

The DESY Grid & Cloud Centre A LKII Infrastructure



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Overview

The DESY Grid & Cloud Centre (DGCC)

The Tier-2 @ DESY

The National Analysis Facility - NAF@DESY

Challenges & Strategy

Summary

The DESY Grid & Cloud Centre

a complete infrastructure for BIG DATA & Analysis

Communities (20 Virtual Organisations) :

- Supported: Atlas, CMS, LHCb, Belle I+II, CTA ...
- Hosted: ILC, XFEL, IceCube ...

Services:

Large set of Grid services (i.e. catalogues ...)

Resources:

- ~ 14.000 cores
- ~ 10 PB disk (dCache)
- ~ Tape storage (non LHC)

Developments:

BIG DATA management i.e. by dCache project (holding ~50% LHC analysis data worldwide), networks (LHCone)

The Tier-1/2 Structure in Germany

Role of Tier-2:

Simulation and user analysis

German Tier-2 shares of WLCG:

CMS: 8% , Atlas: 10%, LHCb: 7%

Financing:

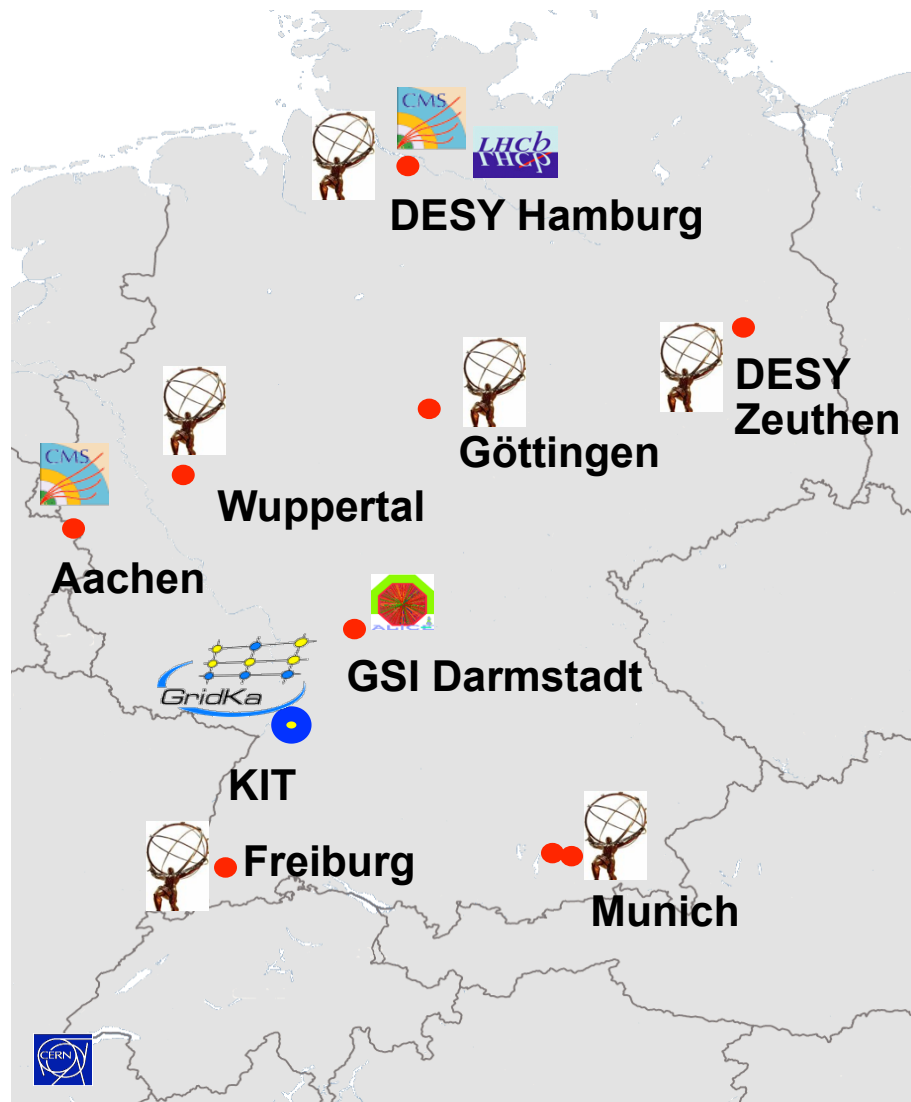
DESY: Base funding, BMBF
Univ.: Physics at the Terascale,
BMBF, local & DFG

