

FAIRness – 24 September 2024

FAIR Project Status

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Finland



France



Germany



India



Poland



Romania



Russia



Slovenia



Sweden



United Kingdom

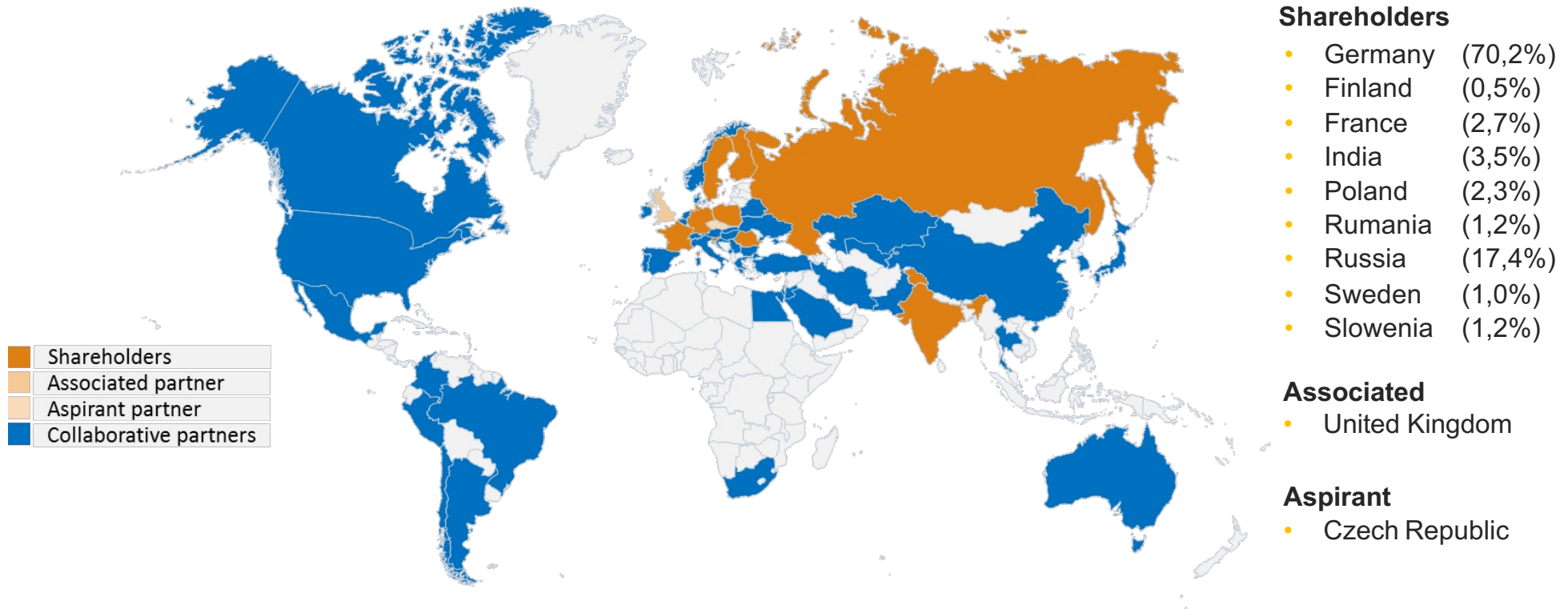


Czech Republic



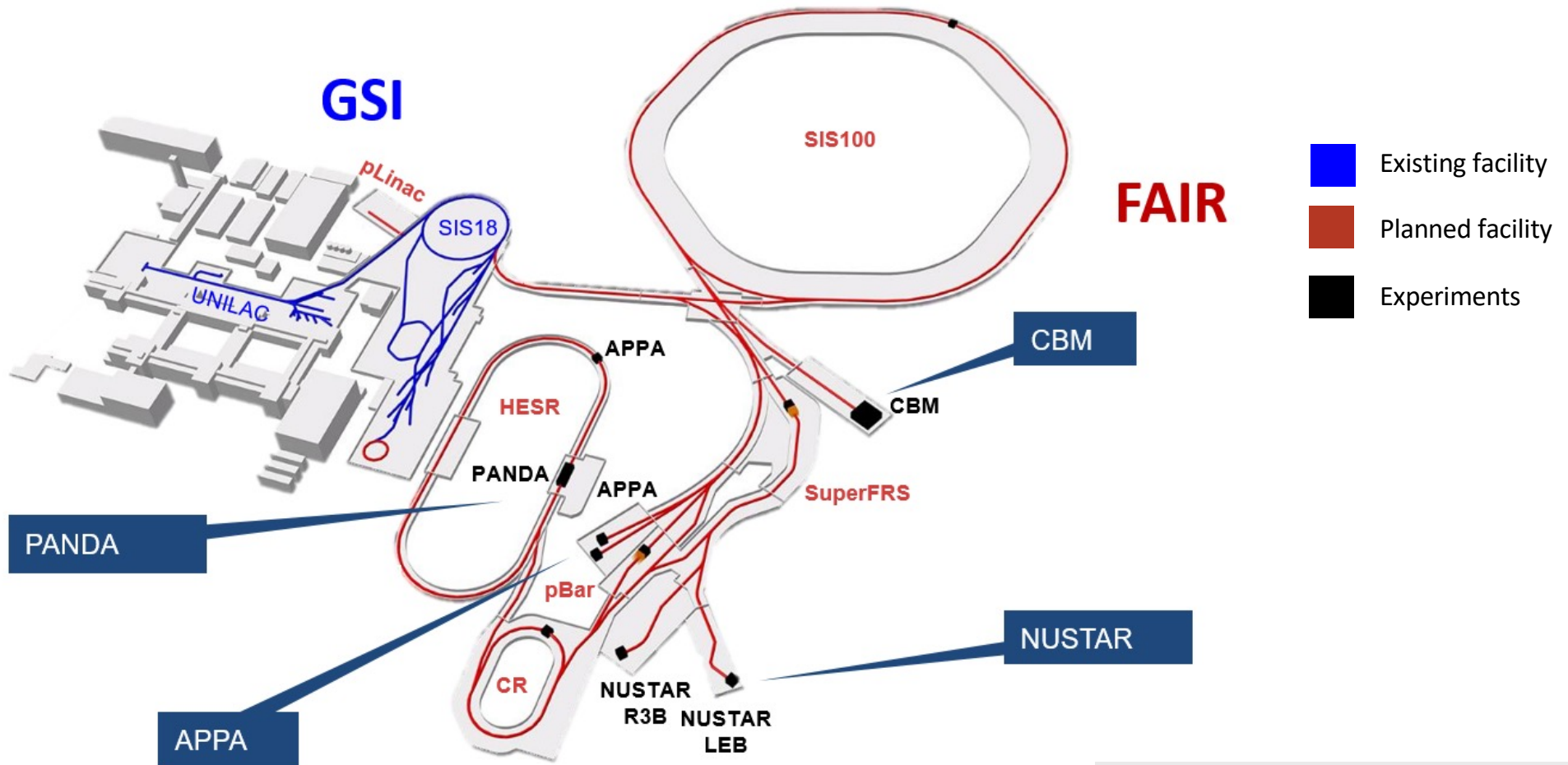
FAIR Project

International co-operation & world-wide project



Unique particle accelerator facility for research with antiprotons and ions worldwide
Realization and operation in international cooperation
Collaboration with around 400 institutes in more than 50 countries
Participation of 3.000 scientists from all continents
1,580 employees on the FAIR/GSI campus in Darmstadt

