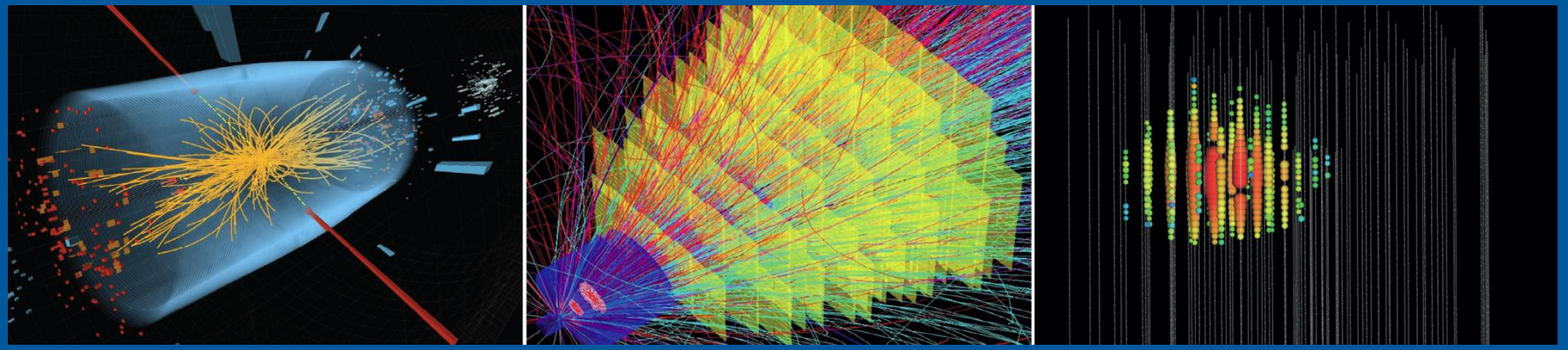
Matter and the Universe

GridKa

Skeleton of the talk…



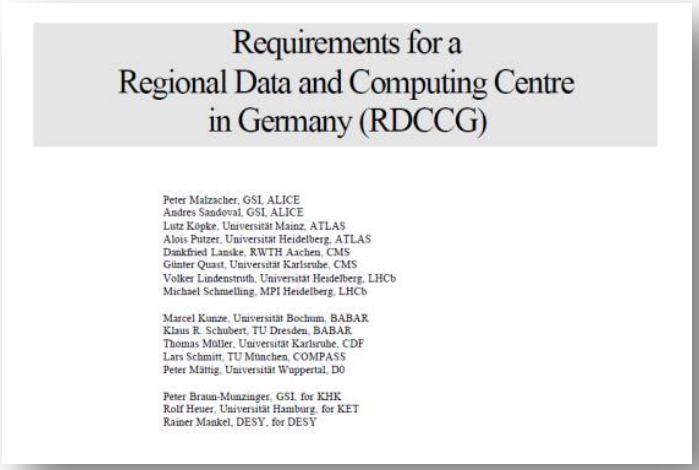
Dr. Andreas Heiss – KIT/SCC

HELMHOLTZ ASSOCIATION

History

2001

- Proposal for a “Regional Data and Computing Centre” (RDCCG) as requested by the German Particle and Nuclear Physics Community
- BMBF appointed FZK to host GridKa



Requirements for a
Regional Data and Computing Centre
in Germany (RDCCG)

Peter Malzacher, GSI, ALICE
Andres Sandoval, GSI, ALICE
Lutz Köpke, Universität Mainz, ATLAS
Alois Putzer, Universität Heidelberg, ATLAS
Dankfried Lanske, RWTH Aachen, CMS
Günter Quast, Universität Karlsruhe, CMS
Volker Lindenstruth, Universität Heidelberg, LHCb
Michael Schmelling, MPI Heidelberg, LHCb

Marcel Kunze, Universität Bochum, BABAR
Klaus R. Schubert, TU Dresden, BABAR
Thomas Müller, Universität Karlsruhe, CDF
Lars Schmitt, TU München, COMPASS
Peter Mättig, Universität Wuppertal, D0

