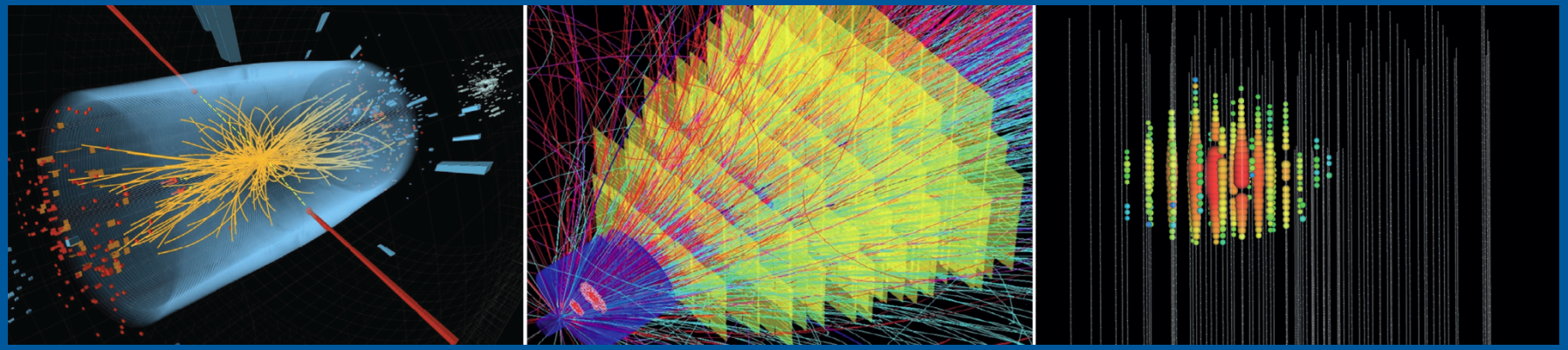
Matter and the Universe

LK I — IT developments for HEP



Paul Millar – DESY

HELMHOLTZ ASSOCIATION

Introduction

This talk introduces **IT developments* from LK I**:

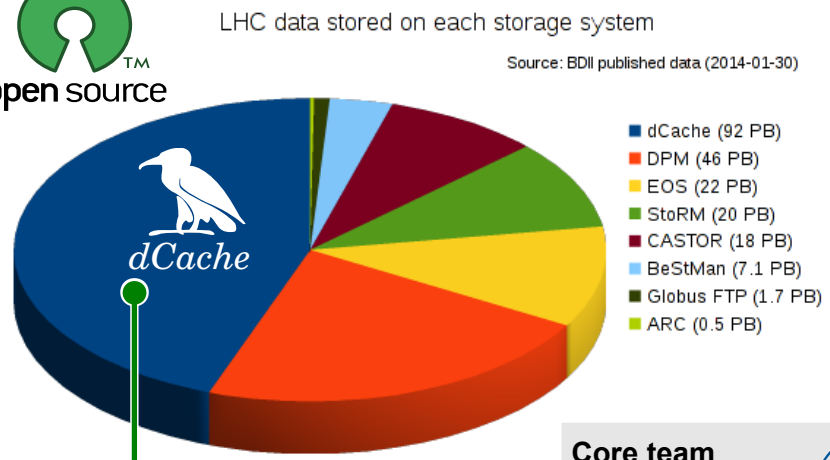
- Big Data solutions with dCache,
- Network connections,
- High Performance Computing (HPC),
- Complete data life-cycle.

* IT developments reported here are from DESY; KIT IT developments are presented in the Research Field: *Key Technologies*.