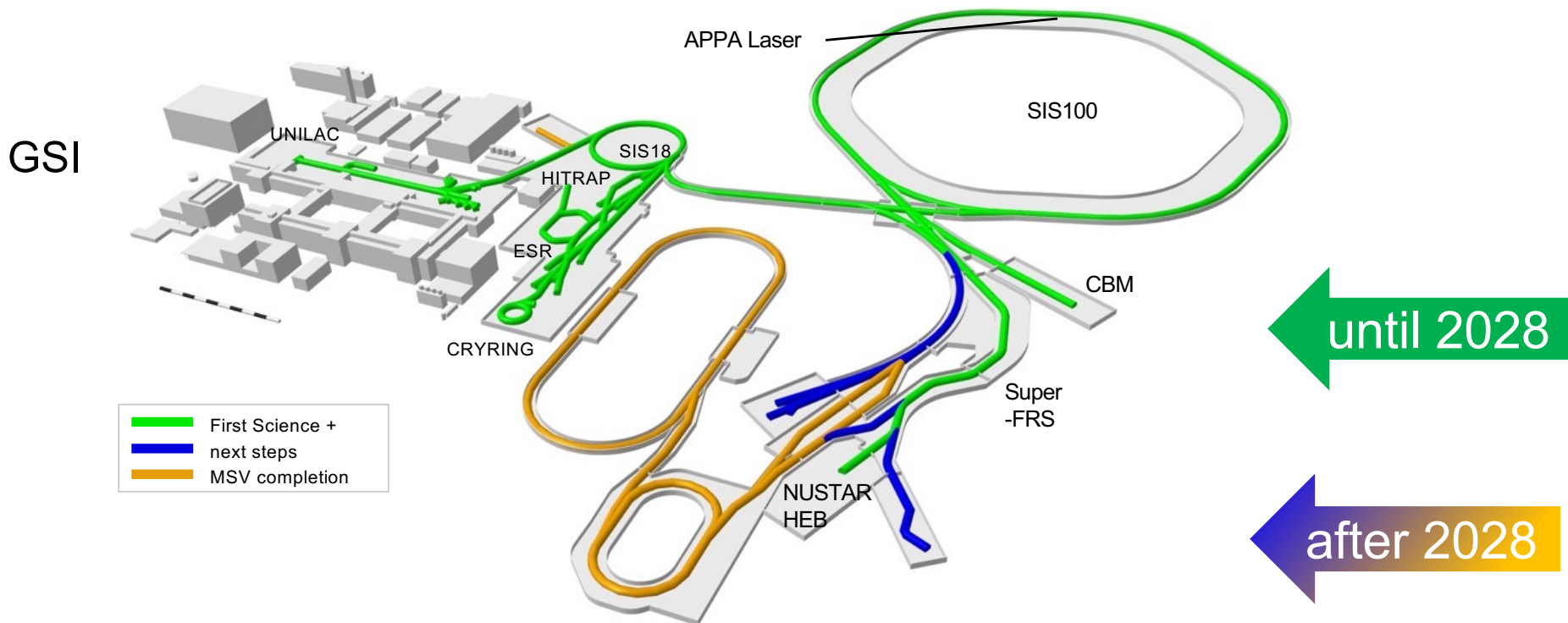
FAIR – The Facility



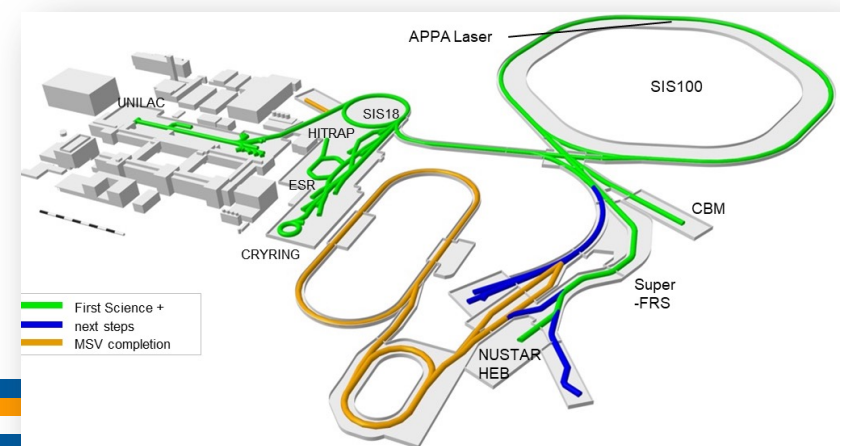
- 20 Accelerator- and Experiment-Buildings
- Underground accelerator ring with a circumference of 1,100 m
- Around 150,000 m² total space

