

Heimdal Instrument Diffraction STAP Meeting

Dan Mannix

Lead Scientist Heimdal Instrument ESS, Lund Sweden

ESS - April 2024

Heimdal Team



Isabel Llamas Scientist (IFE)
Choppers & Neutronics



Dan Mannix (ESS)
Lead Scientist



Kåre Iversen (AU)
Lead Engineer



Bengt Jönsson (ESS)
Engineer 2023



Bjørn Hauback
In-kind Partner IFE



P.I. Mogens Christensen
In-Kind Partner AU



Autur Glavic
In-kind Partner PSI

Bengt
Full time @ ESS
Start March 23-25

Need for more and
continued engineering

Heimdal: Tranche-3 Instrument

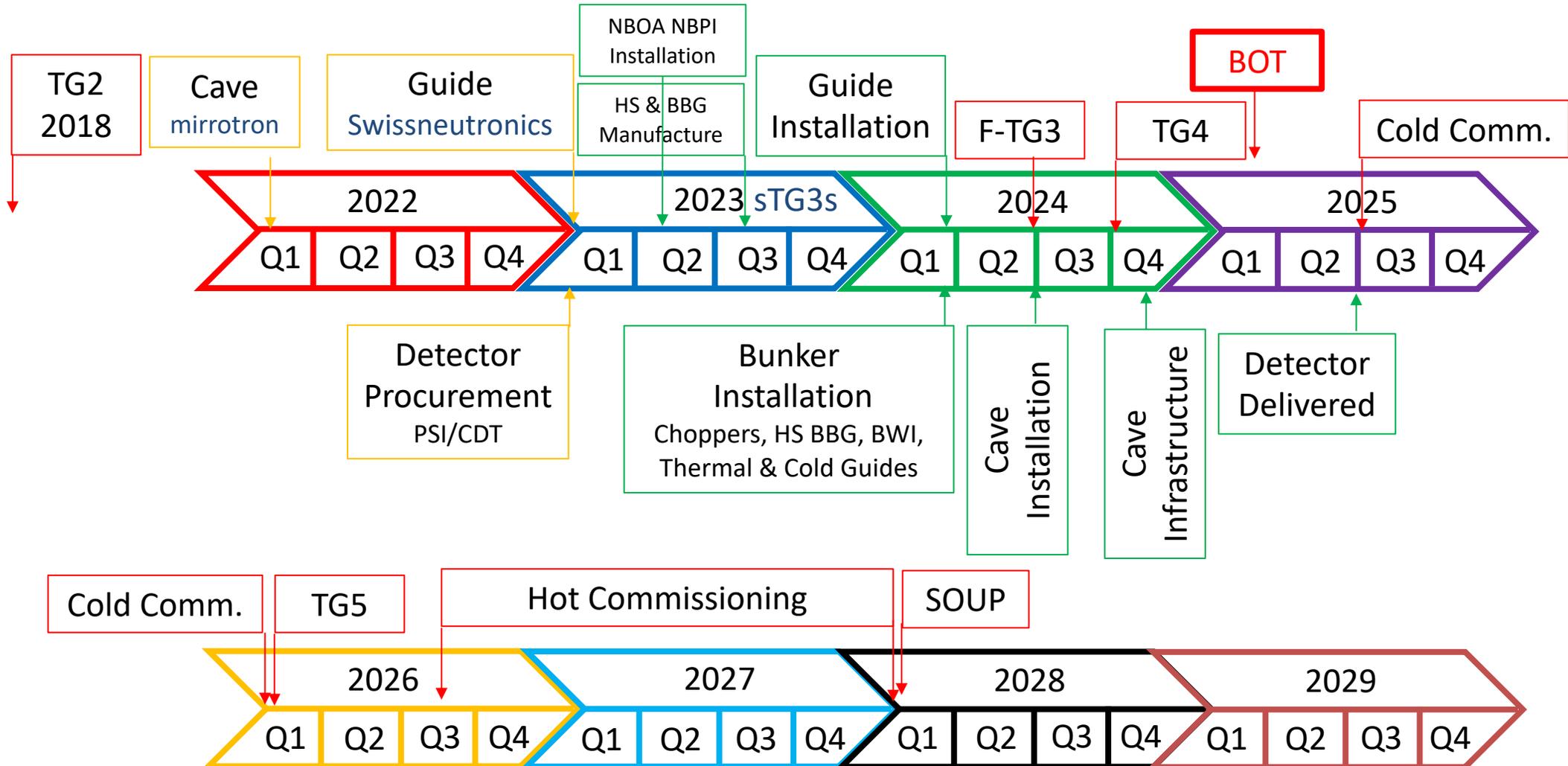


T3 Challenges:

1. Long exposure to rising material costs
-> Effectively less spending power
e.g. 2D detector, CUP/CEP, Shielding c.f. Dream
2. Higher expenditure for Salaries: TG2 -> TG5
challenge for University partners to support this.
3. Lower priority to resources: DMSC, CUP/CEP, Choppers, Shielding, Monitors, Motion control, 2D detector, Neutronics,
Higher risks of delays – knock-on effects of previous delays.
Risk of resources being completely used by other instruments
4. Long term commitment from in-kind partners:
Aarhus University: No Science output for +10 years
IFE is no longer a neutron laboratory !