The LK II developments are covered in a plenary talk.

dCache: managed storage software for Big Data

open source™



Core team

DESY — 5 FTEs

Fermilab — 2 FTEs

NEIC — 1.5 FTEs

dCache

Student mentor programme

htw Hochschule für Technik und Wirtschaft Berlin

3 students

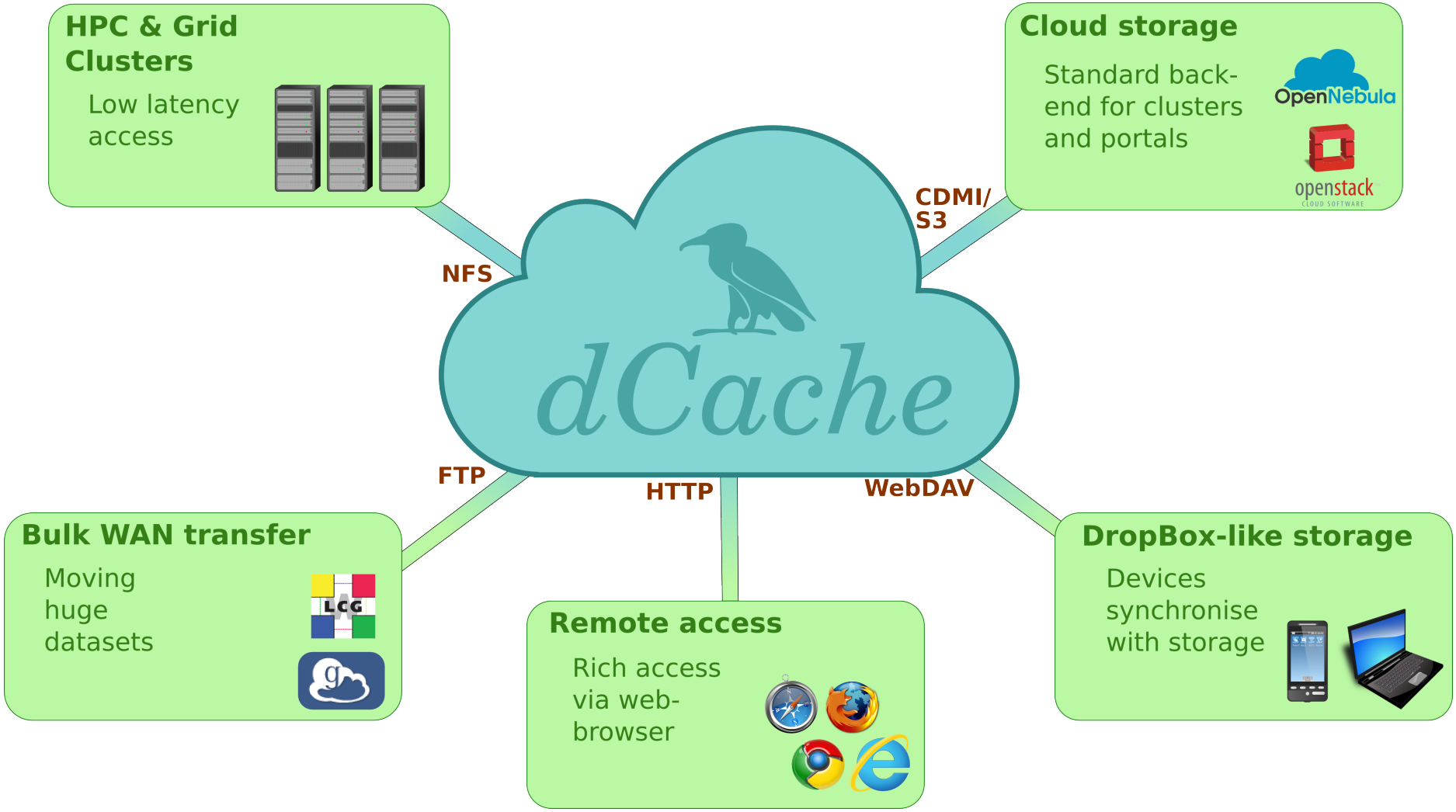
Collaborations

EGI, globus online, PHYSICS AT THE TERA SCALE Helmholtz Alliance, LSDMA, EMI European Middleware Initiative, OpenGridForum, SNIC, Open Science Grid