FAIR Project objective

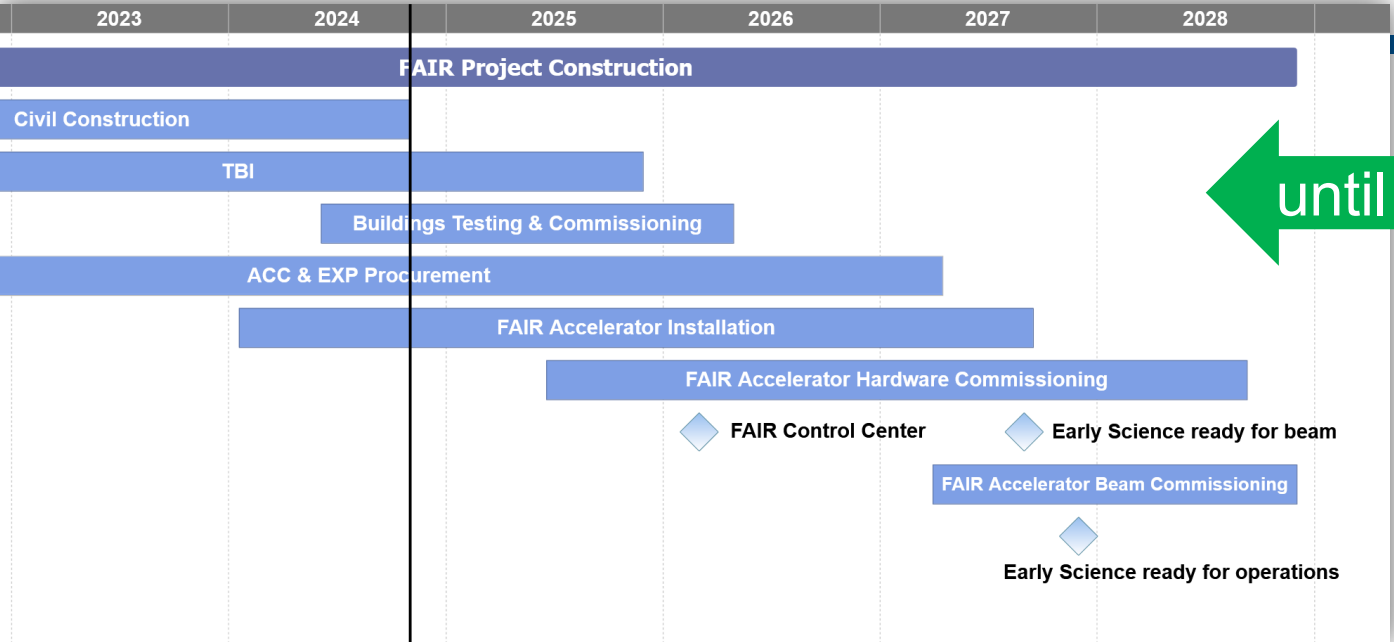
- A Scientific Review panel was tasked by the FAIR Council in 2022 to perform a “First Science and Staging Review of the FAIR Project”.
- The Scientific Review panel recommended in October 2022 that the scenario FS+ (SIS100, Super-FRS-HEB and CBM) would be the most appropriate starting scenario to achieve world leading science.



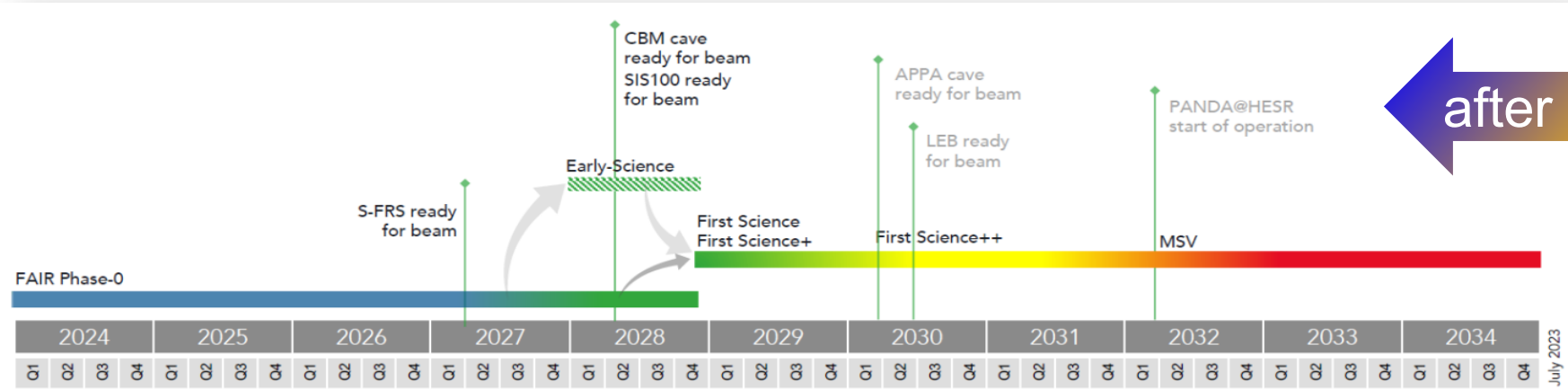
- FAIR Council approved the First Science Scope in 2023
- Step-by-step realisation of CBM is agreed and supported by all Shareholders depending on financing
 - ✓ July 2023: Release of CBM Magnet
 - ✓ July 2024: Release of HEBT and vacuum components
 - Dec 2024: Release of TBI work for the CBM cave + CBM components
 - July 2025: Release of remaining ACC, EXP and installation work
- The additional contributions of Poland and India is critical to get the full scope of CBM approved by the FAIR Council