Tranche-3 Instrument Reschedules

In progress: Final TG3 -> Q2 2025



Heimdal RISK Register

Top 5 Risks				
Title	Rating	Category	Partner	Treatment
RISK to Cave project: Delay	15	Schedule	ESS	Observe
RISKS to Cave project: Costs	10	Cost	IFE	Reduce

Main RISK with cave
ESS having issues with Mirrotron civil engineering projects

Termination of contract under consideration.
Would require a new tender procedure for cave.
Under discussion

Bunker Wall Insert Installation



Optics and Casing
Swissneutronics

Delivered to ESS

Installation April 2024

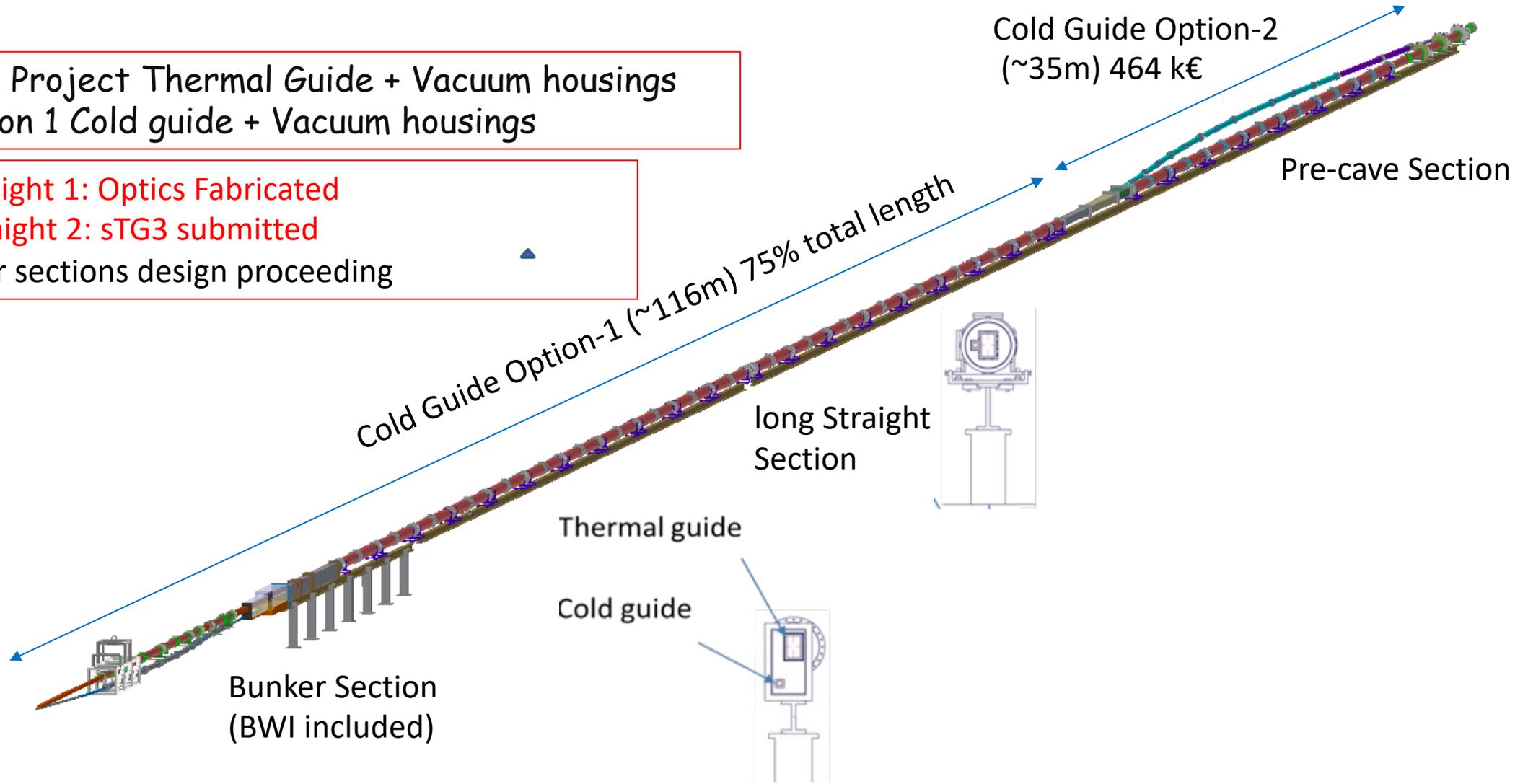
NBOA installed in 2023

Heimdal Guide (PSI) Project

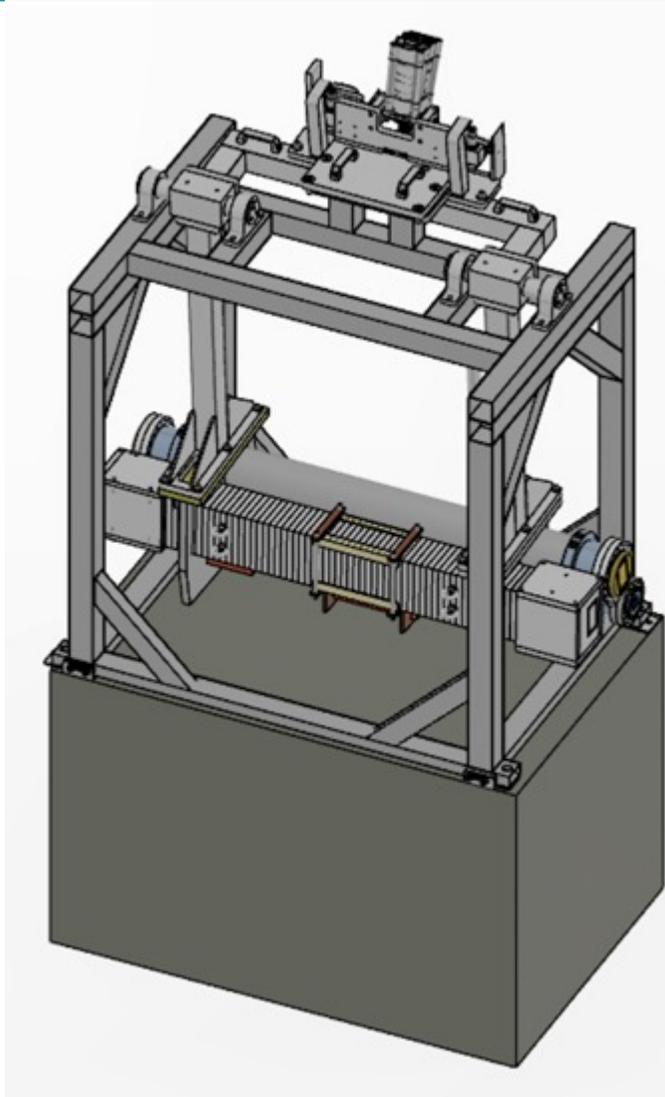
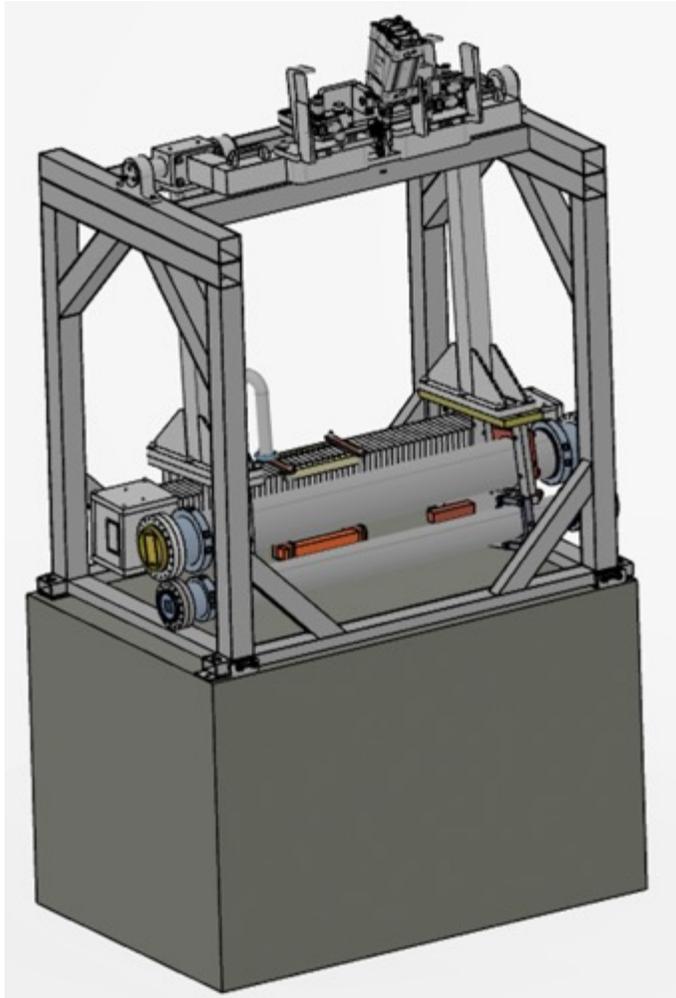
Progressing well with Swiss Neutronics

- (1) Base Project Thermal Guide + Vacuum housings
- (2) Option 1 Cold guide + Vacuum housings

