



# System Acceptance & Instrument Safety Readiness Reviews for Estia

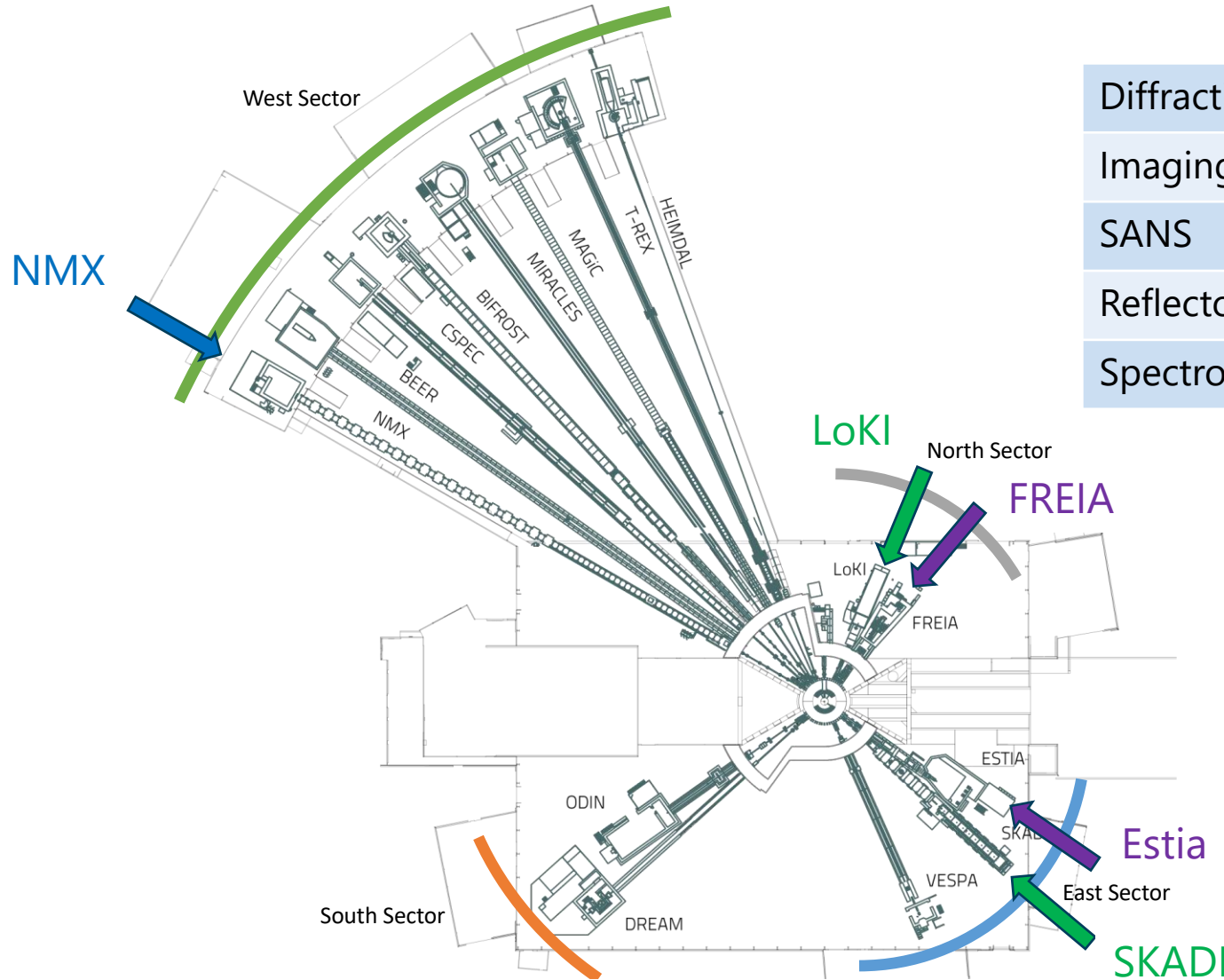
Andrew Jackson

JUNE 17<sup>TH</sup> 2026

# Large Scale Structures Instruments



Small Angle Neutron Scattering, Neutron Reflectometry & Neutron Macromolecular Crystallography