Level 1 Time schedule – FS Realisation



← until 2028



← after 2028

The construction of further components towards the completion of the MSV will require additional funding. If provided by ~ 2026, the MSV could be completed by 2031-2032. The timetable is dictated by the availability of funds

Civil Work 2017 & 2022



Juni 2017



Mai 2022

Civil Work 2024: Completed



2 Mio. m³ Ground will be moved	600.000 m³ Concrete will be installed	65.000 t Steel will be deployed
Correspond to 5,000 single-family houses	Correspond 8-times the football stadium of Frankfurt	Correspond to 9 Eiffel Towers



Q3 2024

Civil Work 2018 & 2019 SIS-100 Tunnel

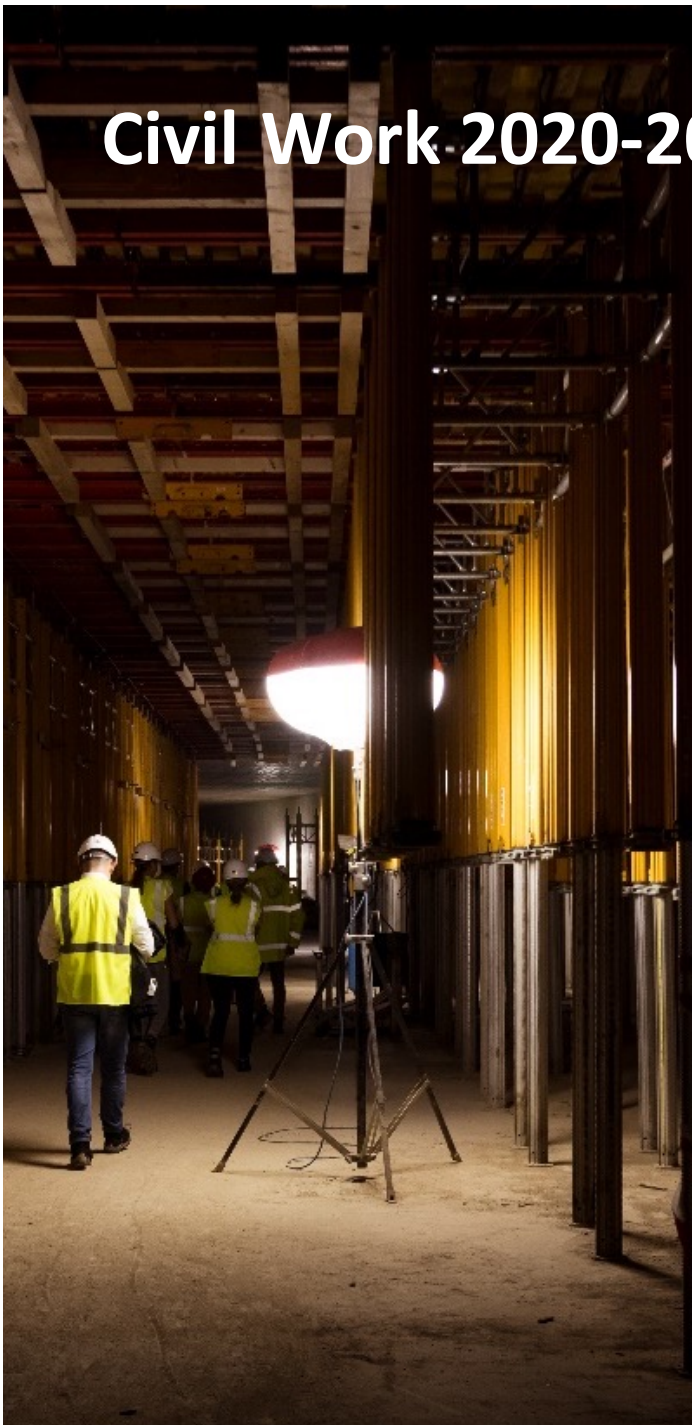