Challenges:

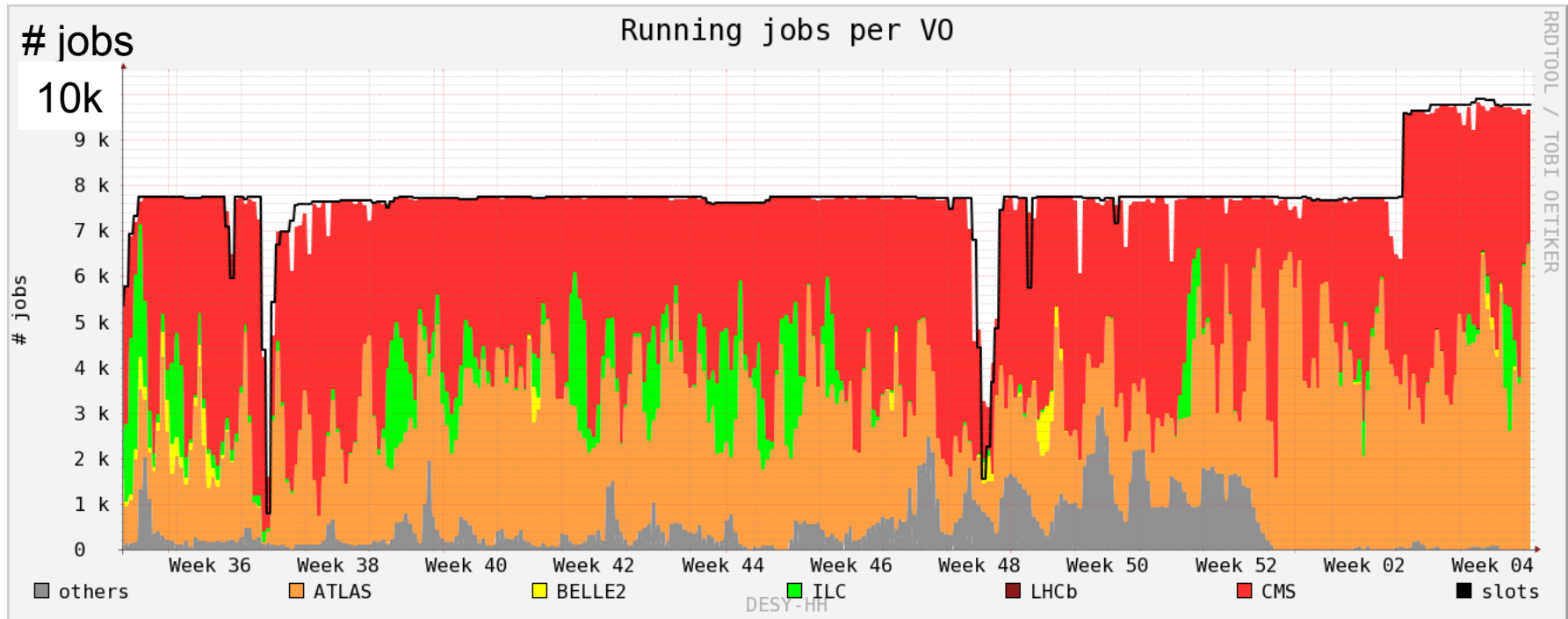
> 2x resources in 2015 + 20%
increase/year, technical issues

Future funding:

DESY: through POF III
Univ.: open



DESY Grid Usage (Hamburg)

