The NAF: Past, Present, Future

Disclaimer: For discussion purpose only!

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HELMHOLTZ ASSOCIATION

DESY

Some history

- Helmholtz Alliance “Physics at the Terascale”
- More resources for German LHC physicists
- NAF should be at DESY

- Two sites for LHC computing at DESY: Hamburg and Zeuthen
  - Idea: If the NAF is something for the whole German community, and hence somewhat external to DESY, why integrating it into either Hamburg or Zeuthen? One could create a new facility, somehow virtually placed between Hamburg and Zeuthen?
- Worked to some extend: Collaborative effort between Hamburg IT and Zeuthen DV

Why changing something in the setup? Changes since 2007

- Changing needs from users
  - More interactivity (like NX)
  - More collaborative tools
  - More development and debugging
  - Closer integration into site specific setups
  - No real need for a distributed setup, only making things more difficult
- Experience from running the NAF since 2007 “as is”
  - No benefit from distributed setup between HH and ZN
  - Three out of four experiments concentrated to one site
  - Need a better integration into site specific workflows
- Changes in DESY landscape
  - HH and ZN: additional focus (with same manpower): Photon Science and AstroParticle
- What will **NOT CHANGE: NAF is open for ALL German LHC/HEP institutes!**

Some technology changes

- Most important imminent change: Getting rid of Lustre@HH
- Replacing by IBM Sonas

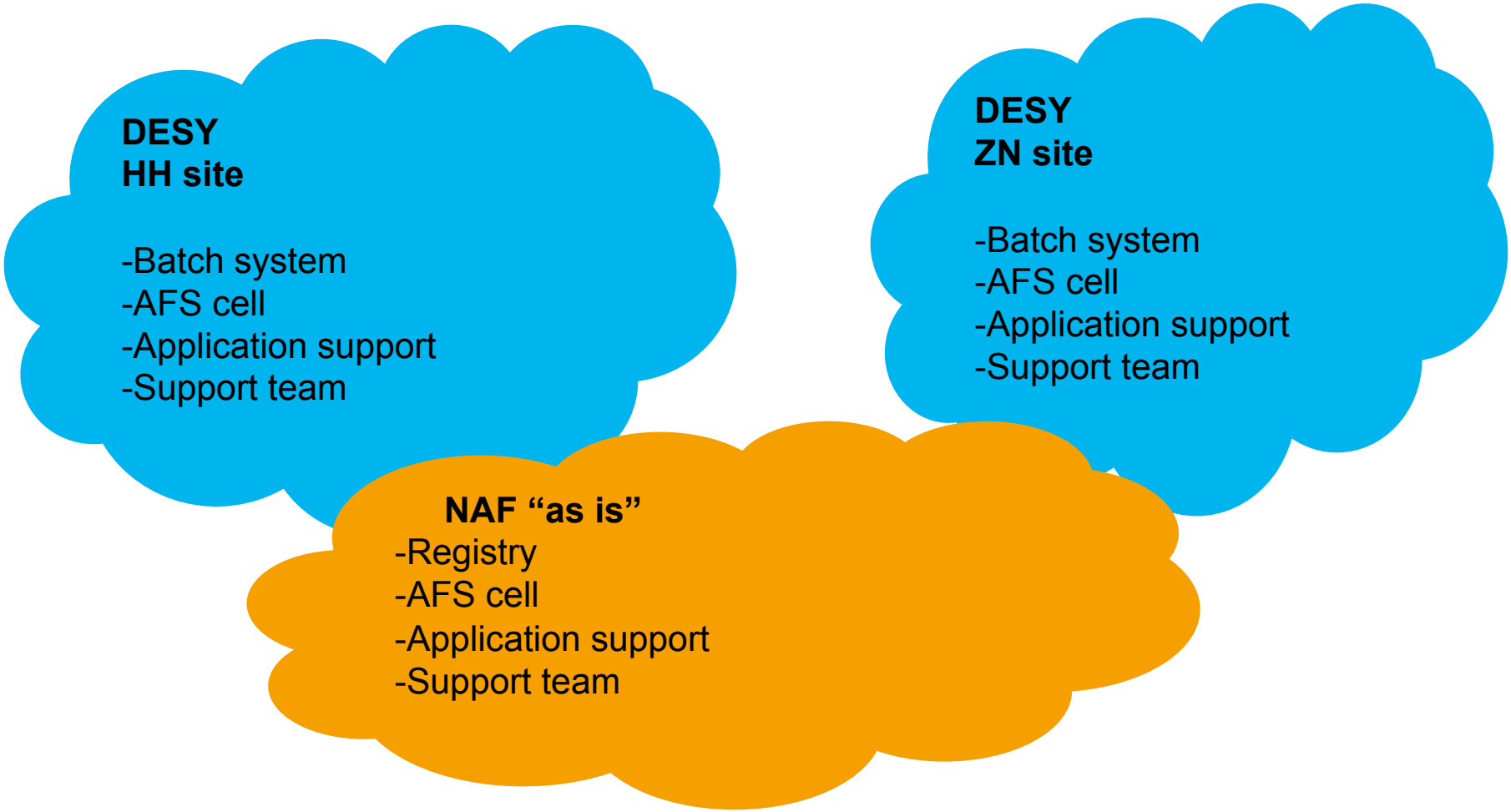
- Our expectations
  - Have support at hand! Cooperation with IBM, not just normal customer. So, if problems occur, better channels to IBM experts.
  - Expect less stability problems: Sonas based on GPFS
  - Expect more performance. First indications and benchmarks are very promising.
  - Better administration tools for us – and potentially for your expert users. Needs maybe some development, but the hooks are there
- DESY IT strategic choice – large momentum in IT

Disclaimer!