August 2018



November 2019

Civil Work 2020-2022 SIS-100 Tunnel



Juli 2020



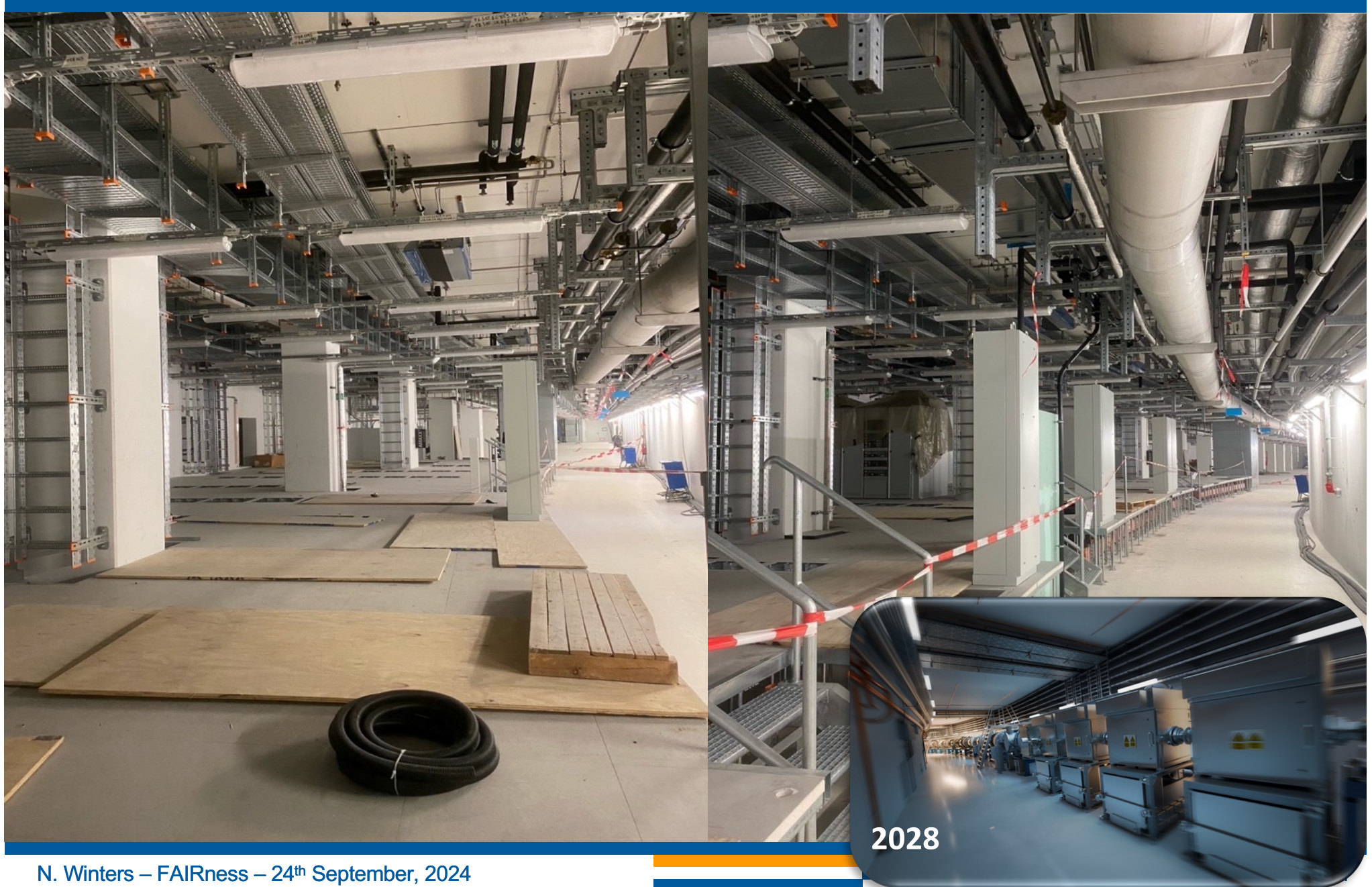
April 2021



April 2022

FAIR Project Progress – Civil Construction

SIS100 Tunnel – TBI Installation



2028

FAIR Project Progress – Civil Construction

Technical installation (air coolers) on the roof of the main supply building north



TBI progress in the buildings

Transfer building - progress of ventilation system installation



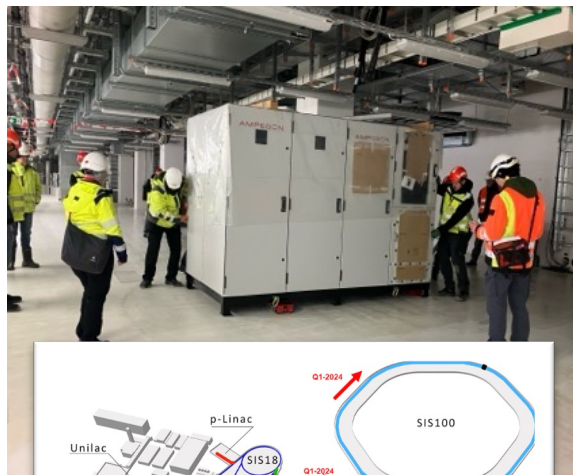
Accelerator progress - Highlights



January 2024

Start of FAIR accelerator installation –

First Power Supply Units were placed in the SIS100 tunnel



