

Highlights of GridKa LK-II Facility

MU Days 2024

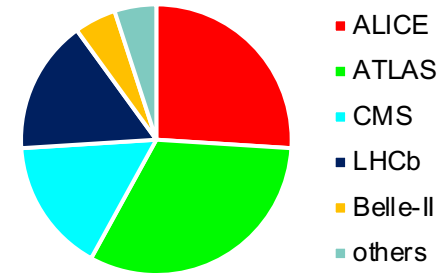
Max Kühn, Andreas Petzold, Achim Streit



GridKa Overview in Numbers

- Compute
 - Up to 50 000 x86 cores at **>97% efficiency**
 - New: Additional 3 840 **ARM cores**
- Online Storage
 - **99 PB usable** storage
- Offline Storage
 - Migration to **HPSS finished**
 - **124 PB used**, 144 PB pledged
- WAN
 - **200 Gb/s** to CERN/LHCOPN
 - **200 Gb/s** to DFN/LHCONE

CPU Share



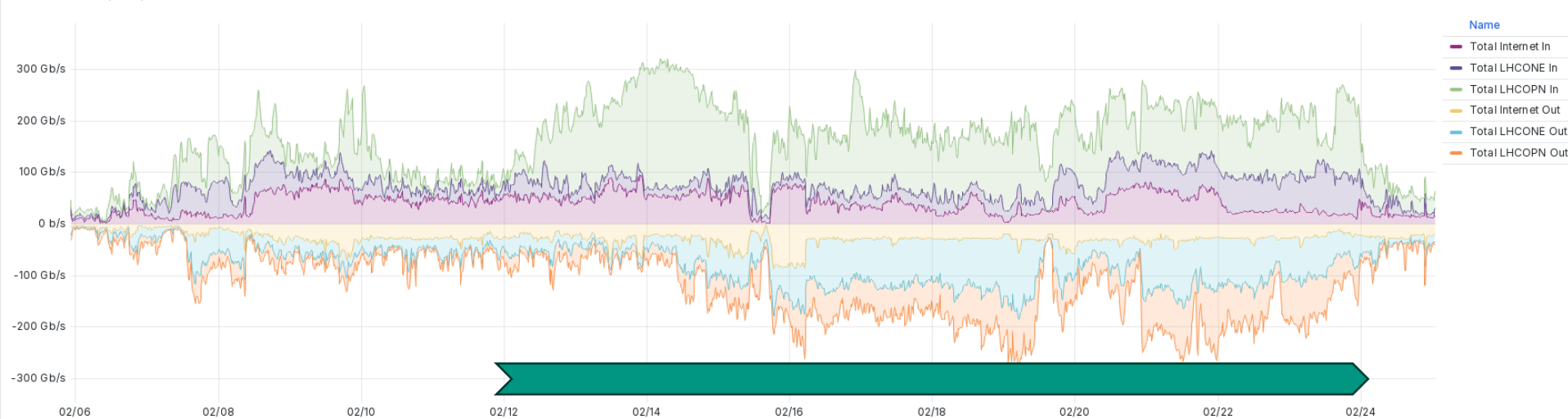
LHC Run3 activities in 2023:

- Compute: 20.2 M jobs
417 M CPU-core-hr
- Data transfers: 134 PB in (+12%),
470 PB out (+5%)

Data Challenge

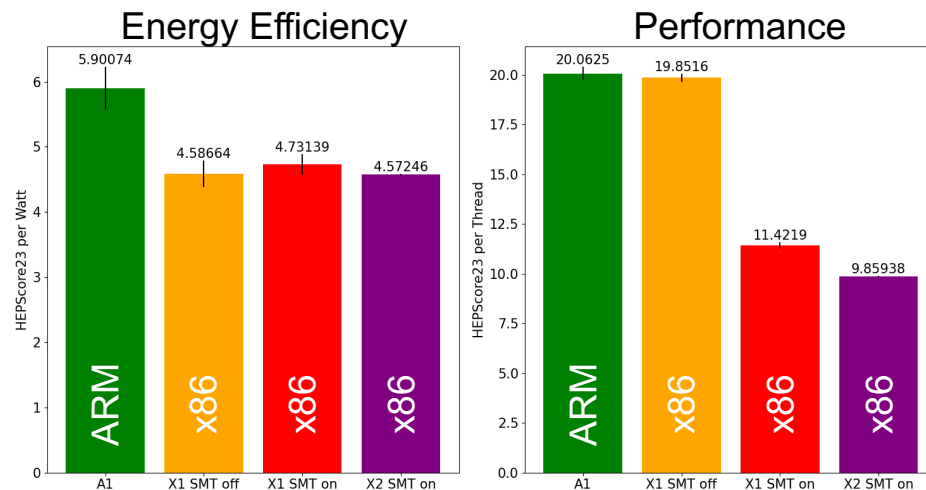
- WLCG test for **25% Run4** targets
 - Site **network, storage and tape**
 - Experiment automation and auth
- Successful stress test for GridKa
 - Good results for **new HPSS tape**
 - Temporary +100Gb/s to CERN
 - **No bottlenecks at GridKa!**