- What will follow now is still under discussion!
- This is just one point of view – but actually shared by others
- Some concepts and also details might not be changed as described in the following slides

- **Slides meant as a basis for discussion**

How? A very broad picture (oversimplified)



(in reality the two DESY sites are not as separated as shown here)

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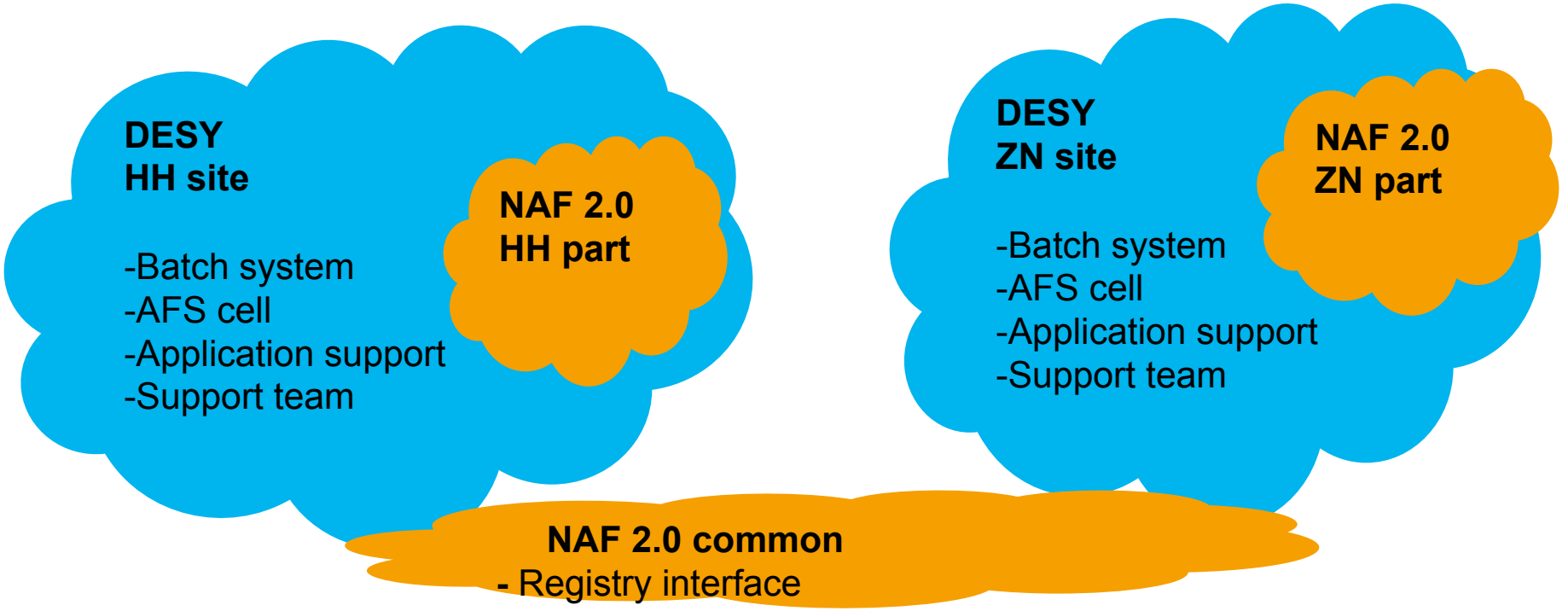

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Other Consequences

- For DESY-User (and Uni-HH):
  - NAF will become more like normal and well-known DESY infrastructure
  - Offers the possibility to integrate DESY non-NAF infrastructure into common NAF 2.0
- For external users:
  - Interaction with WGS and local batch will change – but probably not drastically
  - Interaction with Storage (dCache) will remain.
  - Again: **NAF is open for ALL German LHC/HEP institutes! (TeraScale)**
- For all:
  - NAF user directly benefit from DESY infrastructure

Special consequences for ATLAS

- ATLAS is the one experiment spread over two sites
  - So needs some thinking
- Cross-site access will change in future
- AFS still remain cross-site (as it is a global FS)
  - But HH will have /afs/desy.de/… as $HOME and Zeuthen /afs.ifh.de/… as $HOME
- Lustre/Sonas/… will only be accessible as a mounted filesystem at the respective local site
  - Sonas: Thinking about a GridFTP interface for remote access – subject to investigation with IBM
- dCache: Access is only a matter of firewall openings. No principle obstacle here for cross-site access.
- Remember: 10 Gbit link between HH and ZN (shared with all other traffic) – and ~300 km distance: Local read is ALWAYS preferable!

Consequences for all experiments _ 1

- Computation: Two batch systems and two set of WGS in future
  - One option: Integration into BIRD @HH, in Zeuthen into their local farm
  - Somewhat similar, but potentially different in details.
- Remote graphical tools will come.
  - Office in Hamburg, WGS in Zeuthen (or the other way round, or office at CERN, or some other place …) should be OK, no performance penalty

Consequences for all experiments _ 2

- Support has shown to be a crucial and controversial subject
  - The NAF will change from an “exotic infrastructure” to a “mainline IT/DV system”. More people within IT/DV will know about it.
  - Support at all levels (First-level UCO -> Experts) should be faster and more detailed
- DESY offers quite some services
  - Now unavailable for the NAF – but available in a future integrated NAF
  - Like the whole software maintained , e.g. compilers, debuggers, analysis tools, …
  - GPU computing, HPC cluster, …