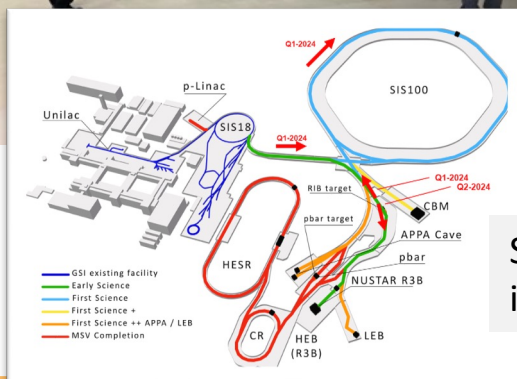
April 2024

First cryogenic bypass lines SIS100 placed in SIS100 tunnel



April 2024

Delivery of the first SIS100 Dipole magnet in SIS100 tunnel



Start of accelerator installation in 2024 in four locations

Accelerator progress - Highlights

March 2024

To reach -269°C to operate the SIS100, these helium tanks were installed on construction site.

Installation of the first six 100 m^3 helium tanks for the commissioning of the CRYO2.



July 2024

SIS100 - Sector 3 Arc

Dipole pairs installation completed



Accelerator progress - Highlights

August 2024

Successfully repaired and cold-tested S-FRS LM11 sc-multiplet arriving at the GSI campus.