Traffic LHCOPN/ONE/Internet



ARM compute at GridKa

- New WNs with **ARM architecture**
 - **15 machines** at 256 threads each
 - Delivered December 2023, available for **jobs since June 2024**
 - **Technology exploration** for GridKa and Experiments
- Overall positive experience so far
 - Roughly **20% energy saving**
 - In production for one VO, final testing by two VOs
- Enables choice of architecture for future hardware

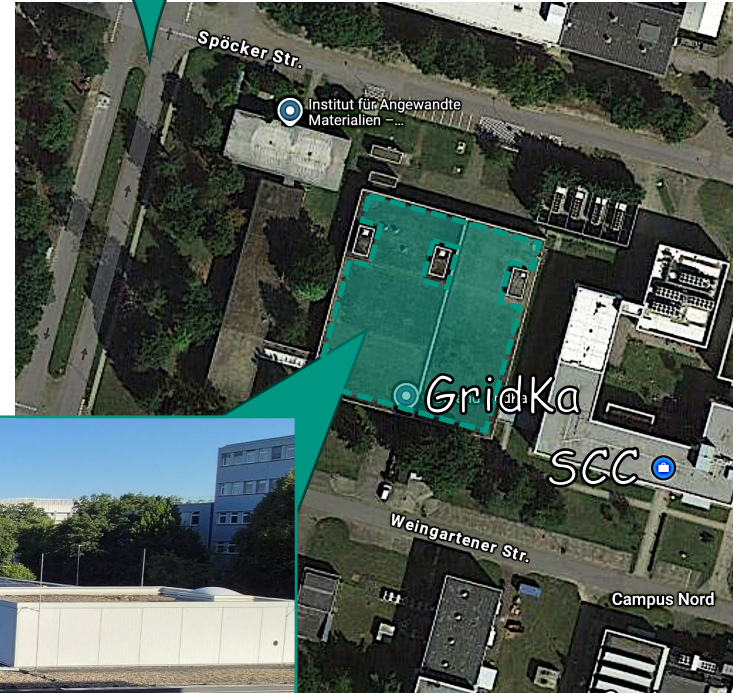


Matthias Schnepf / Armin Krull

Sustainable Science

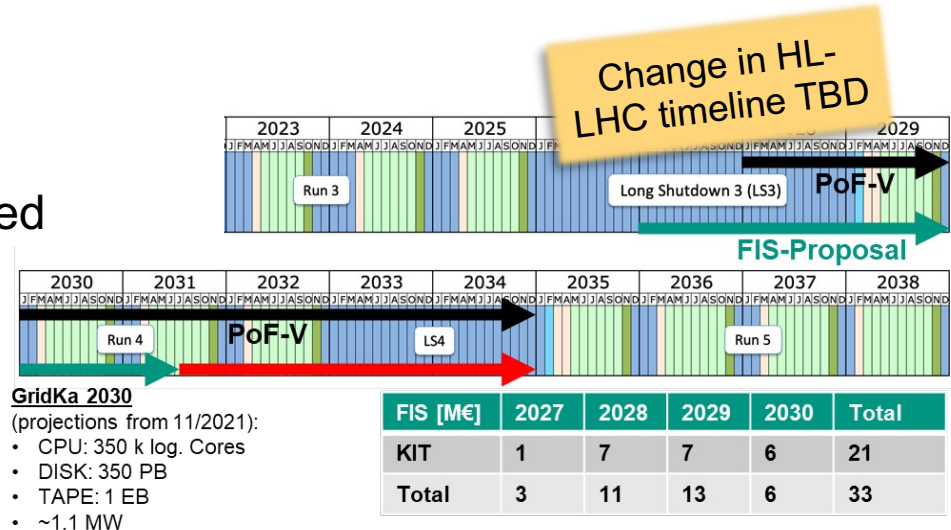
- Investment in renewable energy
 - Solar panels on GridKa building roof
 - Exploit large footprint of compute center
 - Roughly 500 kW peak performance
- Ongoing work for energy optimization
 - Monitor power consumption at every outlet
 - Investigate optimal working points of HW

KIT
CN



Wider Scope

- Change for ATLAS/CMS Uni T-2
 - **GridKa+DESY taking over storage pledges** in 2025-2027
 - Compute pledges covered with **compute at NHR HPC centers**
- GridKa preparing for HL-LHC
 - Operations and personnel covered by POF-V funding
 - HW funding from FIS-entry
„Upgrade TIER-Centers for HL-LHC“ with DESY and GSI



GridKa Power Consumption

