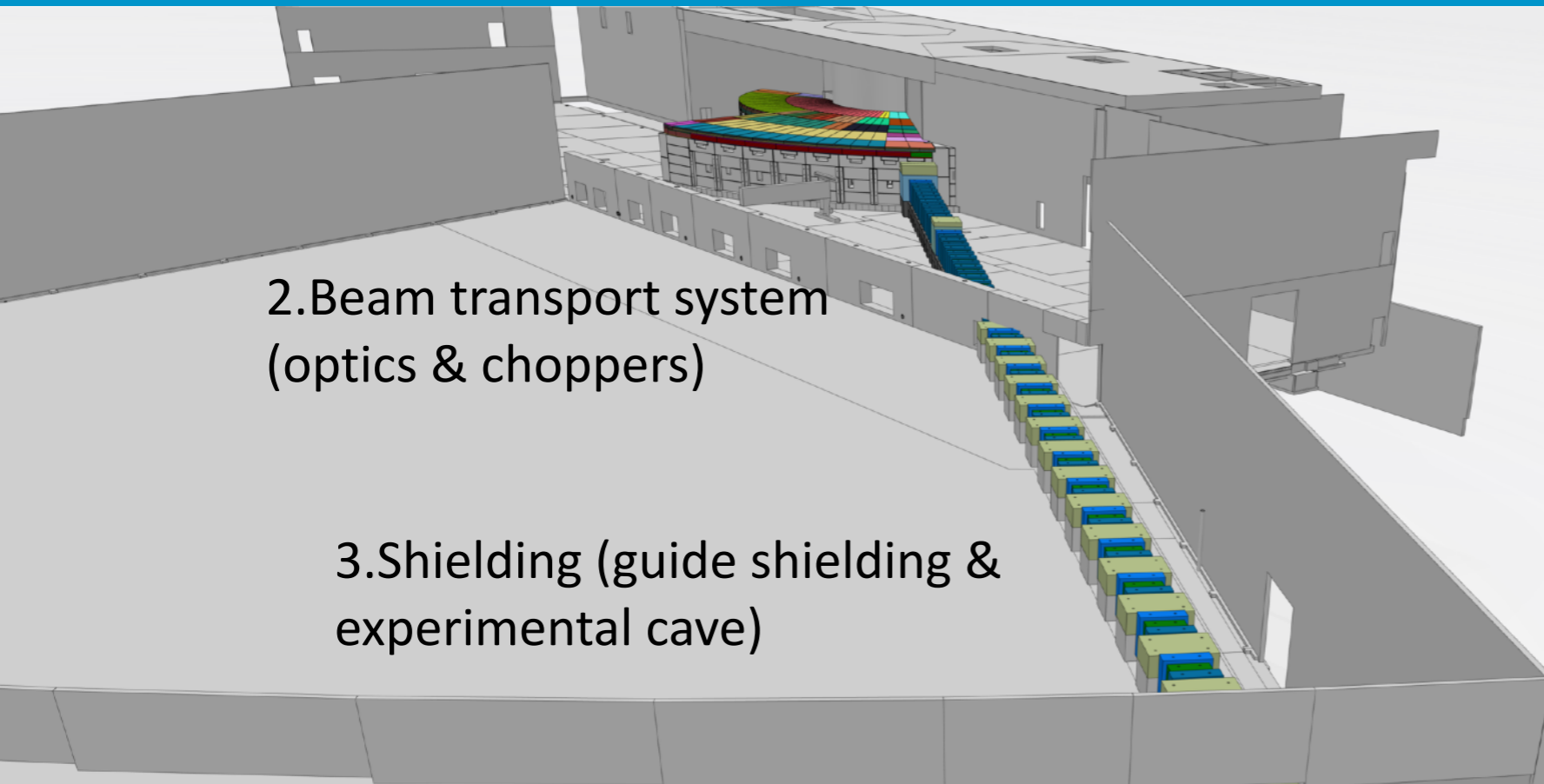
4. Endstation (collimation, goniometer & detector positioners)