Peter Braun-Munzinger, GSI, for KHK
Rolf Heuer, Universität Hamburg, for KET
Rainer Mankel, DESY, for DESY

A Grid Computing Centre at
Forschungszentrum Karlsruhe

Response on the Requirements for a Regional Data and Computing Centre in Germany[1] (RDCCG)

5. December 2001

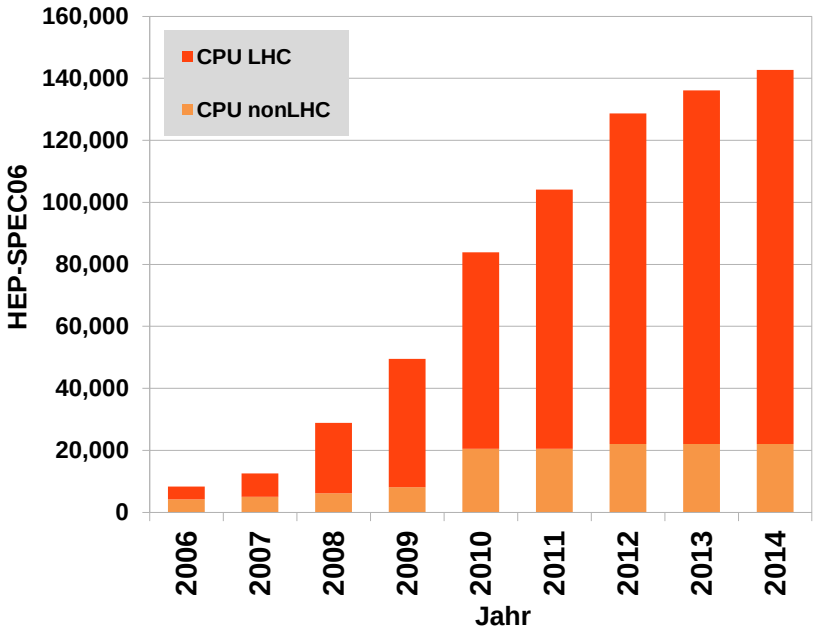
H. Marten, K.-P. Mickel, R. Kupsch

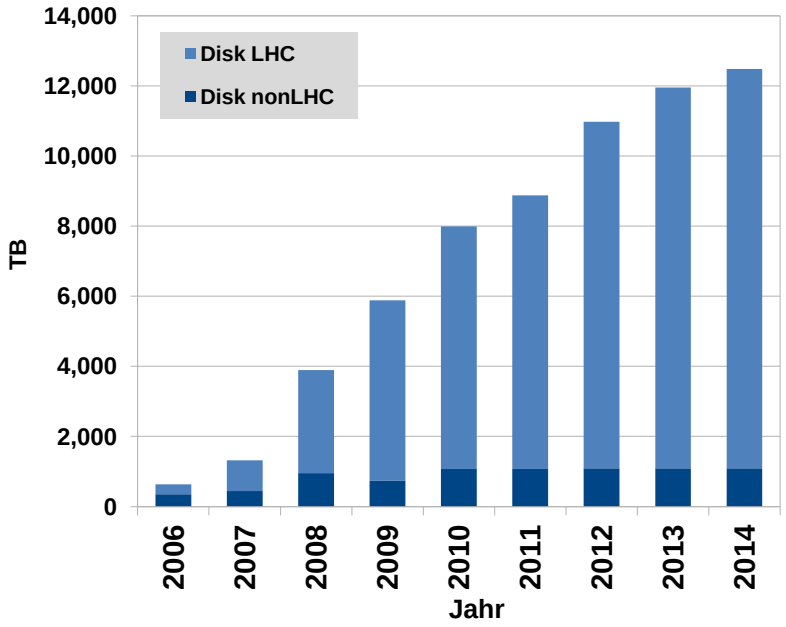
Forschungszentrum Karlsruhe GmbH
Central Information and Communication Technologies Department, HIK
Hermann-von-Helmholtz-Platz 1
76344 Eggenstein-Leopoldshafen

History

- Several non-LHC and all four LHC experiments supported

- Steep ramp-up of resources





History

- Part of Grid development and implementation projects
  - EDG, EGEE I / II / III
  - LCG-1, LCG-2, WLCG
- Today: GridKa cornerstone of WLCG
- WLCG extremely successful

History

Global Effort → Global Success

Results today only possible due to extraordinary performance of accelerators – experiments – Grid computing

Observation of a new particle consistent with a Higgs Boson (but which one…?)