Long straight 1: Optics Fabricated
Long Straight 2: sTG3 submitted
In bunker sections design proceeding



Heavy Shutter



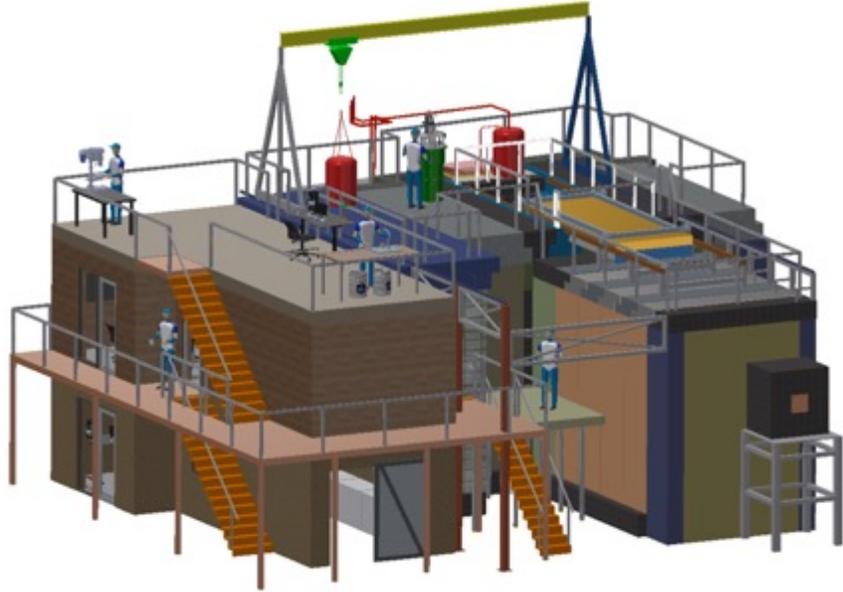
Common “TBL” design:
Scope transfer AU to ESS ?

Detailed design ESS / swiss neutronics

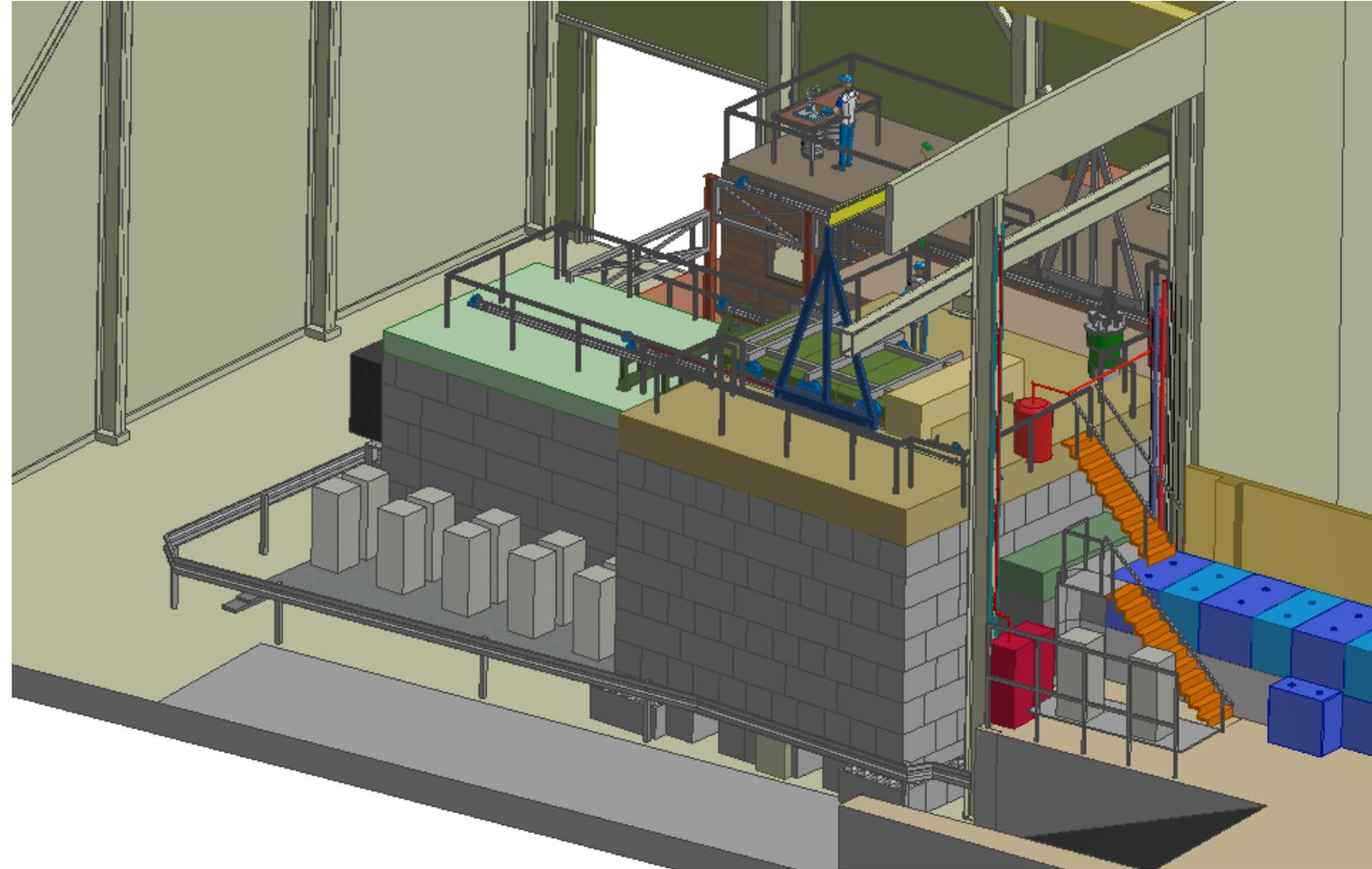
Shutter Neutronics for thermal and
cold guides (completed).