5. Detectors

6. Utilities

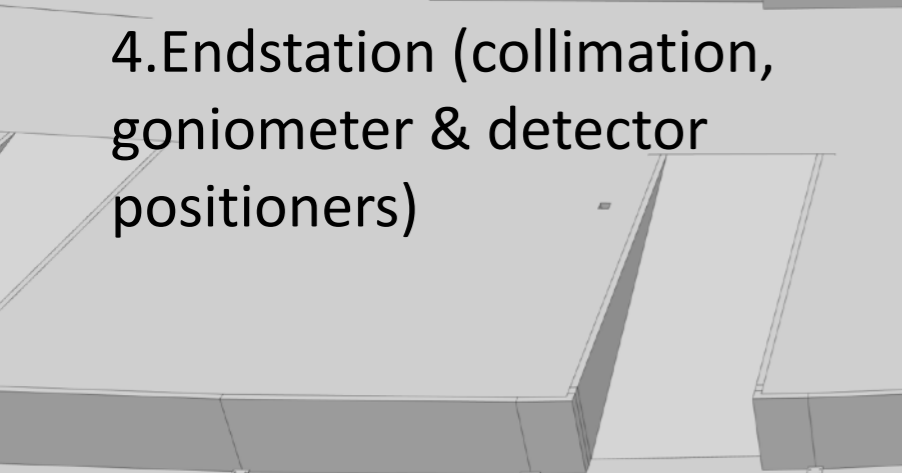
7. Software

Outline – project status



2. Beam transport system
(optics & choppers)

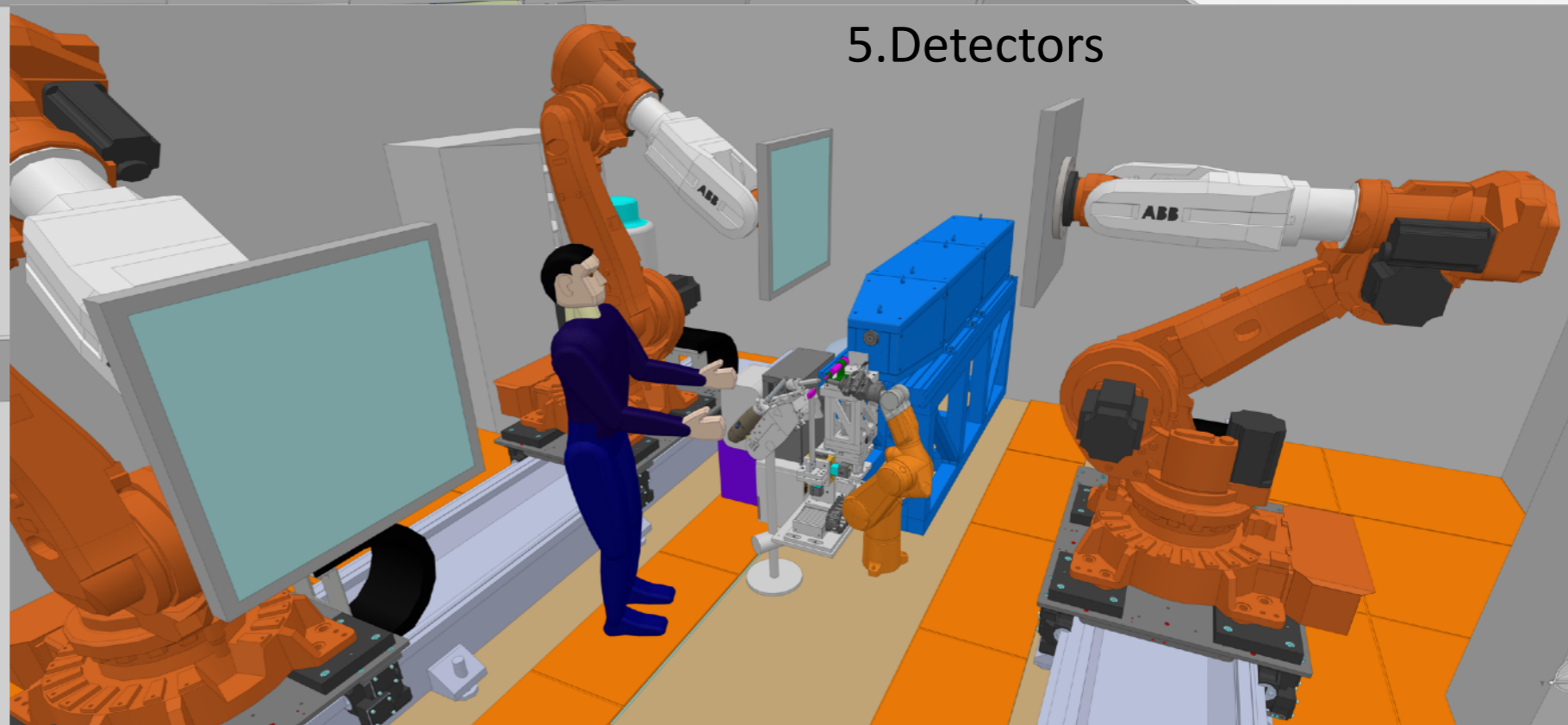
3. Shielding (guide shielding &
experimental cave)



4. Endstation (collimation,
goniometer & detector
positioners)

6. Utilities

7. Software



5. Detectors

Personnel – NMX operations team in place



- Lead Scientist Esko Oksanen (Lund University, Swedish in-kind)
- Justin Bergmann Instrument Scientist (with IOE responsibilities)
- Swati Aggarwal Commissioning Scientist (Lund University, Swedish in-kind)
- Aaron Finke Instrument Data Scientist (DMSC)
- Zoë Fisher (DEMAX) also available to support NMX commissioning



LUND
UNIVERSITY



LUND
UNIVERSITY

Personnel – NMX project team



- Daniel Lundström Lead Instrument Engineer
- Jerome Samarati dedicated to NMX detector in Detector Group
- Laïs Pessine dedicated to NMX in ECDC – MXCuBE & NICOS

