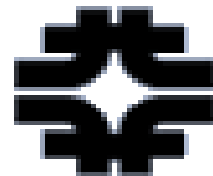




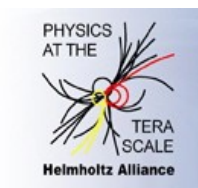
dCache

The dCache project

Patrick Fuhrmann et al.



additional funding, support or contributions by



d-grid
DGI II



What is dCache ?

- dCache is a *software project* with code contributions by DESY, FERMIlab and the Nordic Data Grid Facility (NDGF)
- dCache is a highly scalable *Storage System*, compatible with the WLCG specification of a Grid Storage Element.
- dCache is a project *infrastructure* (dCache.org)
- dCache is the storage software, DESY's data management is build upon.



Who is using dCache ?

- Mostly used in the HEP environment (WLCG+HERA)
- 8 of 11 Tier I's are using dCache as their primary data management system, connected to the local Tape back-end system. (e.g. TSM® HPSS® and many more)
 - Triumf, gridKa, Lyon, FermiLab, BNL, Sara, Pic and NDGF.
- More than 40 Tier II's are using dCache w and w/o Tape back-end including China, Australia and Russia.
- dCache is distributed by dCache.org, the Virtual Data Toolkit of OSG and the CERN gLite, YUM repository

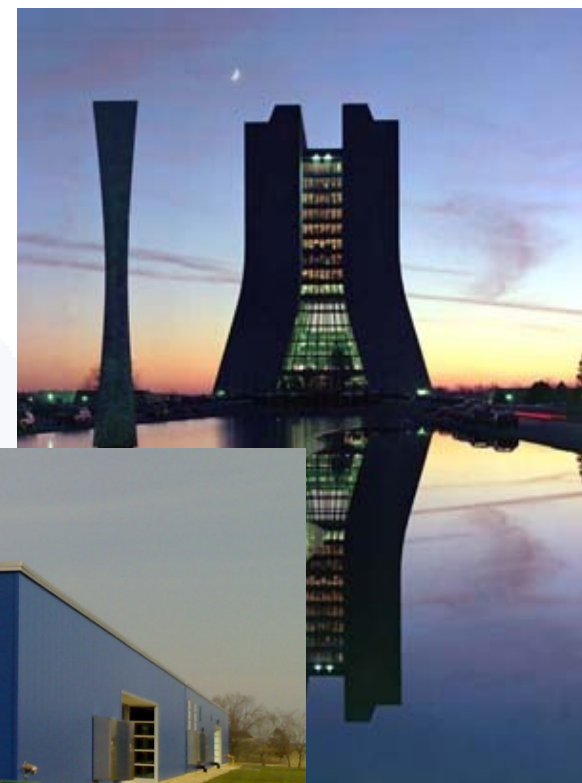


Most prominent dCache users (FERMILab)

Largest installation is the US CMS dCache @ FERMILab

- 690 pools (distributed over 140 nodes)
- 4.8 Pbytes online disk storage till End of March.
- 5 Pbytes storage in Tape.
- LAN throughput up to 20 GiBytes/sec
- WAN 1.2 GiB/sec (peak 2.5 GiB/sec)
- 60 TB/day read
- 2 TB/day write