Historic Milestone but only the beginning

Global Implications for the future

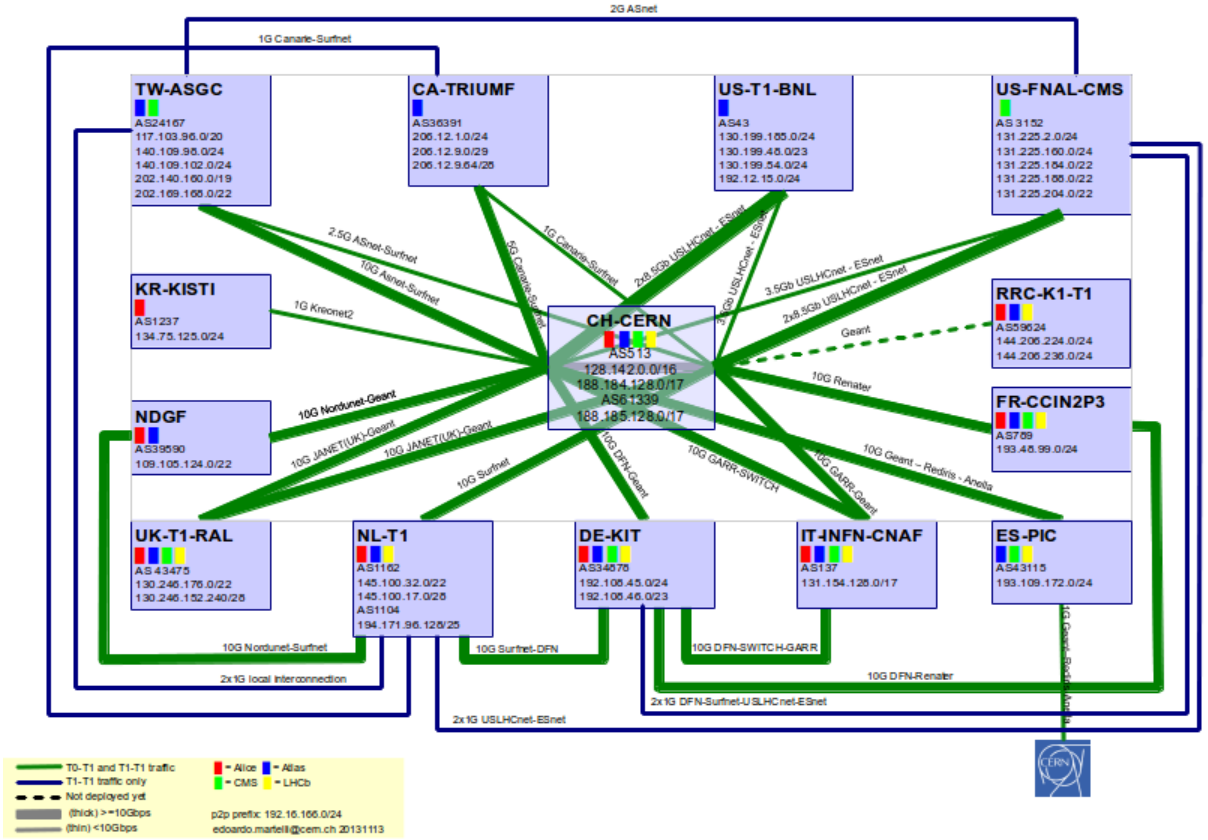
R-D Heuer

Today

- Amoung largest T1s
  - Resources etc.