Beam transport system – neutron optics

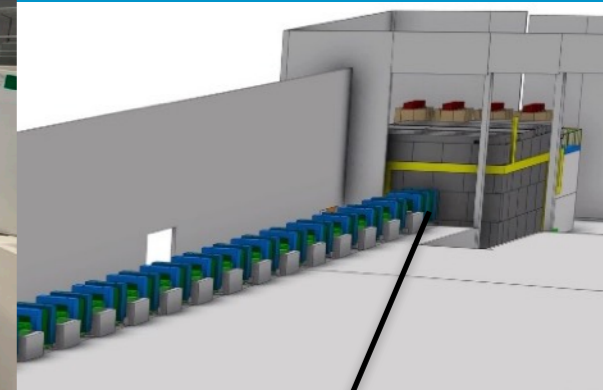


In-kind from Hungary, installed Feb 2024

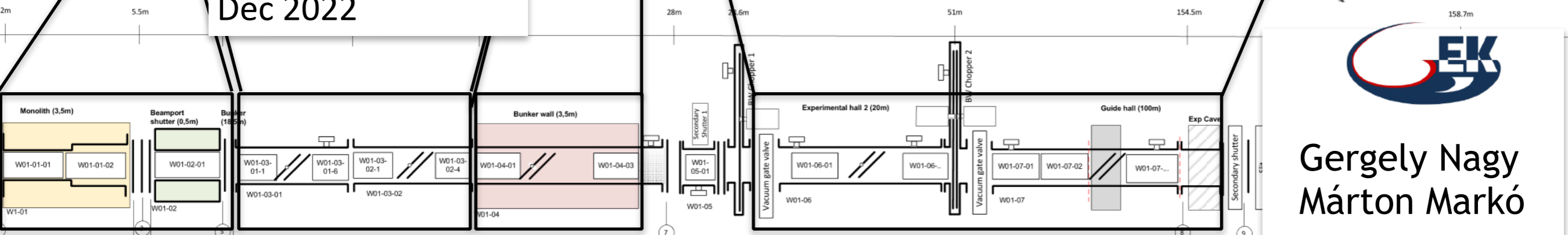


In-kind from Hungary, installed Dec 2022

Installed June 2022



Installed Jun 2023



In-monolith optics

Curved guide in bunker

Bunker wall insert

Straight guide outside bunker

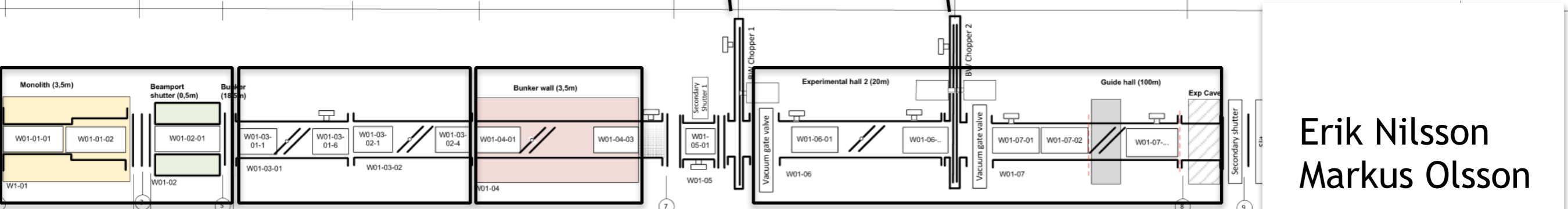
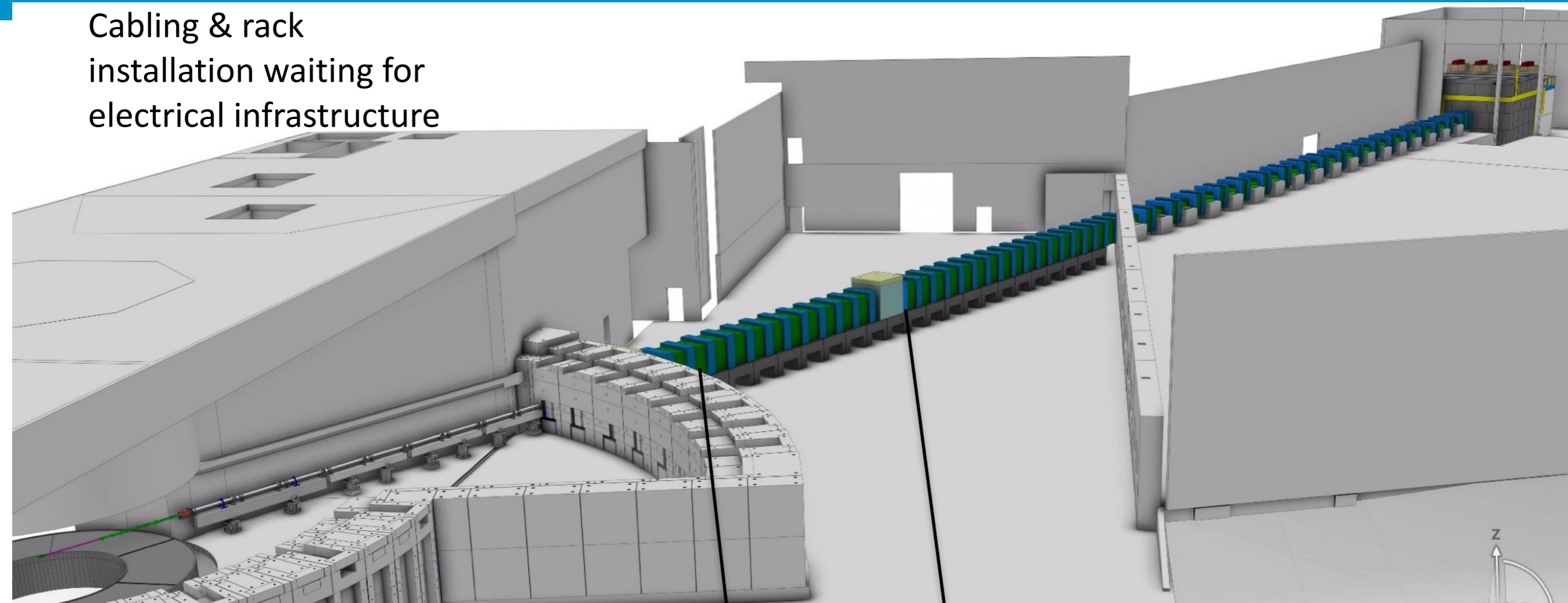


Gergely Nagy
Márton Markó

Beam transport system – choppers

ESS common project,
Installed Apr 2023

Cabling & rack
installation waiting for
electrical infrastructure



Single disc

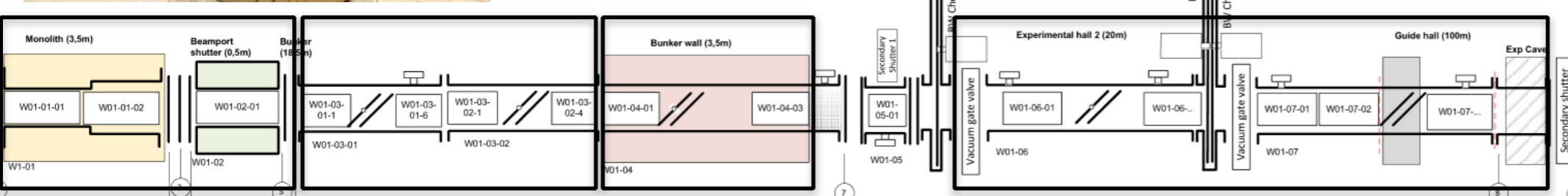
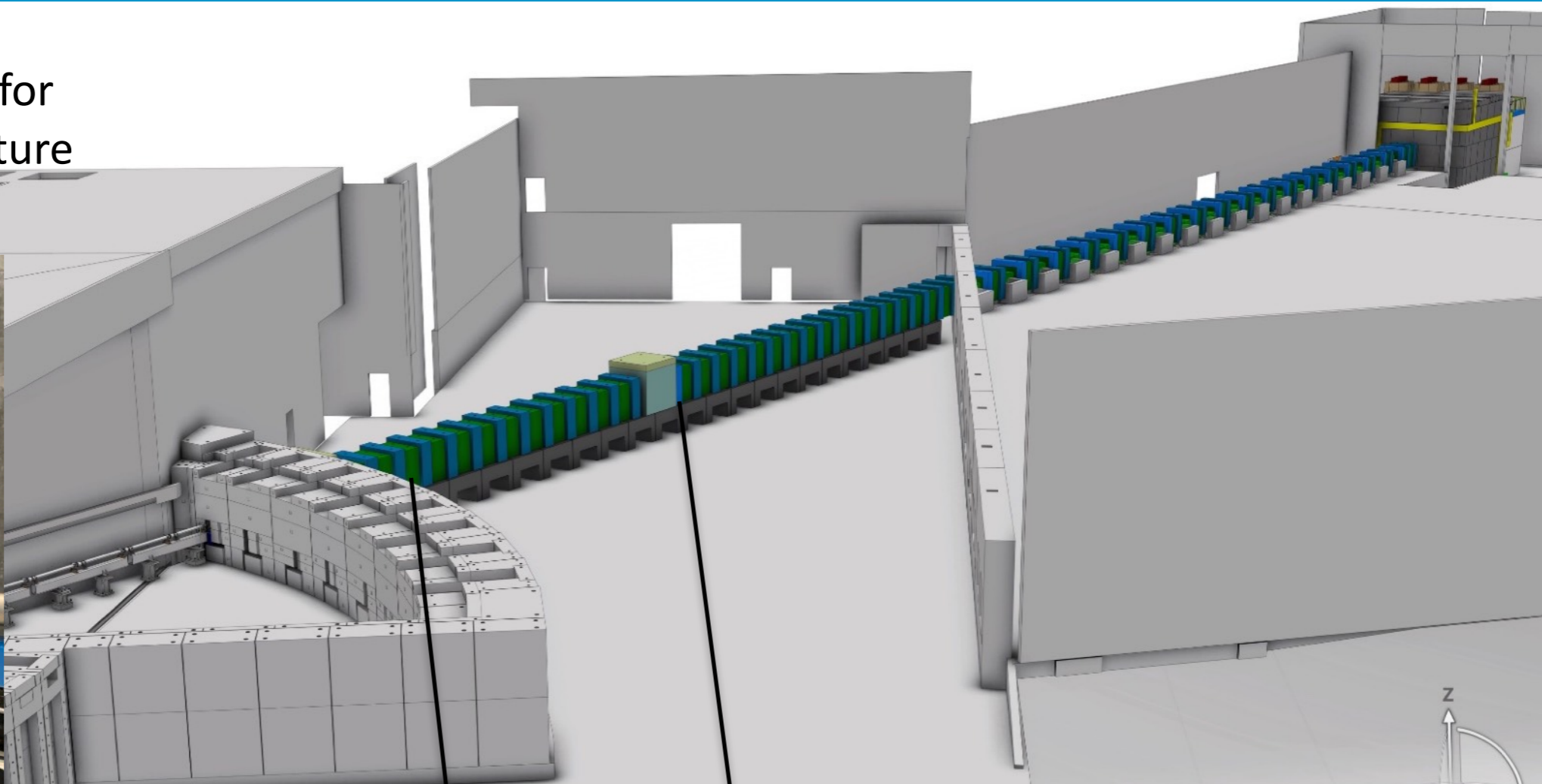
Double disc, co-rotating