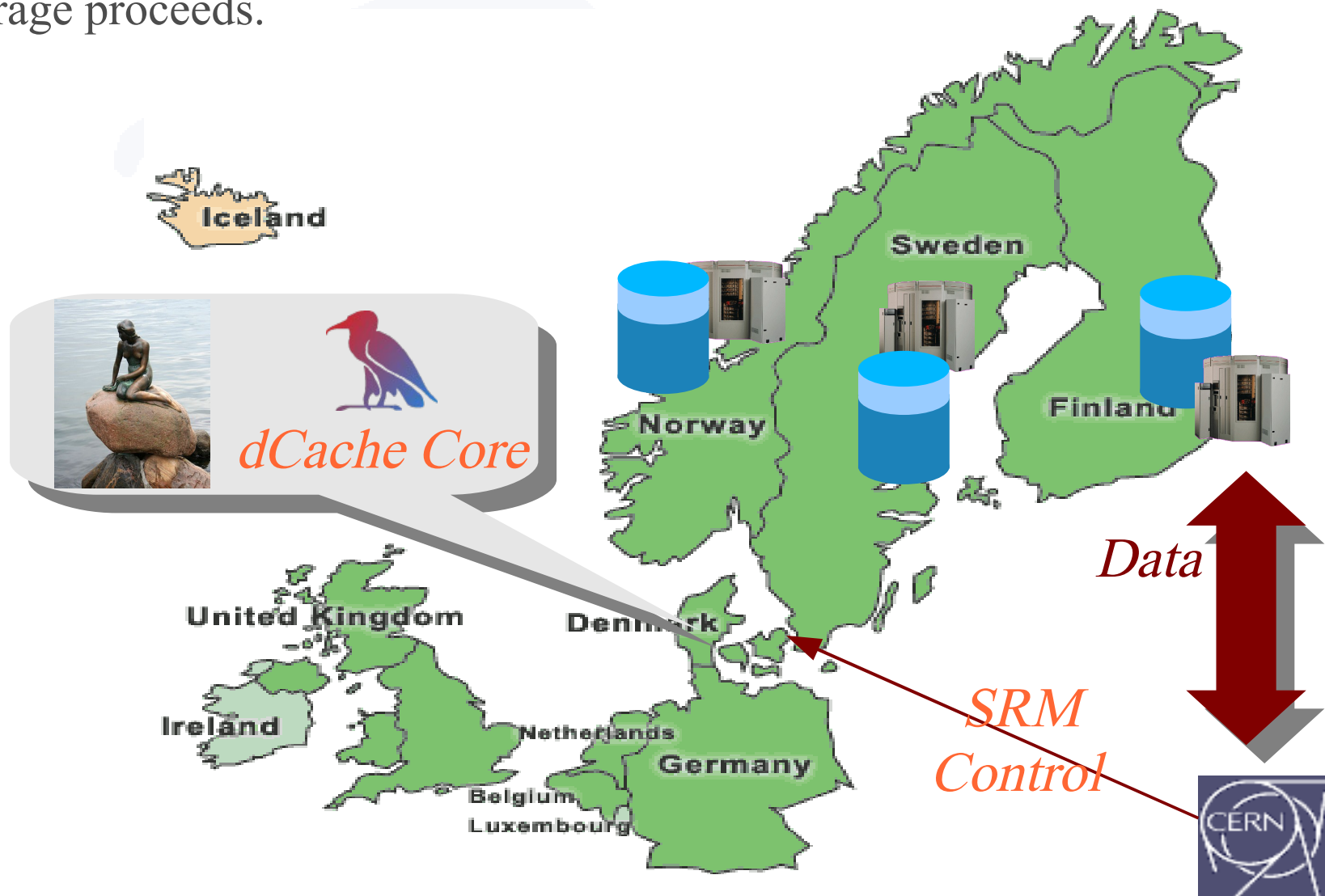
(Source : Jon Bakken US, CMS)





Most prominent dCache users (NDGF)

- 4 Countries, one dCache instance.
- At any time a country may 'go down' though raw data storage proceeds.





dCache.ORG

dCache.ORG

How is DESY involved ?

© 2006 Ulrike Sturmhoevel



DESY code contribution to dCache.org

dCache.ORG

dCache.ORG

- Cell communication package
- dCache core components
- Chimera/pnfs : the file system engine
- File System Access Control List (ACL's) module
- Protocol Engines
 - dCap (Posix file access protocol, client and server)
 - NFS 4.1 protocol engine
 - Http(s)
- Tape system back-end interface
- many more.....





DESY infrastructure support for dCache.org

dCache.ORG

dCache.ORG

- *Project Management*
- *dCache.org is hosting the developer infrastructure*
 - × *Code repository*
 - × *Automated build system*
 - × *Regression test suite*
 - × *LCG certification test bed.*
 - × *Communication infrastructure*
- *Provides the dCache.org web pages*
 - × *General information (releases, events, presentations ...)*
 - × *dCache, the book*
 - × *Wiki*
 - × *Download area & release notes*
- *Support infrastructure*
 - × *TicketSystem(RT)*
 - × *Mailing lists (user-forum and srm-deployment)*





DESY group liaison support to dCache.org.