dCache evolution for Big Data and Cloud

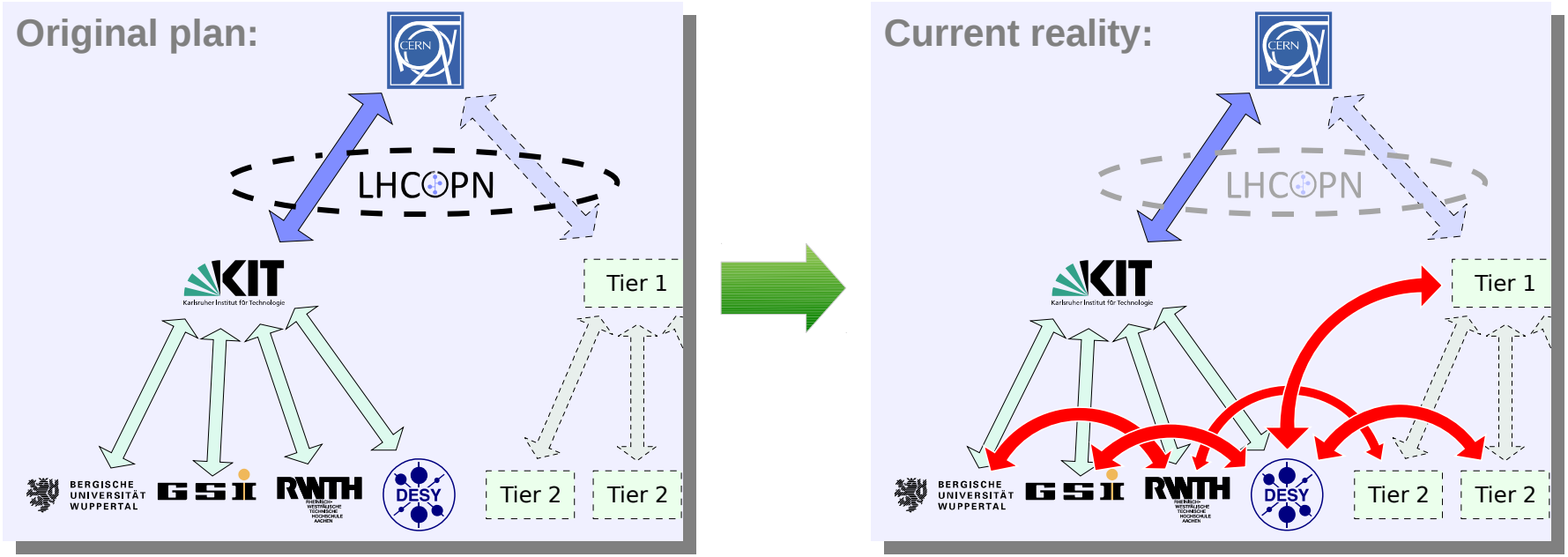
Era	Disk cache	Grid Storage	Generic Storage	Cloud Storage
Additional Communities				
Additional Authen-tication	Trusted host	X.509, Kerberos	Username+PW	SAML, OpenID, OAuth, Token, ...