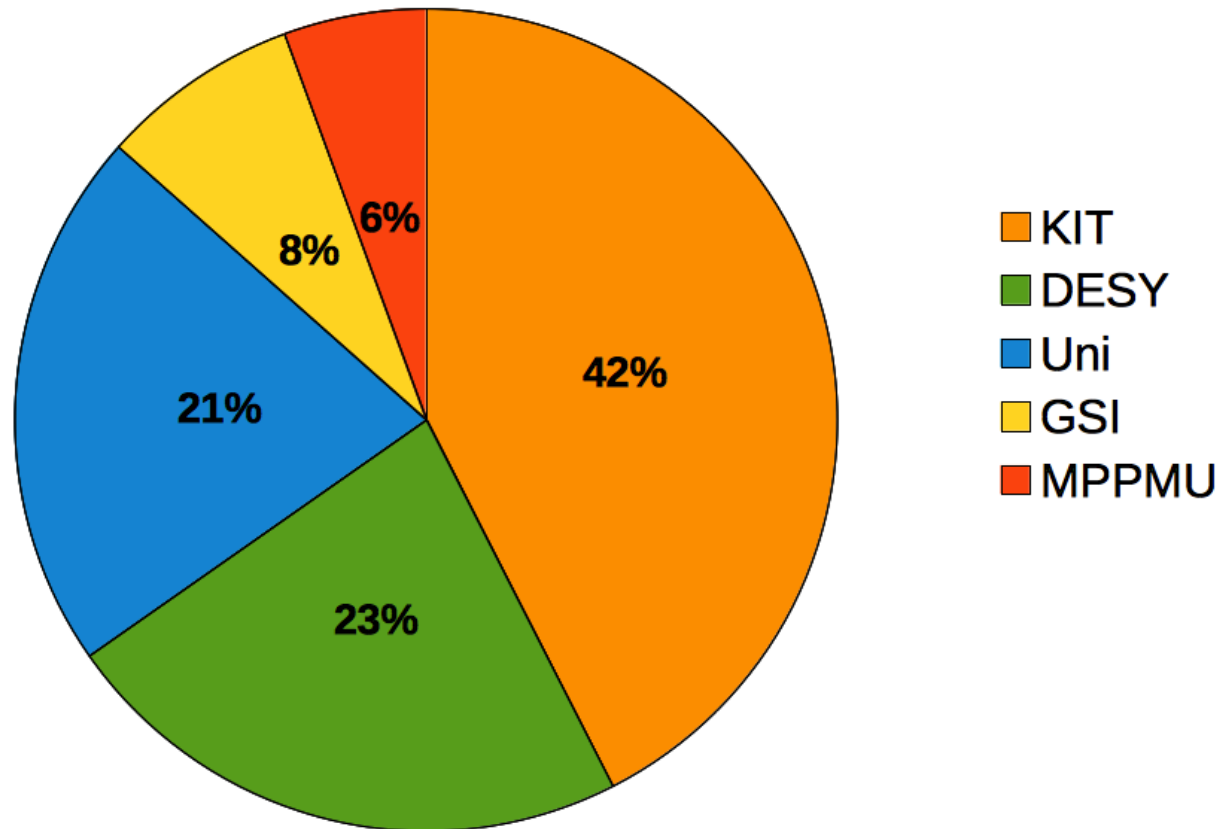


Atlas
CMS
LHCb
Belle
ILC
others

on average ~2000 Jobs queued