Today

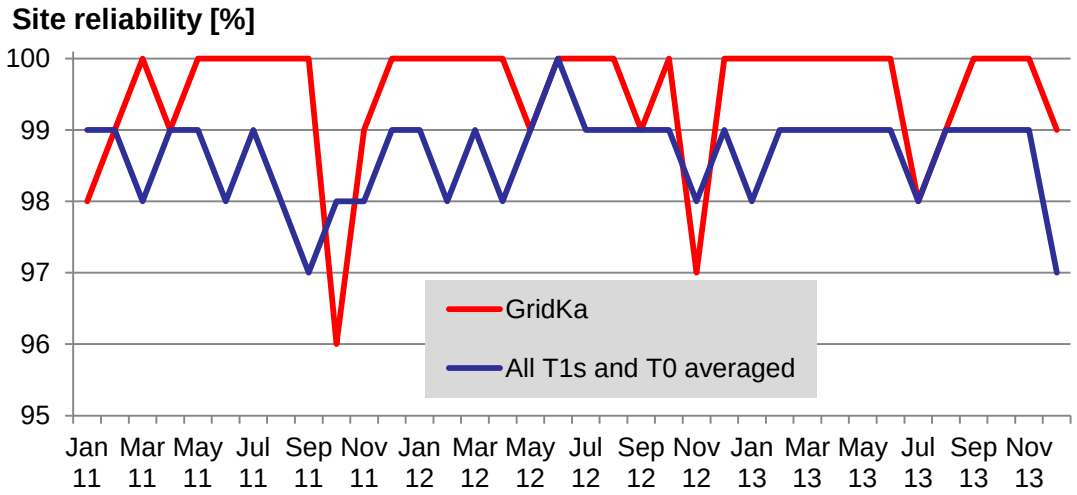
- Best connected T1



Also show LHCONE, Prague etc.

Today

- Amoung best WLCG T1s in terms of service reliability



- GGUS support platform for WLCG and Belle-II
  - CN/CS redundant setup

What we do and plan to do to stay on top…

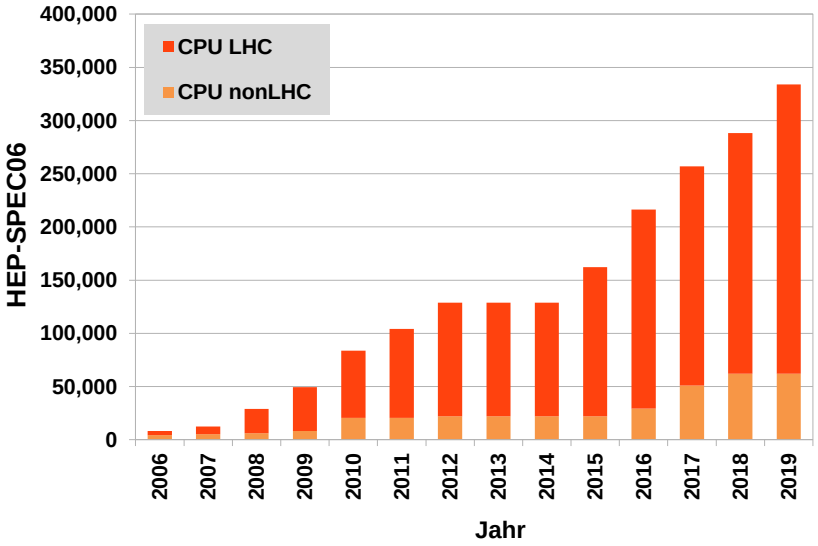
- Networking with communities WLCG, Hepix, …
- Dedicated experiment support people
- Joint R&D,
  - Together with CMS group (KIT university part)
  - LSDMA
    - Cross-topic and Cross-programme initiative
    - Poster Eileen “Monitoring and understanding network traffic”
- Optimize storage in close collaboration with dCache.org
  - Scaling capacity and I/O