Big Data Strategy

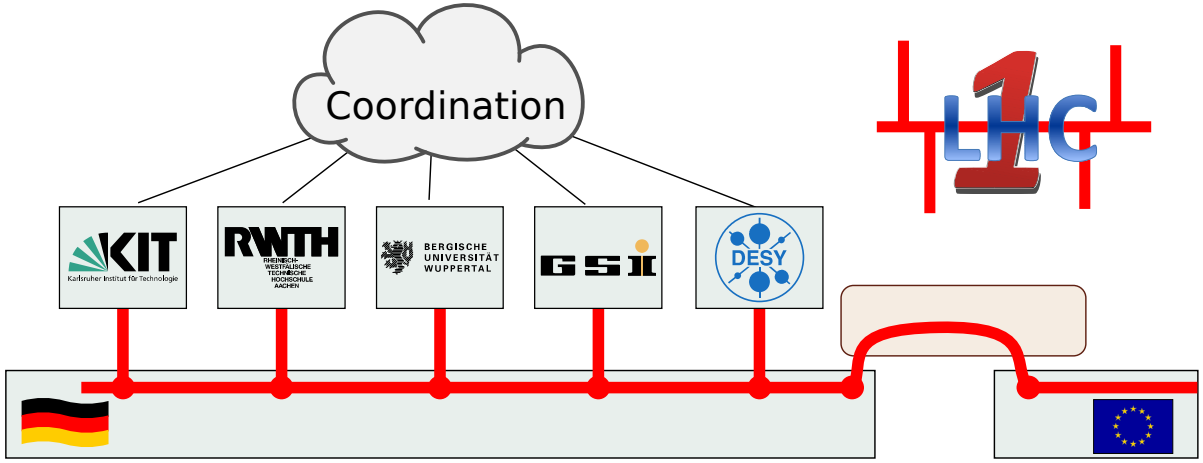


LHCone: advances in networking

The Problem

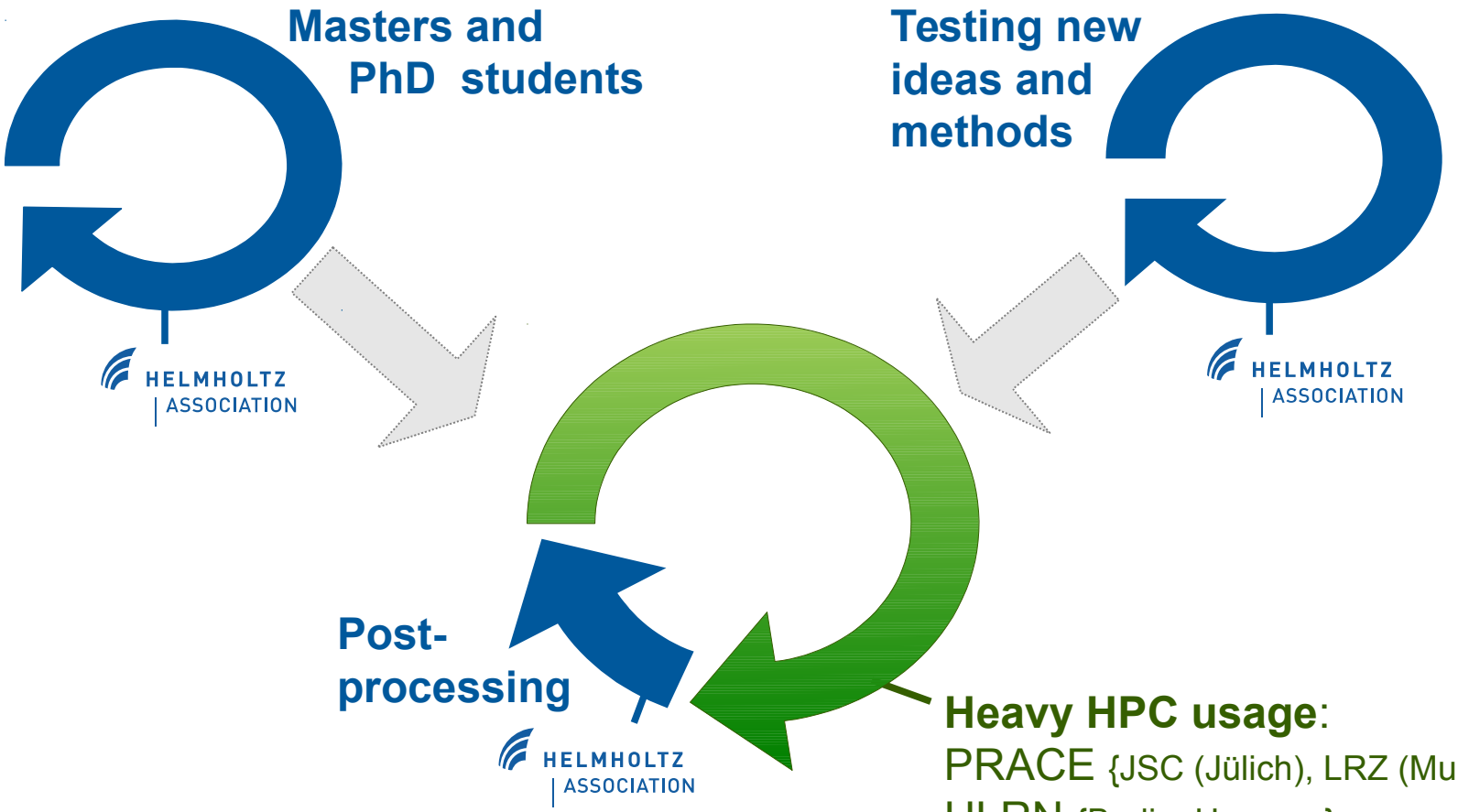