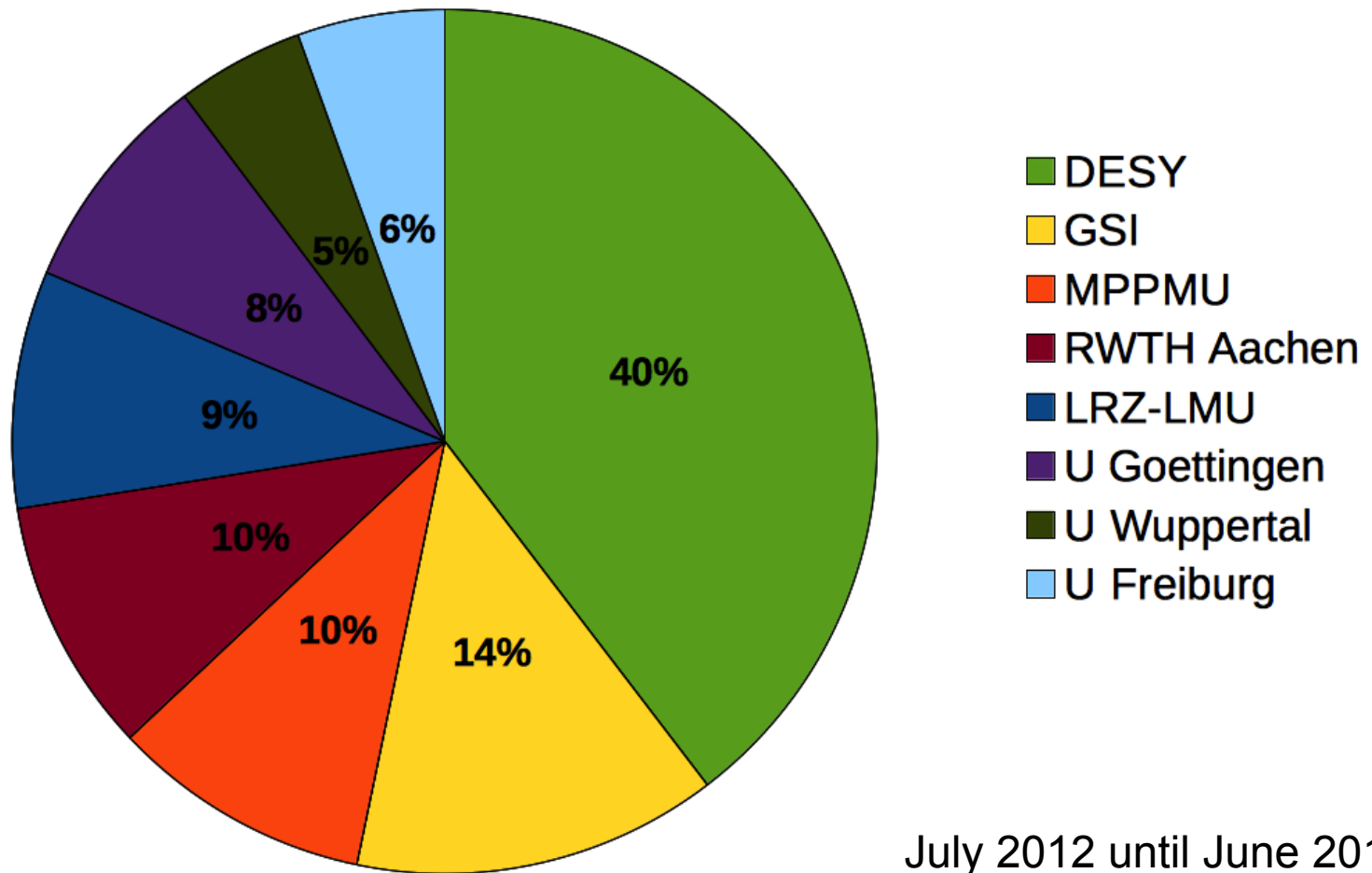
well balanced between I/O and CPU performance