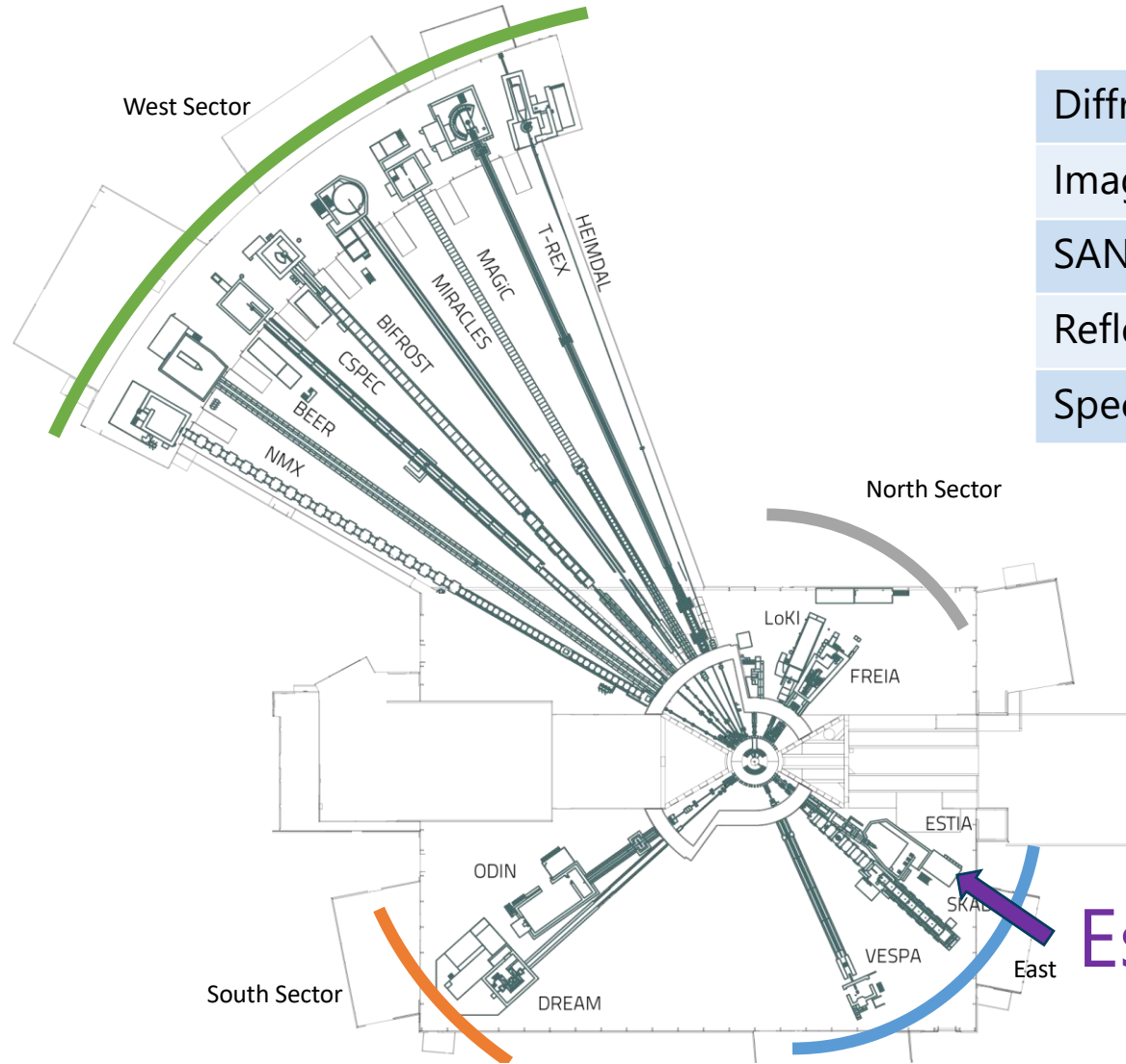


Diffraction	DREAM, HEIMDAL, BEER, MAGiC, NMX
Imaging	ODIN, TBL
SANS	LoKI, SKADI
Reflectometry	Estia, FREIA
Spectroscopy	BIFROST, CSPEC, T-REX, MIRACLES, VESPA


<span style="color: green;">█</span>	SANS
<span style="color: purple;">█</span>	Reflectometry
<span style="color: blue;">█</span>	Macromolecular Crystallography