August 2024

Lateral iron shielding fully installed in the S-FRS target area



August 2024

S-FRS sc-multiplet on the CERN testing bench

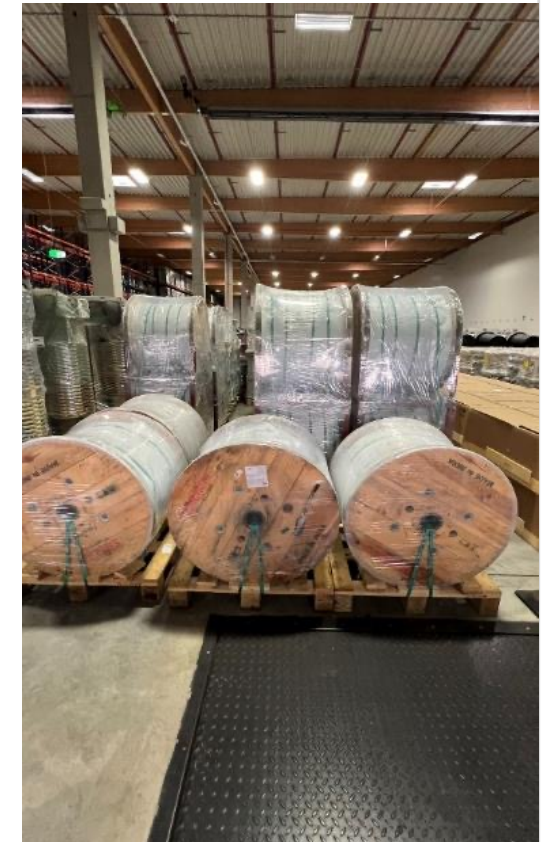


Accelerator progress - Highlights



September 2024

The first partial delivery (Lot-1) of IT and diagnostic cables (80% of these cable types from FAIR) from Siechem Ltd, Chennai/Pondicherry, as part of the Indian InKind for FAIR was delivered on time. The contract will be fully implemented by the end of the year.



FAIR Highlights – Storage and Logistics

Completed and delivered high-tech components for accelerator and experiments



SIS100 Dipoles complete



He-Bypass lines from Poland



Racks from India



Storage area Weiterstadt: approx. 9.900 m²
4.195 objects (Components, assemblies, boxes)

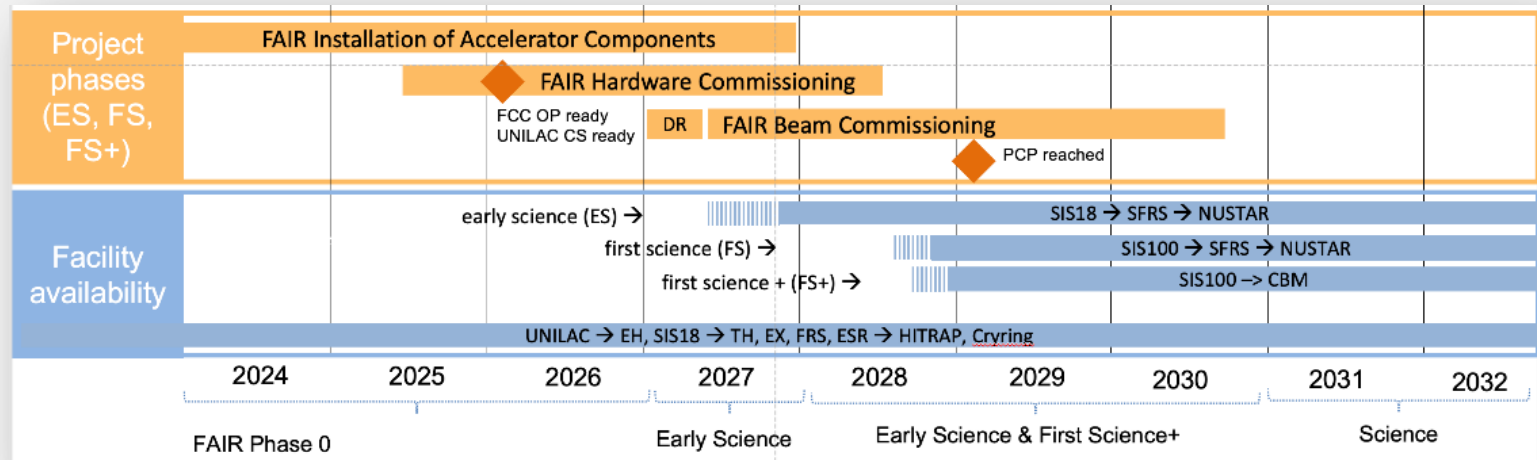
50% of SIS100 components stored
90% of HESR components stored

FAIR Project Progress – ACC Commissioning



The current focus is on planning and preparing the hardware commissioning that will start in 2025

FAIR strategic operation scenario towards FAIR



D. Severin BTR 2024



Thank you for your attention

3D models - SIS100 tunnel



3D models - NUSTAR HEB cave