German Tier-1/2 Wall-Clock Time Delivered



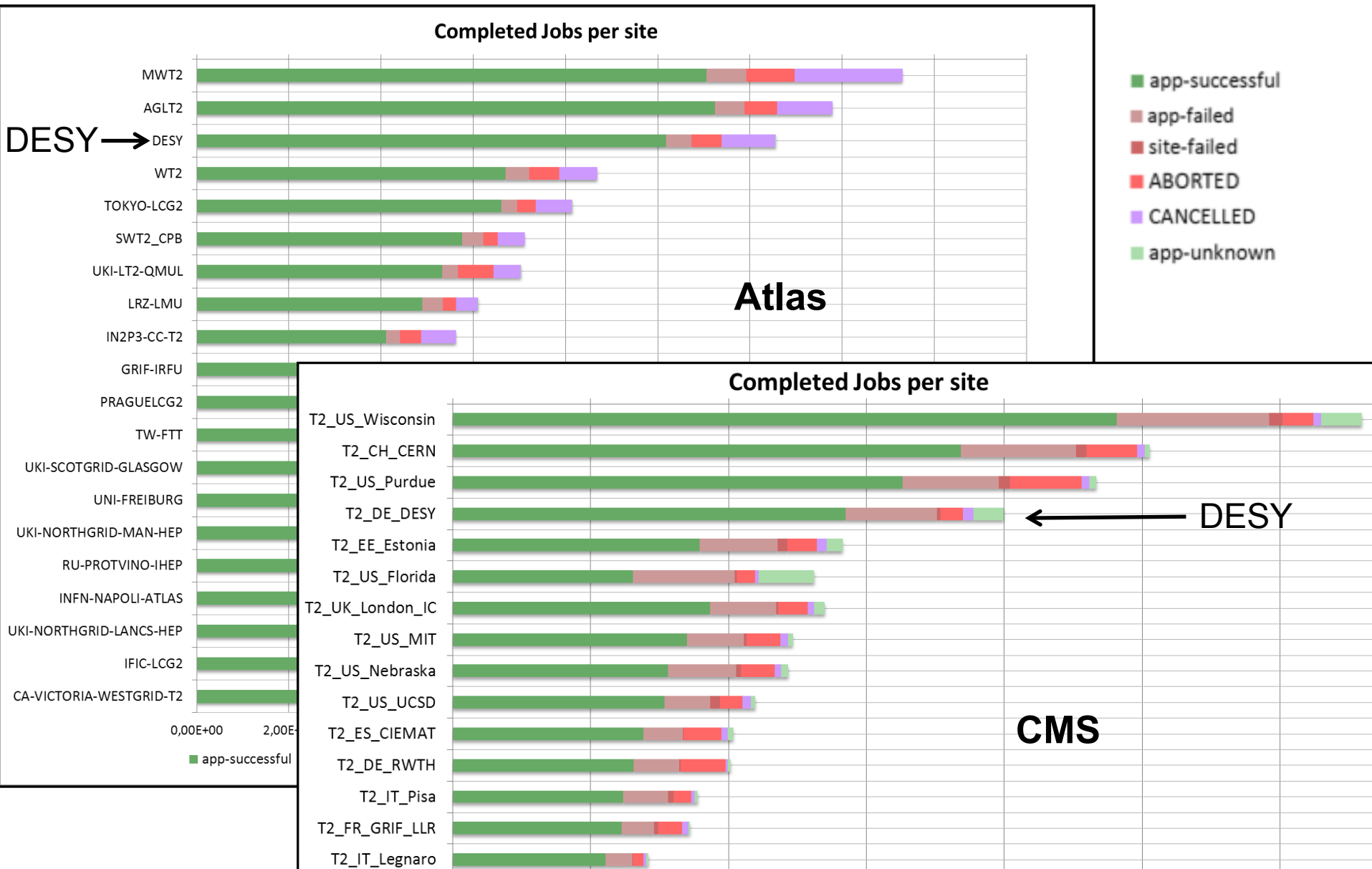
July 2012 until June 2013

German Tier-2 Wall-Clock Time Delivered

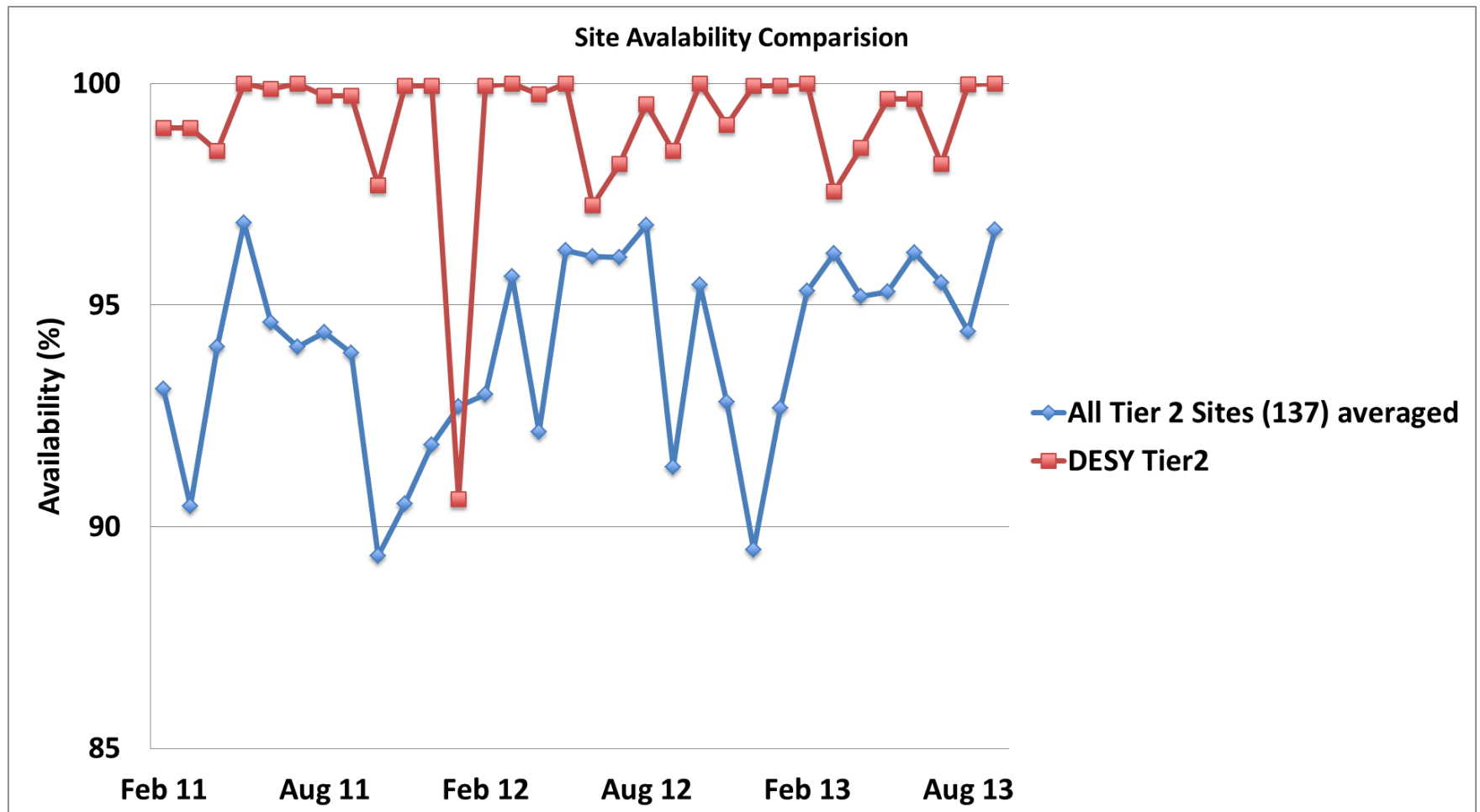


July 2012 until June 2013