➤ *Customer relations*

- *Organisation of customer phone/video meetings (e.g. weekly Tier I meeting)*
- *Telephone support for eligible customers (gridKa)*
- *Support for special events*
- *Organisation of workshops and tutorials*
- *Presentations at GDB and the like*



➤ *Contact to customer organisations and groups*

- *WLCG/EGEE/NGI*
- *LHC Experiments*
- *NDGF*
- *d-grid and HGF (Germany)*
- *Open Science Grid*

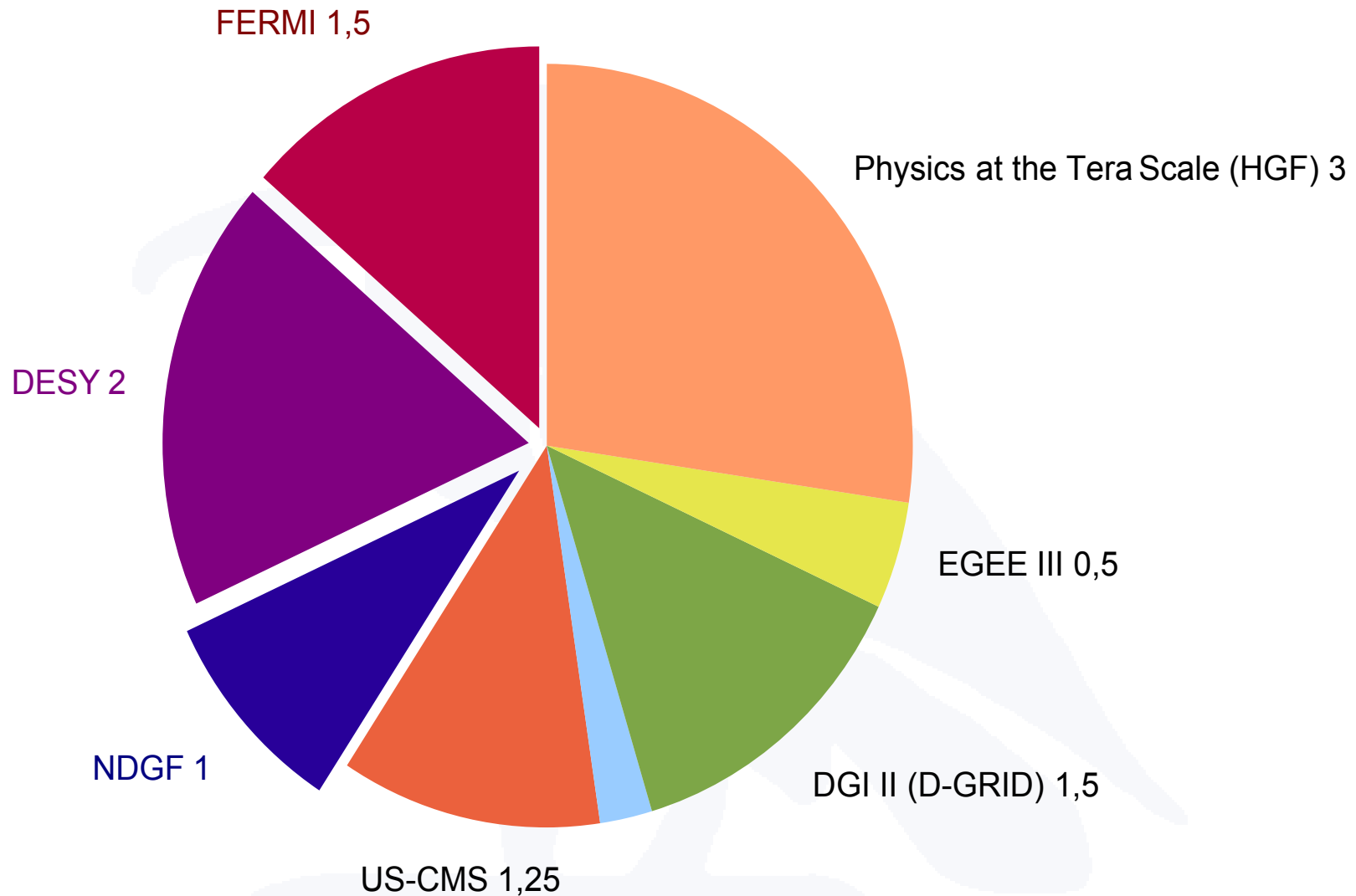




Who is contributing to dCache.org & development

dCache.ORG

dCache.ORG



Focus moving from development to support.



The people

dCache.ORG

dCache.ORG

Head of dCache.ORG

Patrick Fuhrmann

Core Team (Desy, Fermi, NDGF)

Andrew Baranovski

Gerd Behrmann

Bjoern Boettscher

Ted Hesselroth

Alex Kulyavtsev

Iryna Koslova

Tanya Levshina

Dmitri Litvintsev

David Melkumyan

Paul Millar

Owen Syngé

Neha Sharma

Vladimir Podstavkov

Tatjana Baranova

N.N.

P. Fuhrmann

Head of Development FNAL :

Timur Perelmutov

Head of Development DESY :

Tigran Mkrtchyan

Head of Development NDGF:

Gerd Behrmann

External

Development

Abhishek Singh Rana, SDSC

Jonathan Schaeffer, IN2P3

Support and Help

German HGF Support Team

Greig Cowan, gridPP

Flavia Donno, CERN



Mid term plans





Mid term plans

- Code / feature stabilisation well before the start of LHC in September.
- Improved test facilities.
- Improved scalability.
- Improved maintainability.
- Going for standard protocols : HTTP and NFS4.1.
- Attracting more communities.
- Building a stable and supportive user community.





- The dCache technology is an important pillar in the WLCG data management area.