Erik Nilsson
Markus Olsson

Beam transport system – choppers

ESS common project,
Installed Apr 2023

Cabling & rack
installation waiting for
electrical infrastructure



Instrument shutter in place
(Sep 2024)

Single disc

Double disc, co-rotating

Erik Nilsson
Markus Olsson

Shielding

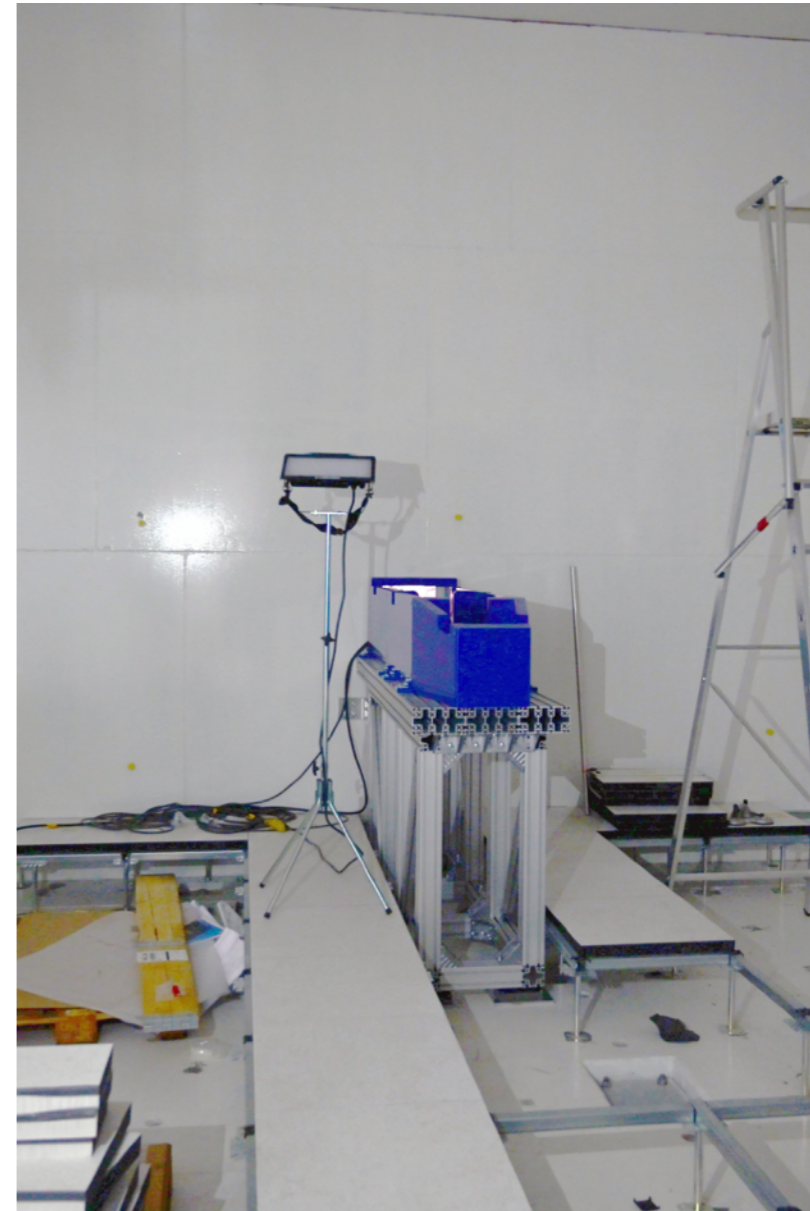
- Experimental cave completed and accepted
- Common shielding project delivers guide shielding – neutronics simulations were performed in Hungary
- Guide shielding delivered and installed – chopper pits left open for cable installation