The Solution

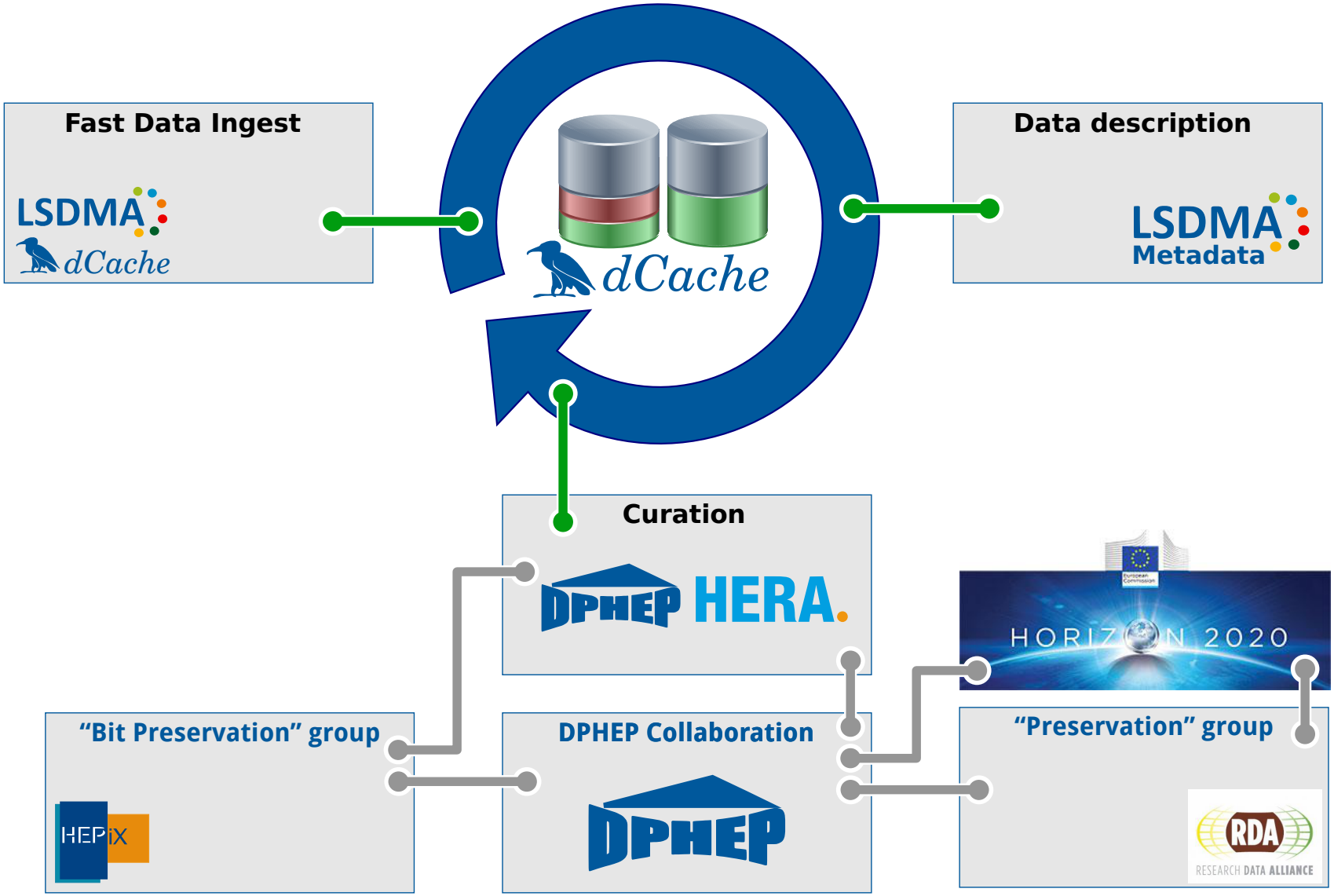


High Performance Computing (HPC):

Lattice QCD, Simulation for Photon Science, Plasma acceleration, ...