- DESY is the dCache.org headquarters, providing crucial services for the project, including project management, product dissemination and deployment, code quality management and development.
- Currently the major funding is provided by short term projects in the US and within the German e-science program (d-grid, HGF).
- dCache.org is putting significant efforts into attracting non HEP communities by going for standard protocols.
- In order to provide a reliable, high quality and reasonably long term service, sustained funding is inevitable.



Further reading

www.dCache.ORG





Backup slides



The dCache.org release workflow ?

dCache.ORG

dCache.ORG

Customers

The Book

The Wiki

*Including Customers
Area*

Download

*Source, RPM
and YUM*

Ticket System

support@dCache.org

Mailing lists

user-forum@dCache.org

srm-deployment@dCache.org

Tel/Video conferences

WLCG Contact

Customer Relations (Workshops)

dCache.ORG

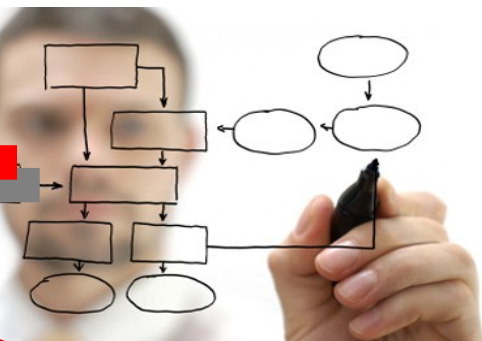
*Automated
Build
System*

*Regression
Test
System*

*Internal
SVN*

Code Review

Developers



*@
DESY
FERMI
NDGF*

The dCache.org framework is operated by DESY
and funded by DESY, HGF, EGEE and the German e-science community.



DESY : a dCache.org customer

- DESY is one of the major dCache.org customers, with 4 dCache instances at Hamburg and 2 at Zeuthen.
- DESY dCache highly benefits from the the external dCache contributions by FERMILab and NDGF.
- dCache.org benetifs from the experience and immediate feedback of the DESY dCache Operation Group (**DOT**)



dCache.ORG



DOT