Szabina Török
Gabor Nafradi
Tamás Bozsó

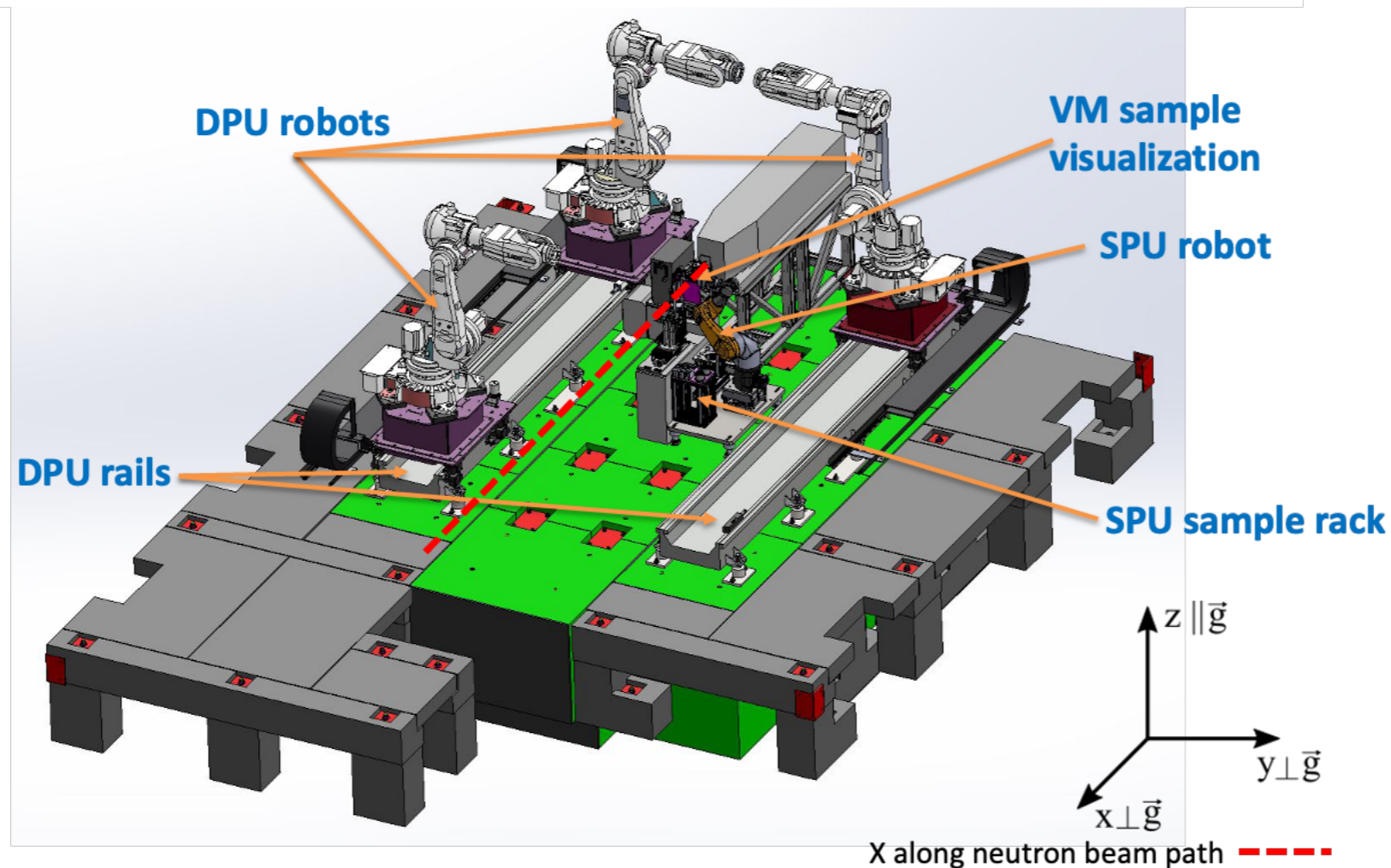
Endstation – Collimation system

- Slits delivered and tested
- Collimation box installed
- Pinhole exchanger prototype built and integrated with the ARINAX system
- Installation after robot installation



Endstation – Robotics

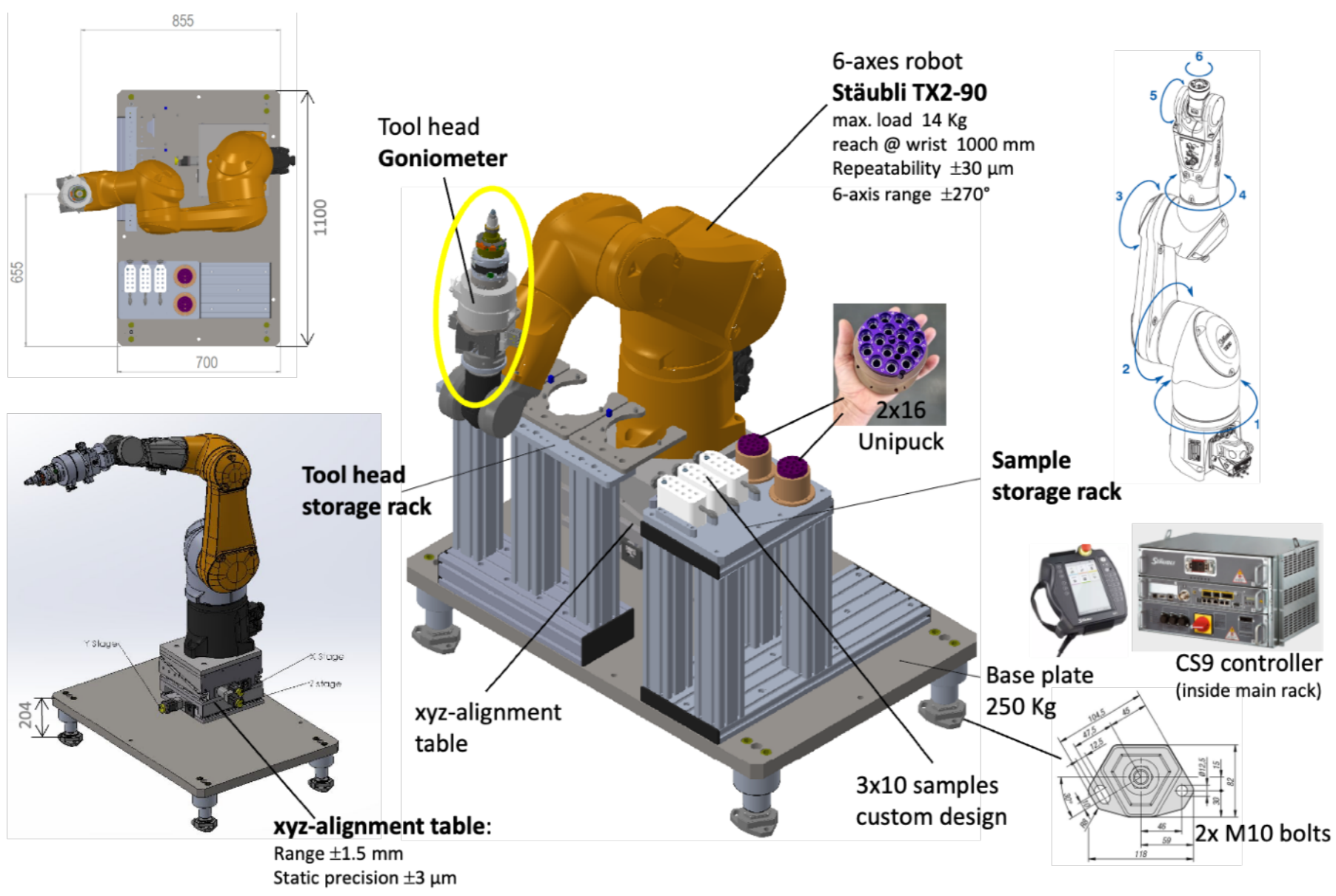
-  **SPU:** Sample Positioning Unit → 1 robot mounted on a fixed base plate
-  **DPU:** Detector Positioning Unit → 3 robots mounted on 2 linear rails
-  **VM:** Video Microscope for sample visualization & alignment