Handling the complete data life-cycle



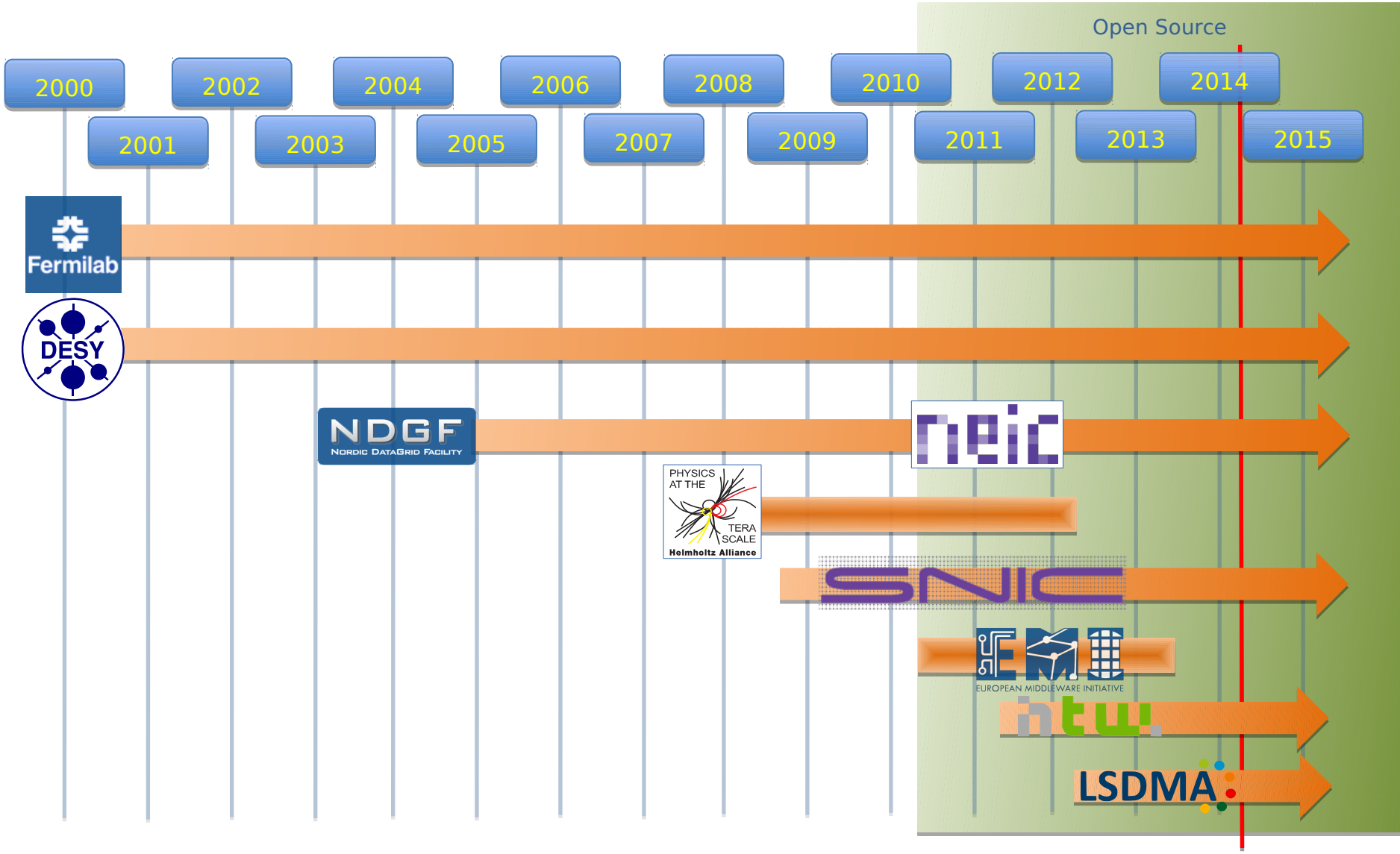
Strategic outlook

We are advancing IT by

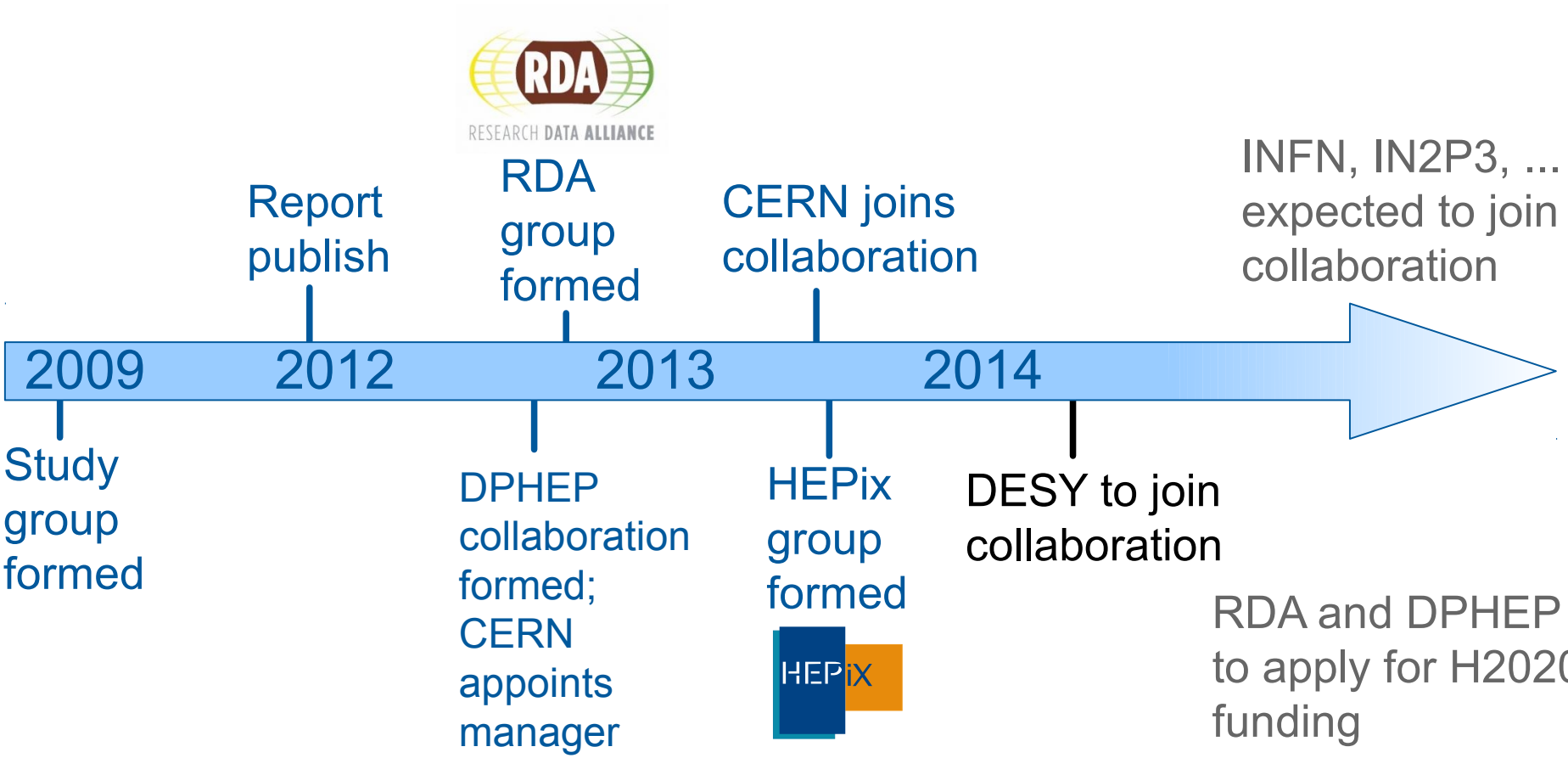
- Solving many community's **Big Data** challenges,
- Advancing **network** connectivity,
- Developing solutions for **High Performance Computing**,
- Enhancing the complete **data life-cycle**:
  - Improving data ingest performance,
  - Managing data archive metadata,
  - Exploring data preservation.

Supplementary slides

Collaboration and funding for dCache



DPHEP: curation of unique data



See www.dphep.org.