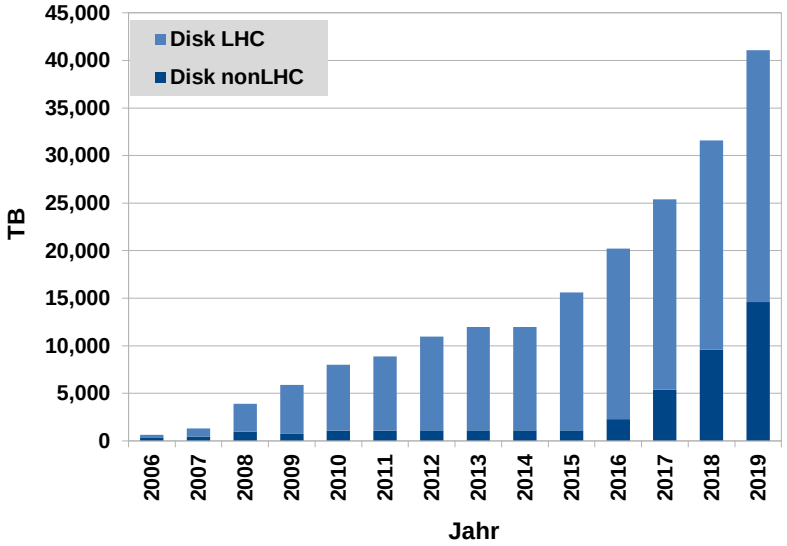
Current and future activities to maintain top position

- Improve the infrastructure
  - Replace parts of network backbone
  - Test 100 Gb/s WAN links
    - Heidelberg, Supercomputing conference Denver
  - Prepare 100 Gb/s WAN in 2015
  - Upgrade and replace tape infrastructure (libs, software HPSS etc.)