Manufacture in progress





Modular system:
SANS back-wall demountable
Possibility to extend SANS cave:
Current: 8m SANS
Upgrade: 10-12m+ SANS



Cave Shielding : Mirrotron

Move cave & sample position 1m downstream

158m sample position moved from 157m:

Approved by NSS.

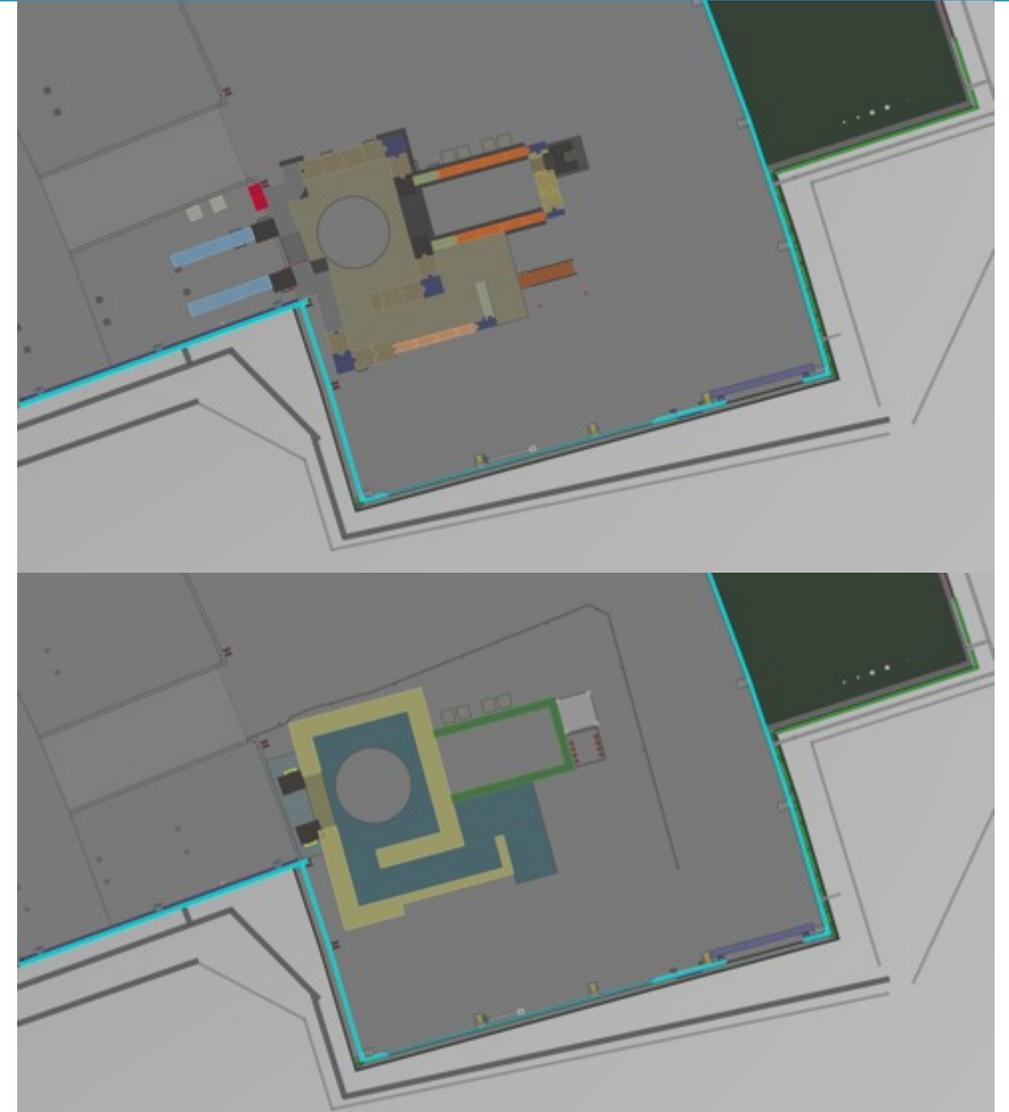
Checked Choppers and McSTAS all ok.