Delivered by ARINAX, FAT 25th-28th
 Nov 2024, Installation Jan 2025

20 μm cylinder of confusion ensured with an
 extra axis (Heidenhain ceramic bearing)

Endstation – Robotics



Delivered by ARINAX, FAT 25th-28th
 Nov 2024, Installation Jan 2025

20 μm cylinder of confusion ensured with an
 extra axis (Heidenhain ceramic bearing)

Endstation – Robotics

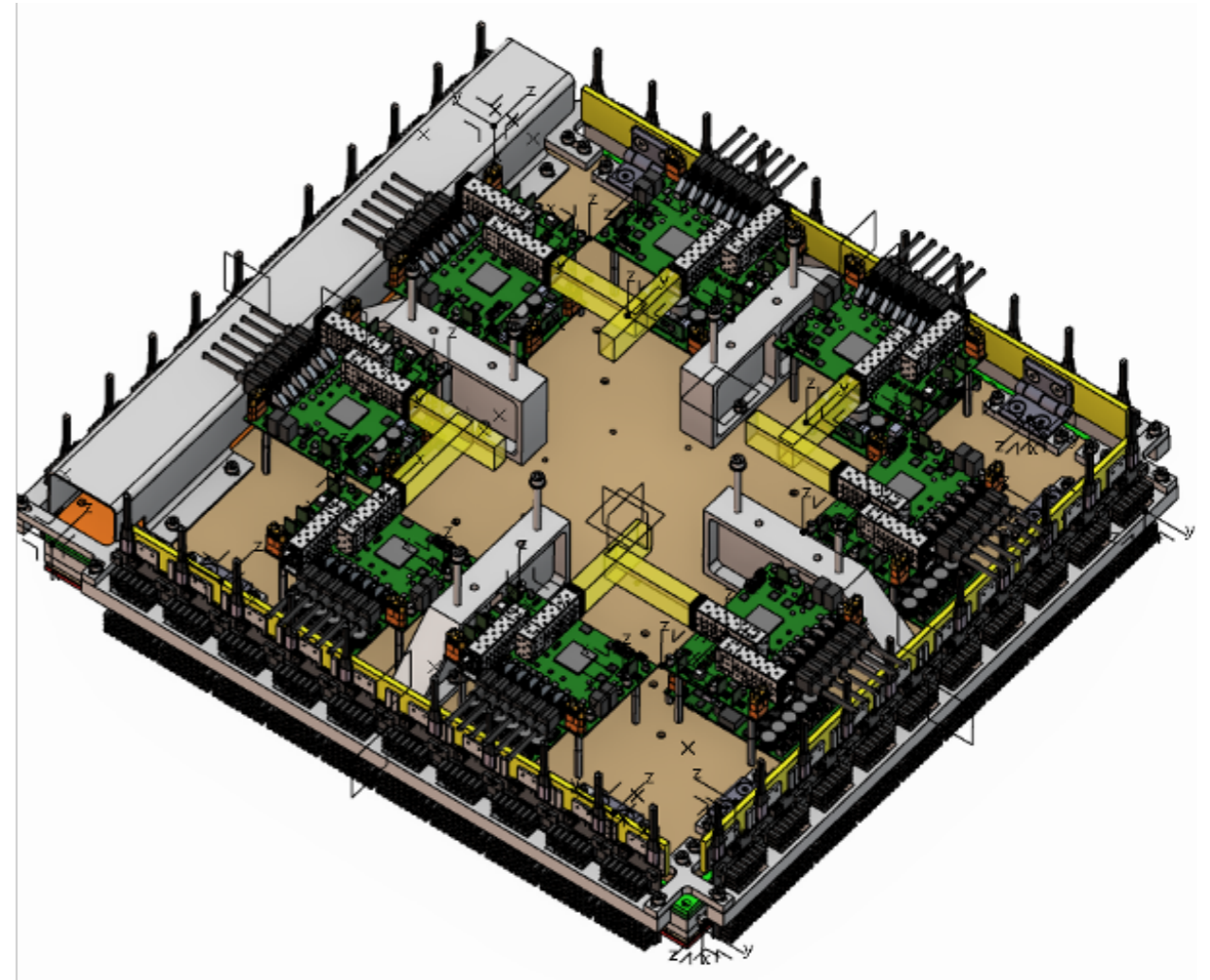


Delivered by ARINAX, FAT 25th-28th
Nov 2024, Installation Jan 2025

20 μm cylinder of confusion ensured with an
extra axis (Heidenhain ceramic bearing)