Current and future activities to maintain top position

- 2014+
  - Setup resources for LHC run 2 and Belle-II





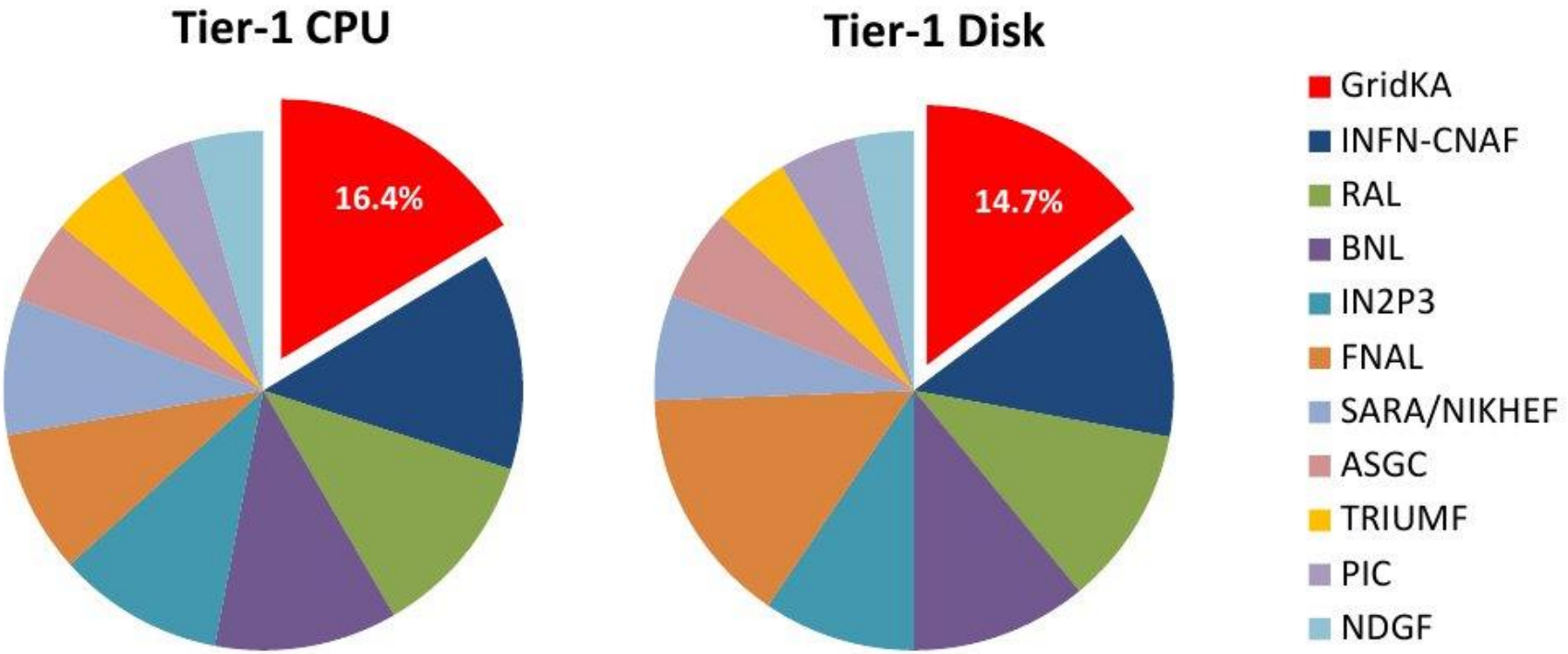
What we need for it

- Human resources
- Running costs
- …

Here or just on a backup slide?