# Estia

## Neutron Reflectometry



Diffraction	DREAM, HEIMDAL, BEER, MAGiC, NMX
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SANS	LoKI, SKADI
Reflectometry	Estia, FREIA
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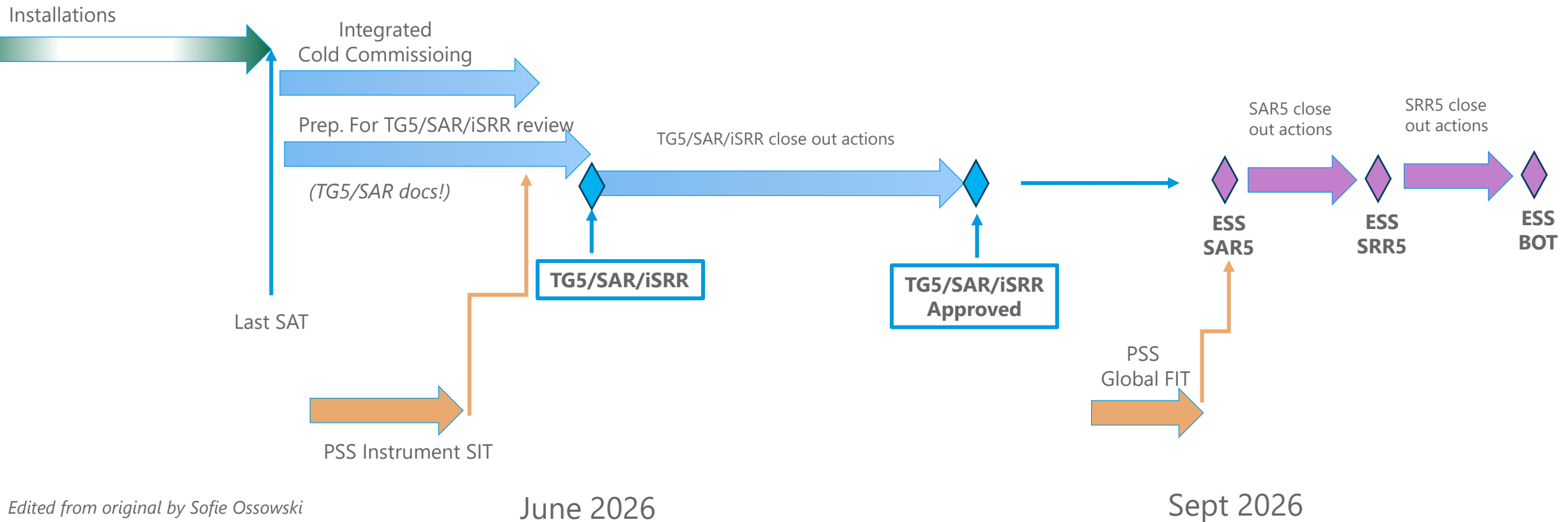
	SANS
	Reflectometry
	Macromolecular Crystallography

Estia

# Two reviews in one day



- **System Acceptance Review (SAR):** Are all components installed properly?  
Is the instrument ready for Hot Commissioning?
- **Instrument Safety Readiness Review (iSRR):** Safety of operations & readiness of team



# Basic pillars for iSRR



System of interest

Short summary of Estia based on the previous SAR



Hazard identification

### Comprehensive Radiation Safety Assessment

- ESS-5692487 only a template
- ESS-5693466, Ch. 6
- ESS-2972939 rev 14 section 5.2 & 6.2

### Estia Instrument Hazard Analysis (conventional and radiological)

### Estia Area Risk Assessment

### Estia Task Risk Assessments



Implemented safety measures

### Safety measures (Engineered)

- Shielding
- Personnel Safety System
- REMS
- Fire protection
- ATEX zones for explosive atmospheres
- Controlled ventilation
- Safety valves for pressurised equipment
- ODH detection
- Etc.

Shielding & Activation

### Safety measures (Administrative)

- Roles & Responsibilities
- Training
- Operation & Safety procedures
- Etc.

### Roles (some examples)

- MCR Shift leader / Operator
- Beam Commissioning Coordinator
- Instrument team
- Occupational Health & Safety
- Radiation Protection
- Electrical Operation Leader, ESL, etc

### In addition

- System specific commissioning plan
- Verification *reports* **without** beam (instrument cold commissioning)
- Verification *plans* **with** beam (instrument hot commissioning) together with specifications of which 'safety requirements' that are / will be verified.

### Procedures (some examples)

- ESS Local rules for safety
- Procedure for work orders
- Rules for interlocks
- Emergency procedures
- Establishment of Safe State

- Radiation Protection = protecting people from radiation
- Radiation Safety = controlling the source of radiation

# Charge for SAR



1. Validate that all system components, as defined by the Instrument FBS, are present and installed. This ensures that all project scopes have been delivered.
2. Validate that all system documentation has been delivered and is in CHESS.
3. Validate that all technical documentation has been delivered, stored in CHESS, and is appropriately linked to the FBS structure.
4. Review the integrated cold commissioning report and ensure that it represents a sufficient test of the instrument systems, showing that all requirements that are testable during cold commissioning have been addressed.
5. Confirm that the performed testing has verified performance against the requirements that are testable during the cold commissioning.
6. Review the operating processes of the instrument and Hot Commissioning plan.
7. Review the list of non-conformities and their actual or proposed resolution and determine if they are appropriate.
8. Prepare a review report

# Charge for iSRR



1. Are the safety systems of the instrument installed and operational?
2. Are the safety systems of the instrument adequately documented?
3. Is all the shielding on the instrument installed and correctly configured?
4. Are the safety systems of the instrument ready for hot commissioning and operations?
5. Are the necessary operations procedures in place?
6. Complete iSRR/SAR report

# Remarks



1. It is the third combined SAR & iSRR meeting
2. The first combined one for LSS and my first as chair
3. One report with with SAR & iSRR findings
4. Helpful pre-SAR meetings before with technical groups
5. Lessons learned from previous reviews were considered
6. Welcome our on-kind partners, as presenters

# Rules

1. Only reviewers & observers are allowed to ask questions during the meeting
2. Mute yourself on Zoom
3. All others are welcome to ask questions during coffee breaks/lunch
4. Any feedback is welcome after the meeting