Completed Jobs per Tier-2 Site in 2013



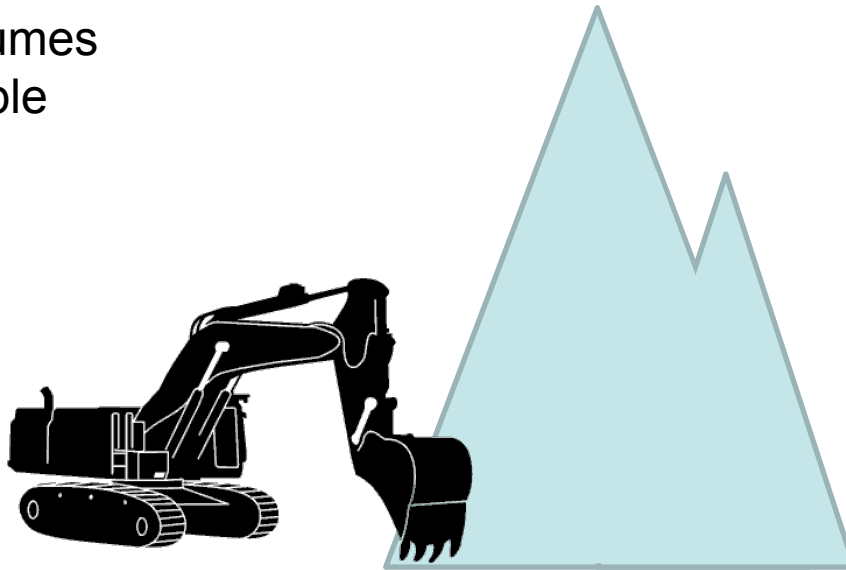
The DESY Tier 2 site availability



Why the NAF? - Grid versus NAF

The Grid World

- batch
- centralized
- large volumes
- less flexible



LHC Data – the treasure

