

# RELIABILITY OF THE GSI / FAIR FACILITY AFTER A LONG SHUTDOWN PHASE



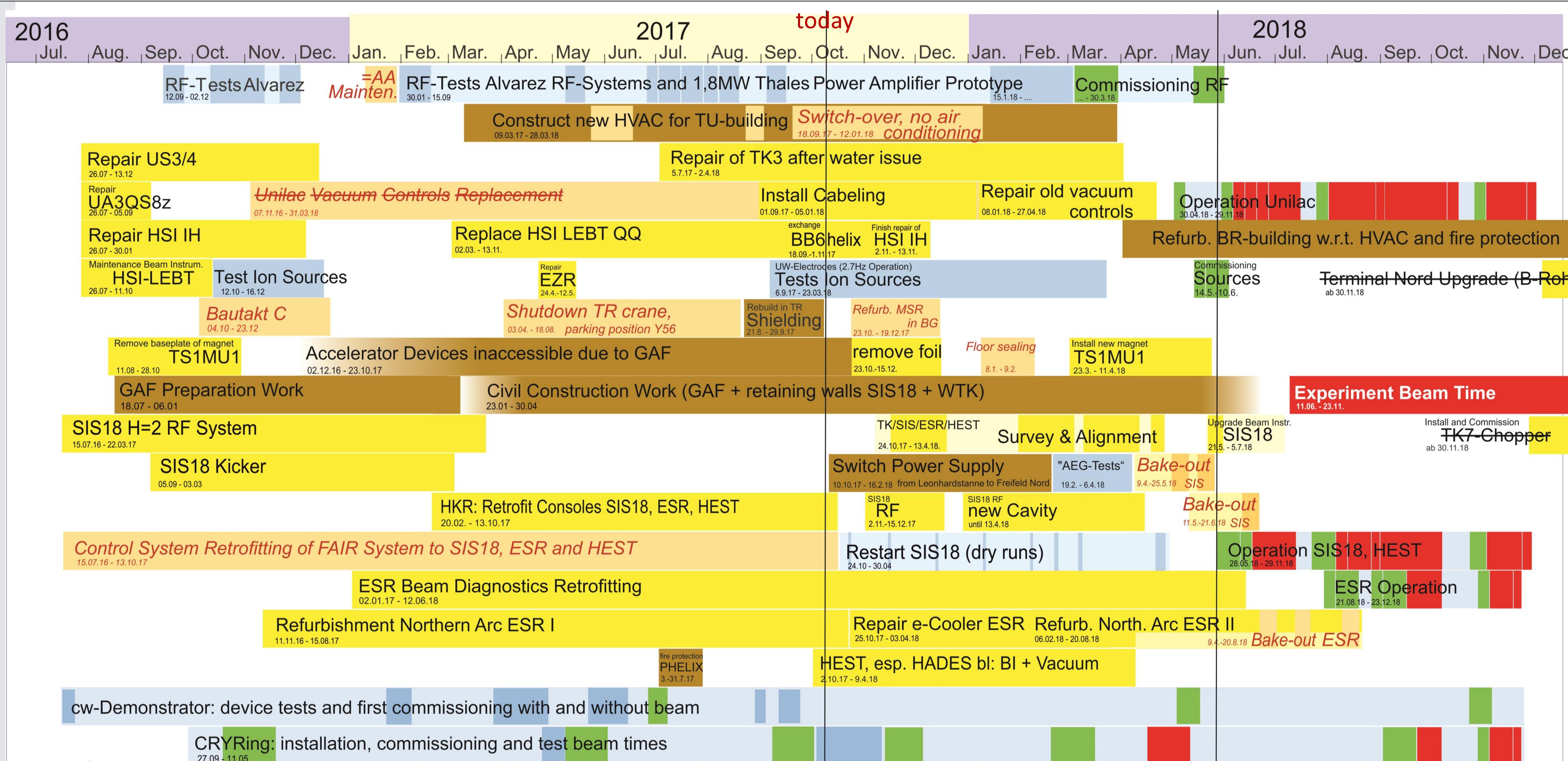
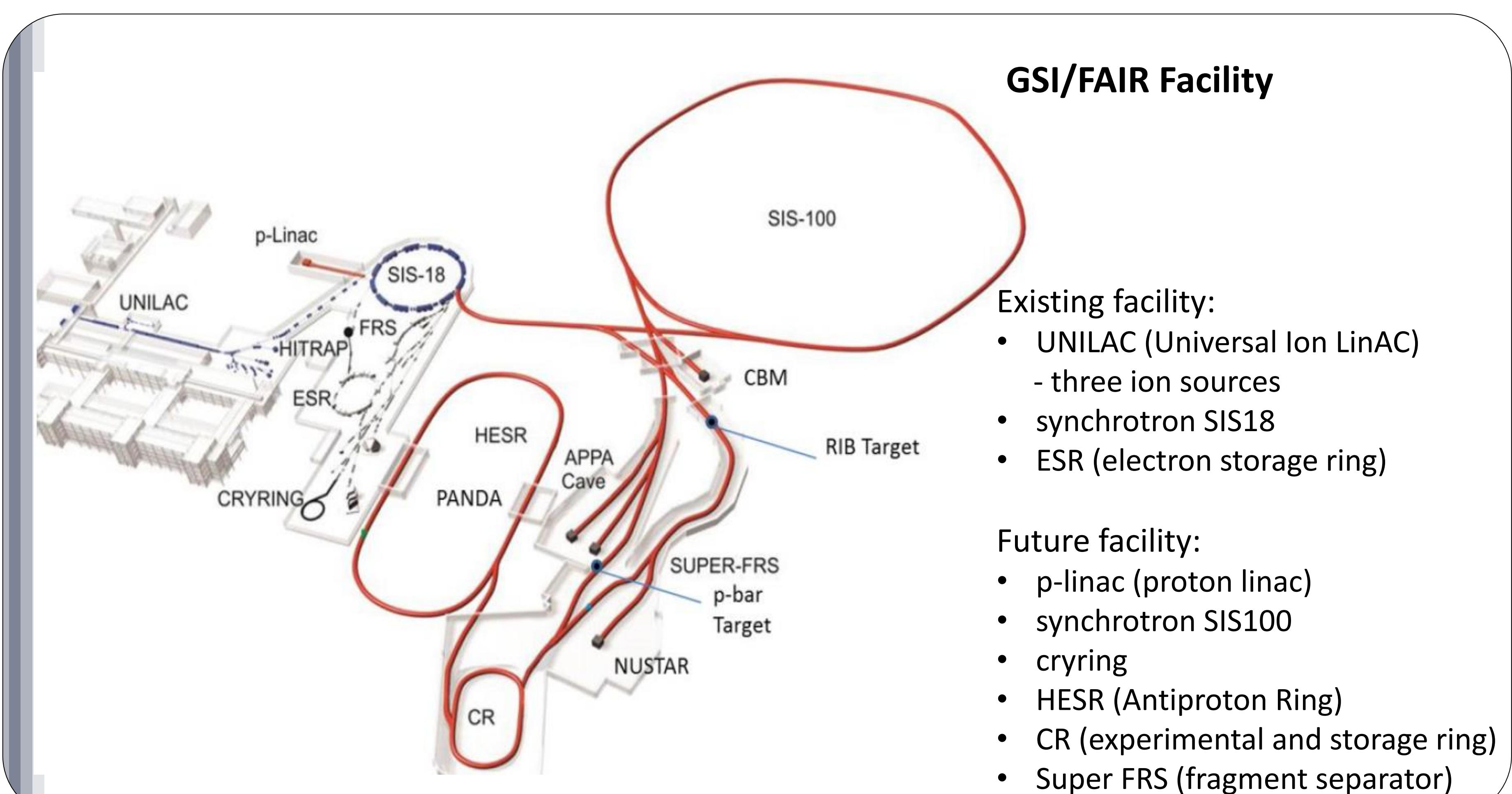
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ARW 2017 "Accelerator Reliability Workshop"