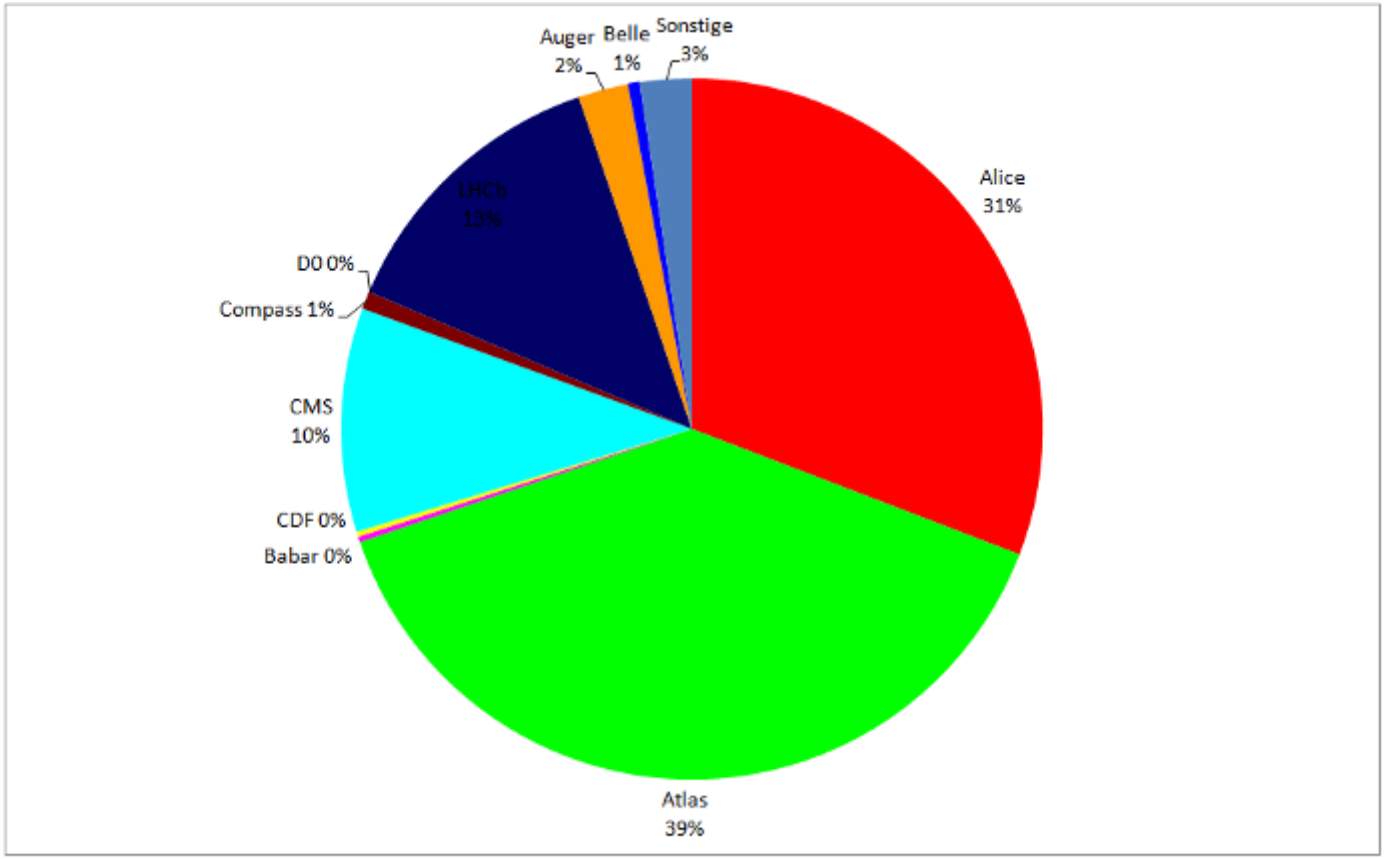
BACKUP SLIDES

WLCG Tier-1 centres



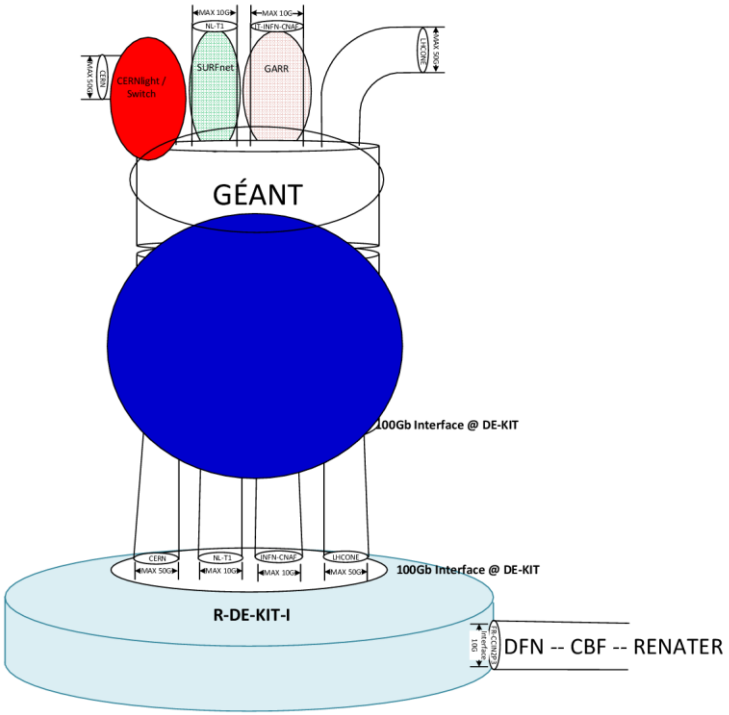
Used compute power 2013

113.477.804 Wall hours



100Gb/s WAN upgrade plan

Upgrade „GridKa – DE-KIT“ connection



- Protocol
  - tcp
  - udp

- Ablösen der CBFs durch:
  - Verbindungen über Géant
  - bis auf CBF zu FR-CCIN2P3

- Layer-2 P2P (VLAN seperated)
  - DE-KIT – CERN → KIT – DFN - GÉANT – CERNlight/Switch – CERN
    BGP routing at DE-KIT (DFN Layer-2 VLAN only)
  - NL-T1 → KIT – DFN - GÉANT – SURFnet – SARA
    BGP routing at DE-KIT (DFN Layer-2 VLAN only)
  - INFN-CNAF → KIT – DFN - GÉANT – GARR – CNAF
    BGP routing at DE-KIT (DFN Layer-2 VLAN only)
- Layer-3 (HEPPI / LHCONE VRF)
  - LHCONE

- P2P – CBF – DE-KIT – FR-CCIN2P3
Als letzten Notnagel LHCOPN Backup bestehen lassen.

Titel – Arial 28

Text – erste Ebene Arial 24

- Text – zweite und folgende Ebenen Arial 18