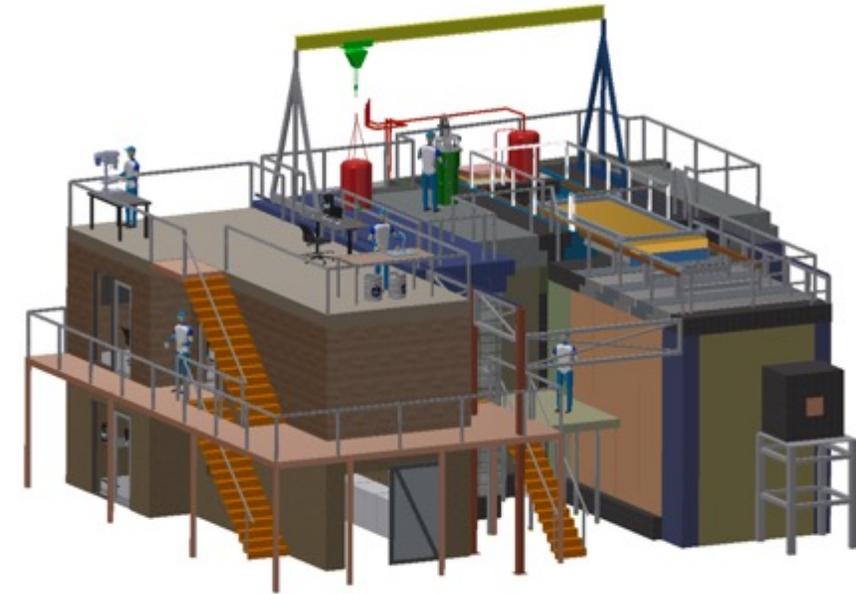
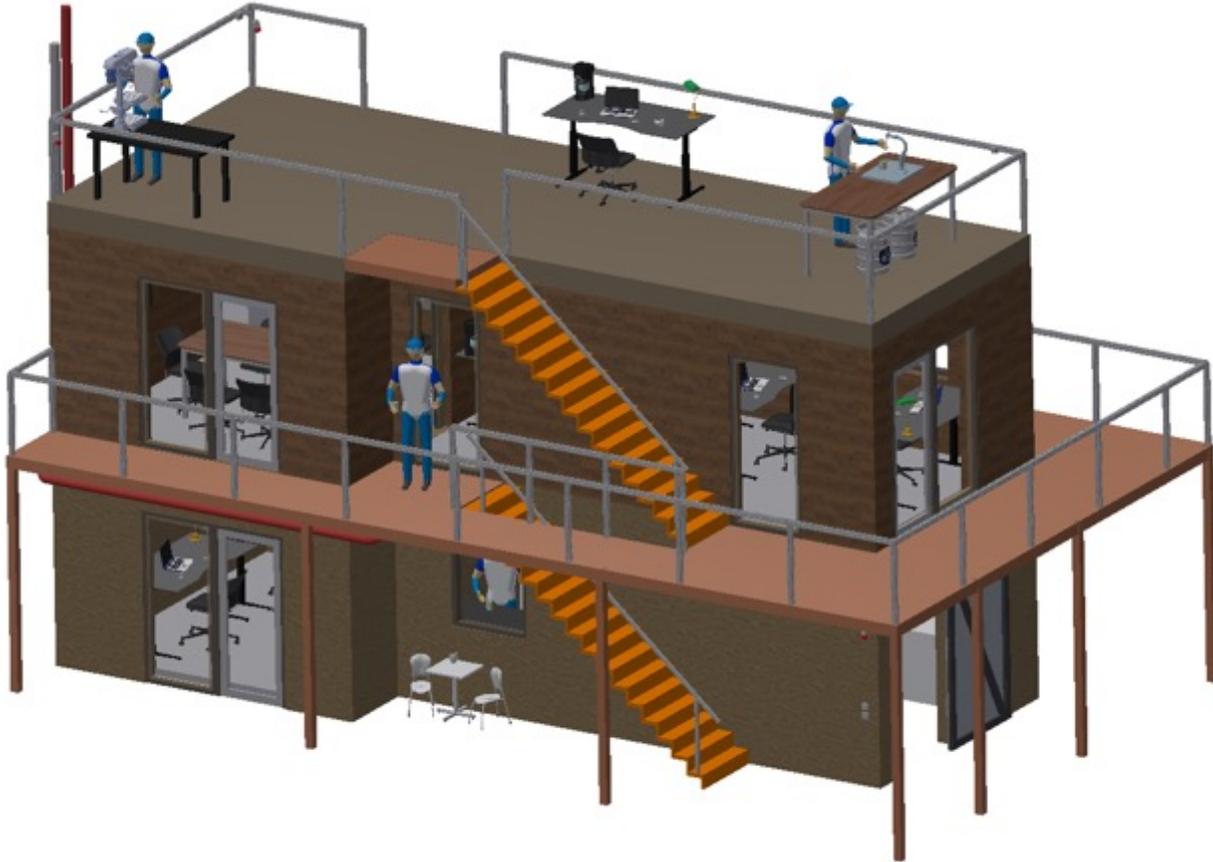
Building inspections possible

Better spread of floor load at front of cave

Cave project has issues.