15<sup>th</sup> – 20<sup>th</sup> October 2017, Versailles, France

## Abstract

The 'Facility for Anti-Proton and Ion Research' (FAIR) which is presently under construction, extends and supersedes the existing GSI. In July 2016 began longest shutdown GSI has ever seen. The main work package is the civil construction project GAF (GSI Anbindung an FAIR, Link of GSI to FAIR) which comprises additional shielding of SIS18, fire protection measures, as well as the connection of the new beam line between FAIR and the existing GSI facility. During construction work of the GAF project the SIS accelerator components are inaccessible. Therefore, maintenance and repair work on the kicker and on RF cavities was scheduled at the beginning of the shutdown and finished before the start of GAF. The modernization of the post stripper RF system which need regular test periods are in conflict with the refurbishment of the HVAC system (Heating, Ventilation and Air Conditioning). Another import project is the retrofitting of the FAIR control system to SIS18, ESR and HEST. Careful coordination of those projects is mandatory to finish in time for the beam time 2018. The planning and monitoring of the most important shutdown projects and the reliability of the system will be presented.



## GAF project (Link of GSI to FAIR)



The civil construction project (GAF) is the largest work package during this shutdown. It comprises additional shielding of SIS18, fire protection measures and as well he connection of the new beam line tunnel towards FAIR to the existing transfer hall. During the construction works the SIS18 accelerator is inaccessible. Therefore maintenance and repair work on the kicker and on RF cavities was scheduled at the beginning of this shutdown and was finished before the start of the GAF works. The deadline of this project is scheduled end of May 2018 in order to enable recommissioning for the next GSI beam time.