Detectors

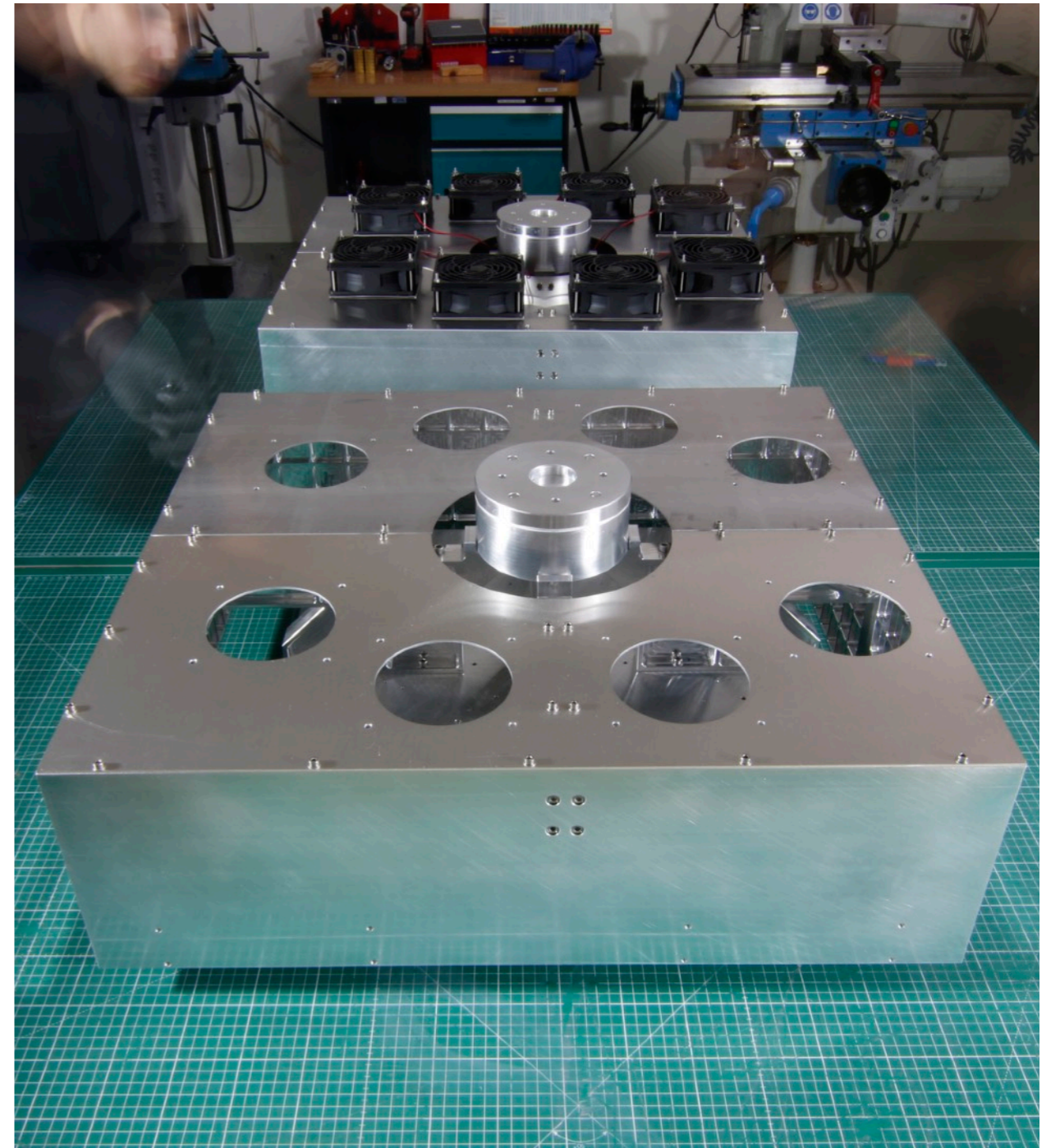
- Module 0 (Day 1 scope) detector available in Lund Dec 2024
- Scope transferred to detector group, delivery of Module 1-3 expected 2025
- All will have readout (mini-assister) in the box -> only fibre from detector to rack
- Grounding in protective box established



Jerome Samarati
Dorothea Pfeiffer

Detectors

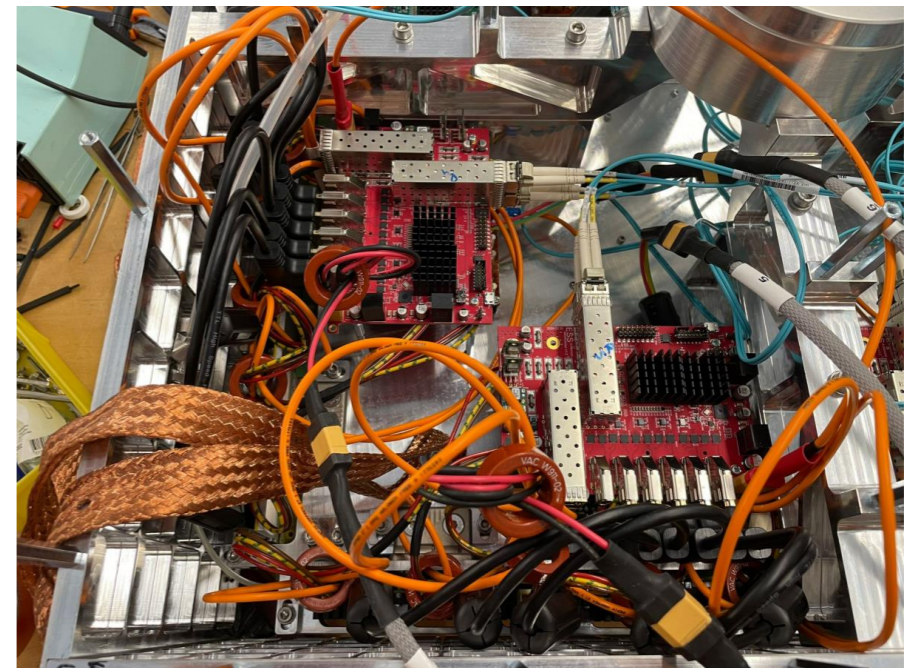
- Module 0 (Day 1 scope) detector available in Lund Dec 2024
- Scope transferred to detector group, delivery of Module 1-3 expected 2025
- All will have readout (mini-assister) in the box -> only fibre from detector to rack
- Grounding in protective box established