Possibility for new tender -> More expensive

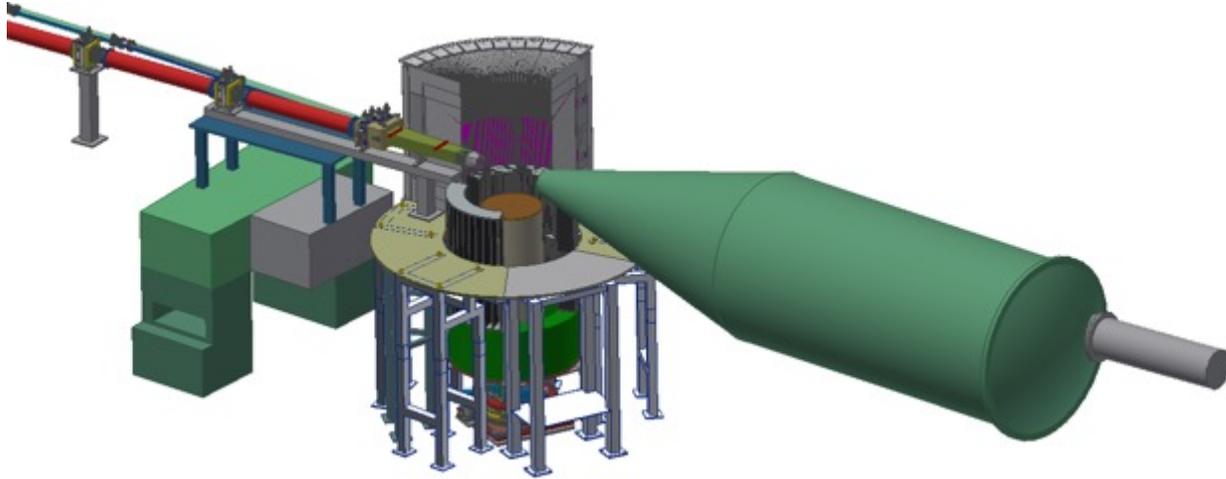




ESS – Facility Management
On Hold
Awaiting cave.