## Modernization and refurbishment of the accelerating system

Approved projects for the shutdown 2016-2018

- Installation of the new LEBT QQ
- Refurbishment Poststripper RF FOS
- Upgrade Beam line SIS18 to HADES
- Retrofitting ESR beam diagnostics
- Commissioning of the Cryring
- Alignment of SIS18 / HEST / ESR / Cryring
- Upgrade of the Main Control Room
- FAIR Migration SIS18 / HEST / ESR controls
- careful coordination of those projects is mandatory to finish before beam time 2018

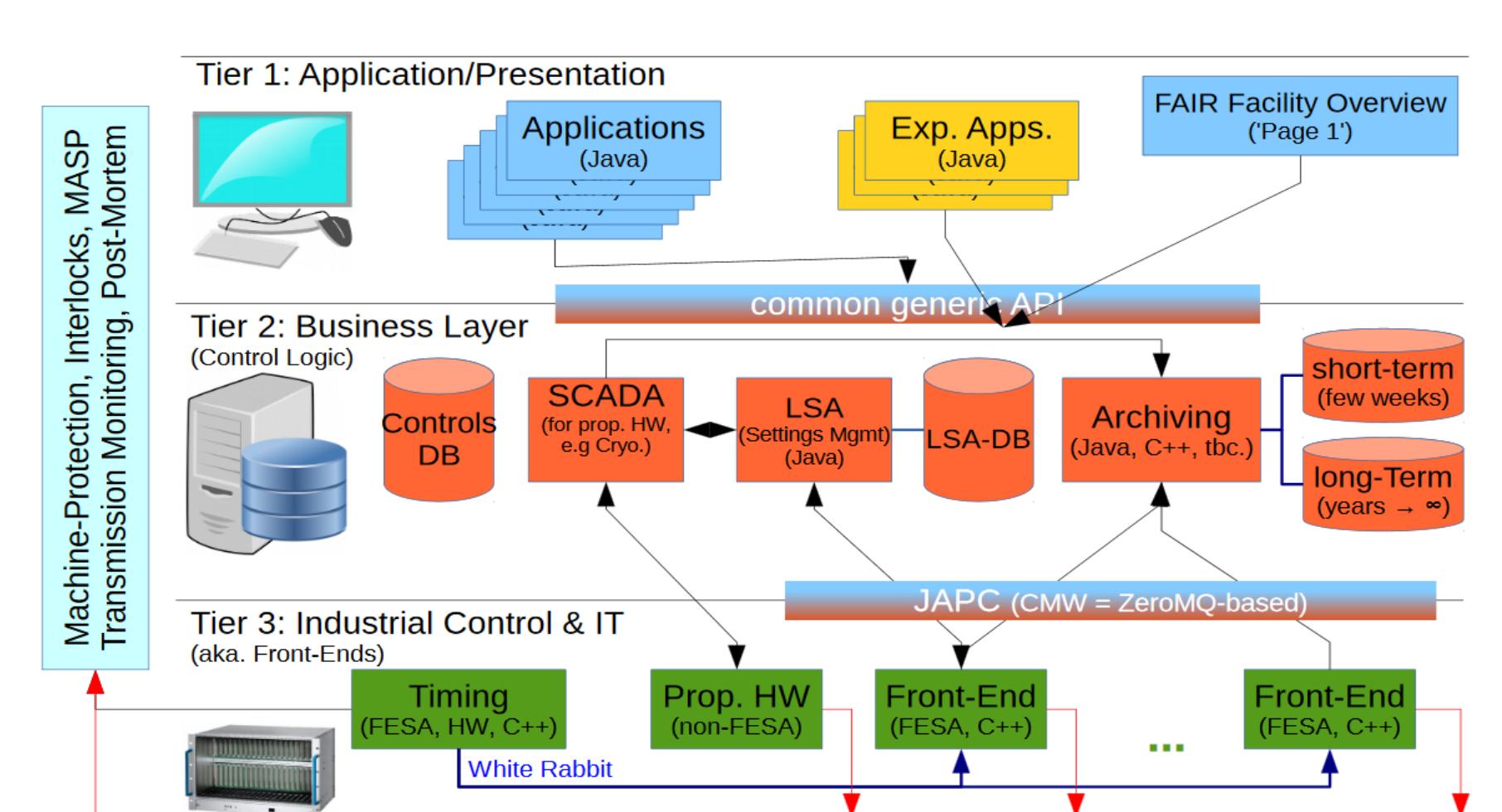
Other running projects

- Refurbishment of the HVAC
- Development of the ion sources
- Repair of ESR short-circuit fault
- commissioning of a new power transformation substation for the main magnets of SIS18 and ESR

At the end of 2016 nearly all standard repair and maintenance was finished, also SIS18 and ESR were prepared for GAF. The construction works were delayed by several weeks which could be used for completion of work an RF system and kicker. The vacuum replacement for UNILAC had to be moved to the next shutdown; the project could not be started early enough to be finished before scheduled beam time 2018.

Due to the personal shortage in all involved departments and high priority for the FAIR project, the progress in many tasks is slower than expected, but a timely completion for the beam time 2018 is feasible.

## Retrofitting of the control system



The previous control system was finally shut down after the beam time 2016. So the retrofitting of the FAIR control system for SIS18, ESR and HEST is another important project. To ensure a smooth commissioning, dry runs was planed half a year before the beam time 2018. The control system refurbishment also implies upgrades for the beam diagnostic and the implementation of modern consoles for SIS18 and ESR. First tests of the control system with all implemented application were already done during the commissioning and operation of the Cry-Ring.

## Status and Outlook