Worldwide User Community

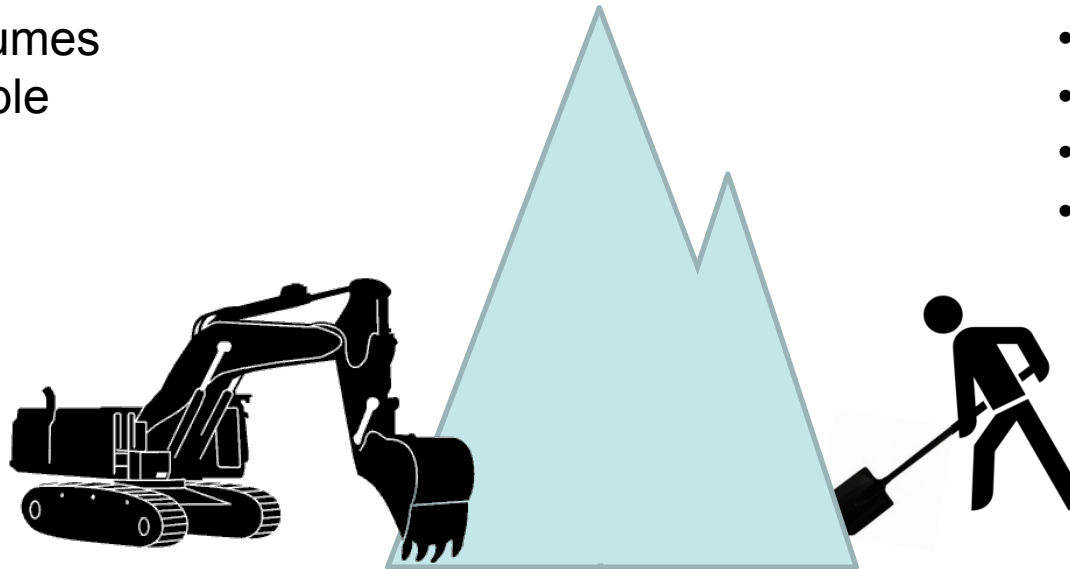
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The NAF World

- interactive
 - i.e. PROOF
- flexible
- fast turnaround
- final analysis
- user driven