Could be part of new tender

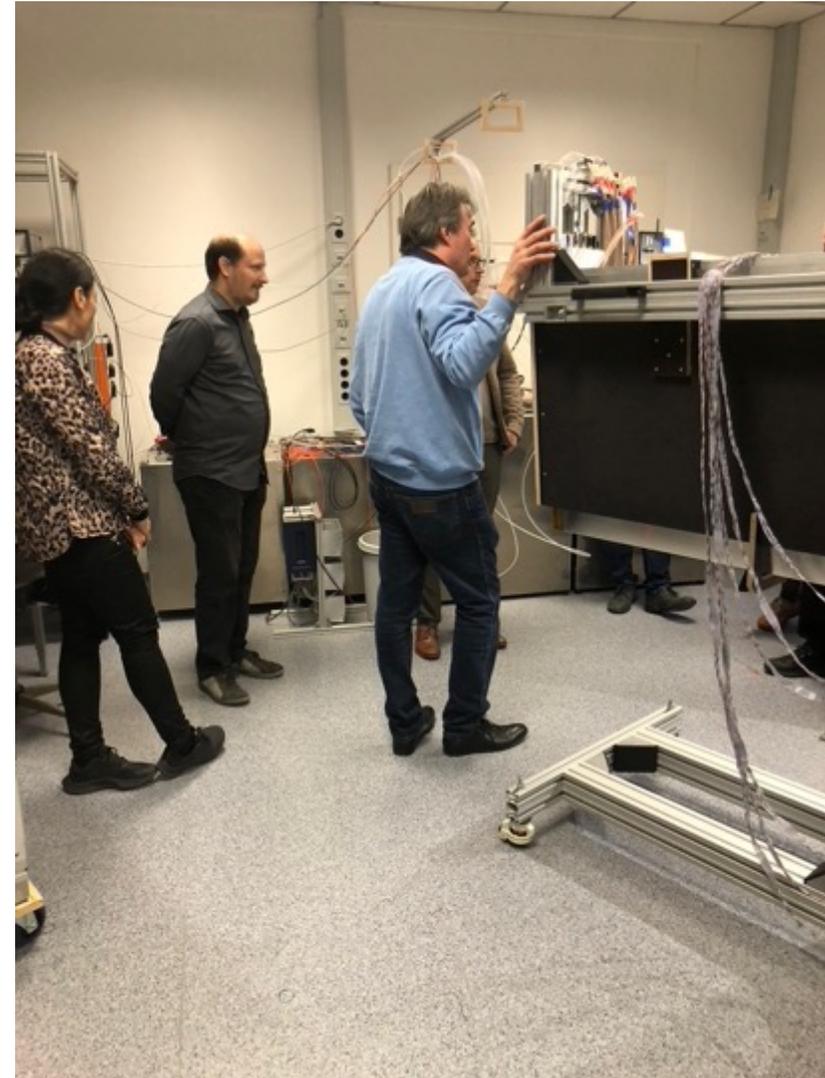
2D Detector: Kickoff March 2024



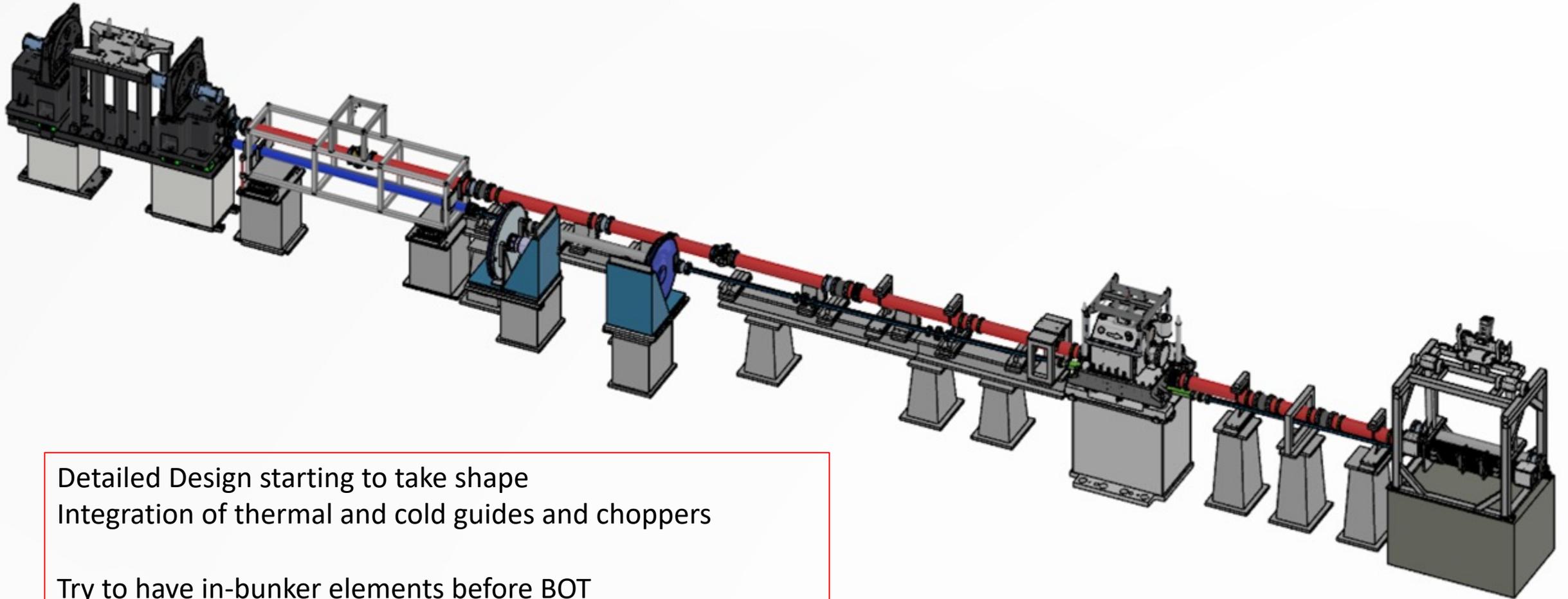
2D detector: Only offer from CDT

CDT Kick-off March 2024

Delivered to ESS March 2026



In-Bunker Overview



Detailed Design starting to take shape
Integration of thermal and cold guides and choppers

Try to have in-bunker elements before BOT
In not they will be stored at ESS for next bunker open slot.

Summary / Main points



Major items now contracted: Guide shielding (ESS), Choppers (ESS), Cave (Mirrotron), Guides (swissneutronics), 2D detector (CDT) - Costed & within budget and spec.

New rescheduling for Tranche-3 instruments: Final TG3 Q2-2025

Bunker Wall Insert Delivered and Installed

2D detector kick-off with CDT Started March 2024

Guide system progressing well with Swissneutronics:

Long straight-1 optics fabricated

Long straight-2 approved for manufacture

In-bunker design in-progress

Main Issues for Heimdal

(1) Engineering resources to complete project timeline

(2) Cave project with Mirrotron.