Jerome Samarati
Dorothea Pfeiffer

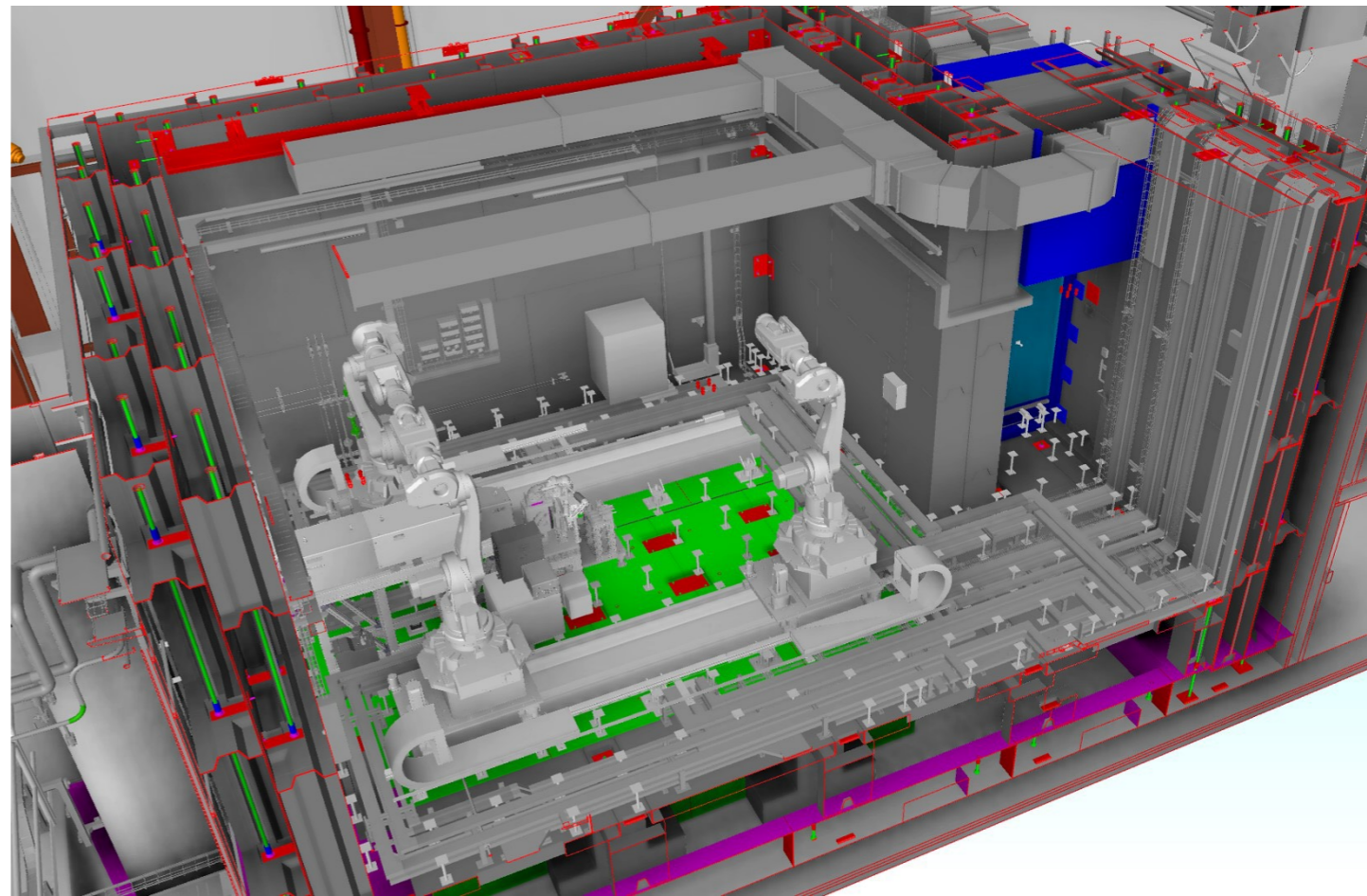
Detectors

- Module 0 (Day 1 scope) detector available in Lund Dec 2024
- Scope transferred to detector group, delivery of Module 1-3 expected 2025
- All will have readout (mini-assister) in the box -> only fibre from detector to rack
- Grounding in protective box established

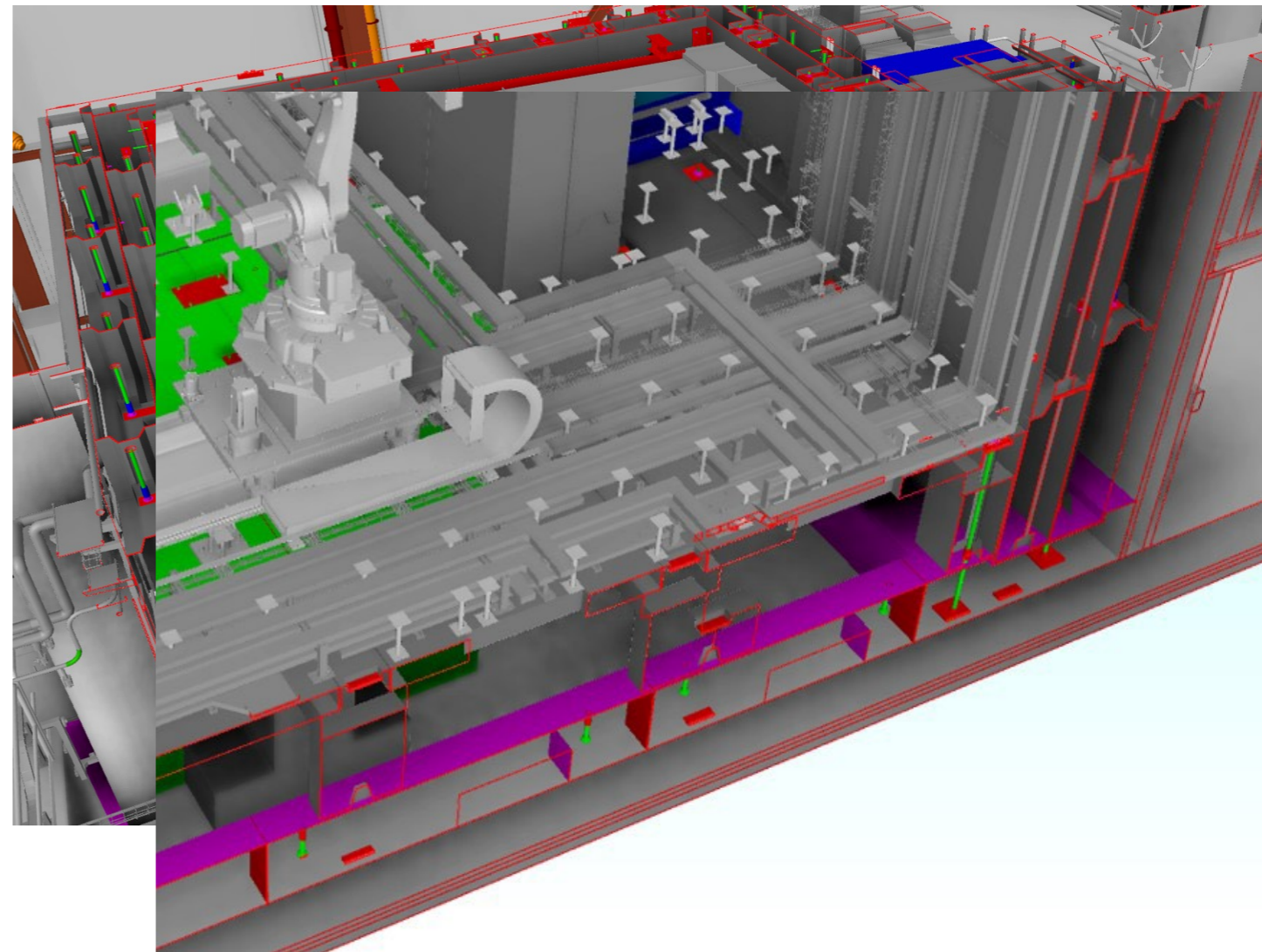


Electrical & Utilities

- NMX electrical and utilities will be provided by ESS Common Electrical & Common Utilities Projects
- Installation start Sep 2024, finish Dec 2024



- NMX electrical and utilities will be provided by ESS Common Electrical & Common Utilities Projects
- Installation start Sep 2024, finish Dec 2024



- Data processing pipeline with DIALS tested with simulated data
- Issues in integration likely depend on the shortcomings of the simulated data
- PyScale (a new implementation of LSCALE) reproduces LSCALE results
- We have started looking at data collection strategy software (CrystalPlan)

Questions?

esko.oksanen@ess.eu