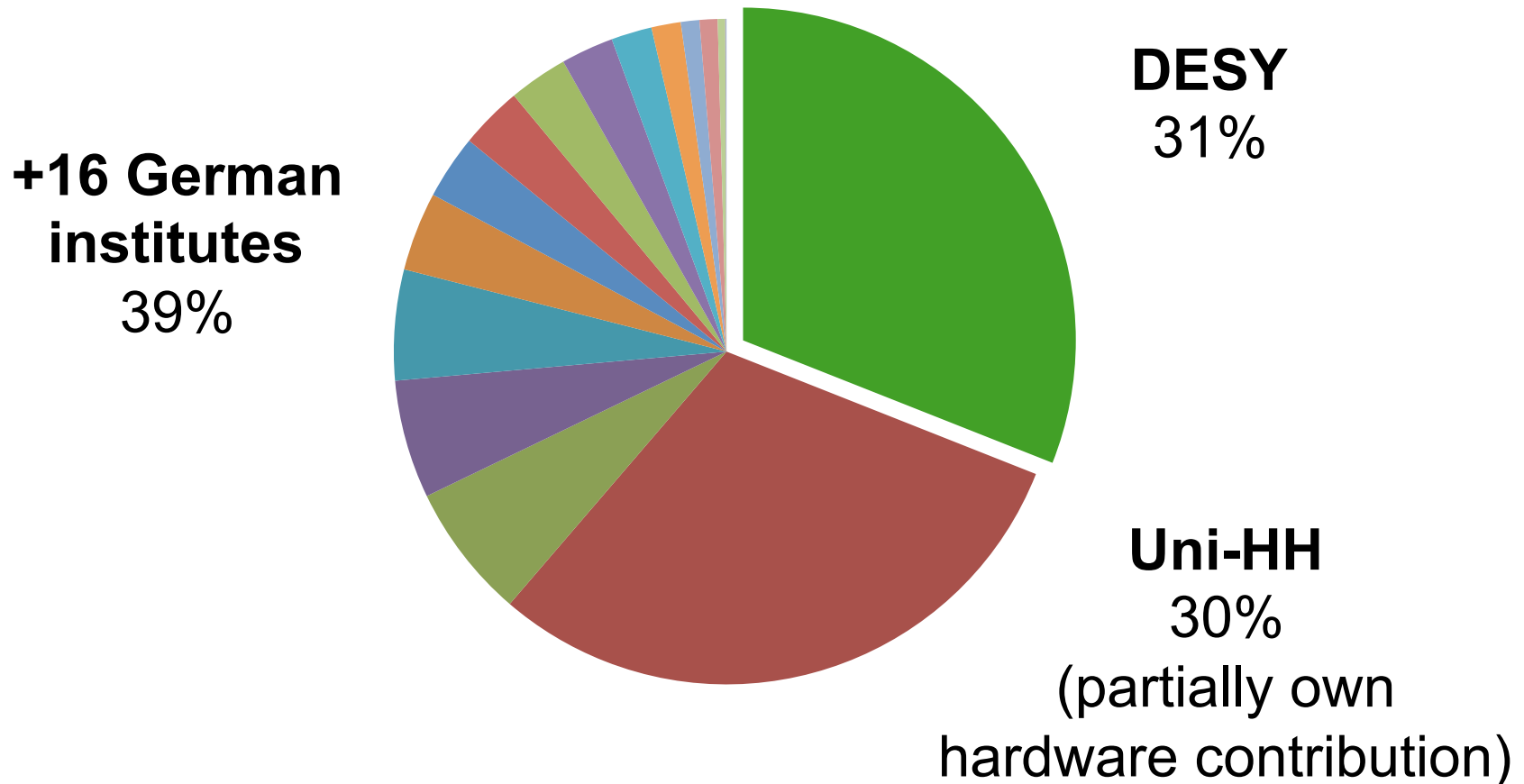
LHC Data – the treasure

Worldwide User Community

German User Community

NAF usage

NAF CPU usage by institutes Dec. 2009 – Apr. 2013



Challenges for the DGCC

Community	Challenge
LHC Belle II ILC Astroparticle	BIG DATA management, scalability of solutions, change of computing models, Grid & Cloud evolution, multi core support, data preservation, networks (LHCone)
Photon Science	BIG DATA management, scalability, Tier-0 role, cloud style, consultancy, federated identities, meta data, data formats

Strategic Topics

Continue to enable outstanding scientific work by:

- Maintaining and further developing BIG DATA management solutions
- Preserving data
- Consulting & Support
- Taking a leading role in coordination of computing in MATTER
- Being major player in MATTER for cooperation with LSDMA
- Applying for 3rd party funding
- Education and training

Summary

- The DESY Tier-2 is among the best worldwide
- The NAF plays an essential role for LHC analysis in Germany
- The concept of shared resources significantly improves the overall efficiency
- The excellent performance of the LK II facility attracts an increasingly diverse user community
- DESY will continue to develop next generation IT solutions in collaboration with scientific and industrial partners to be attractive to young people from all scientific communities