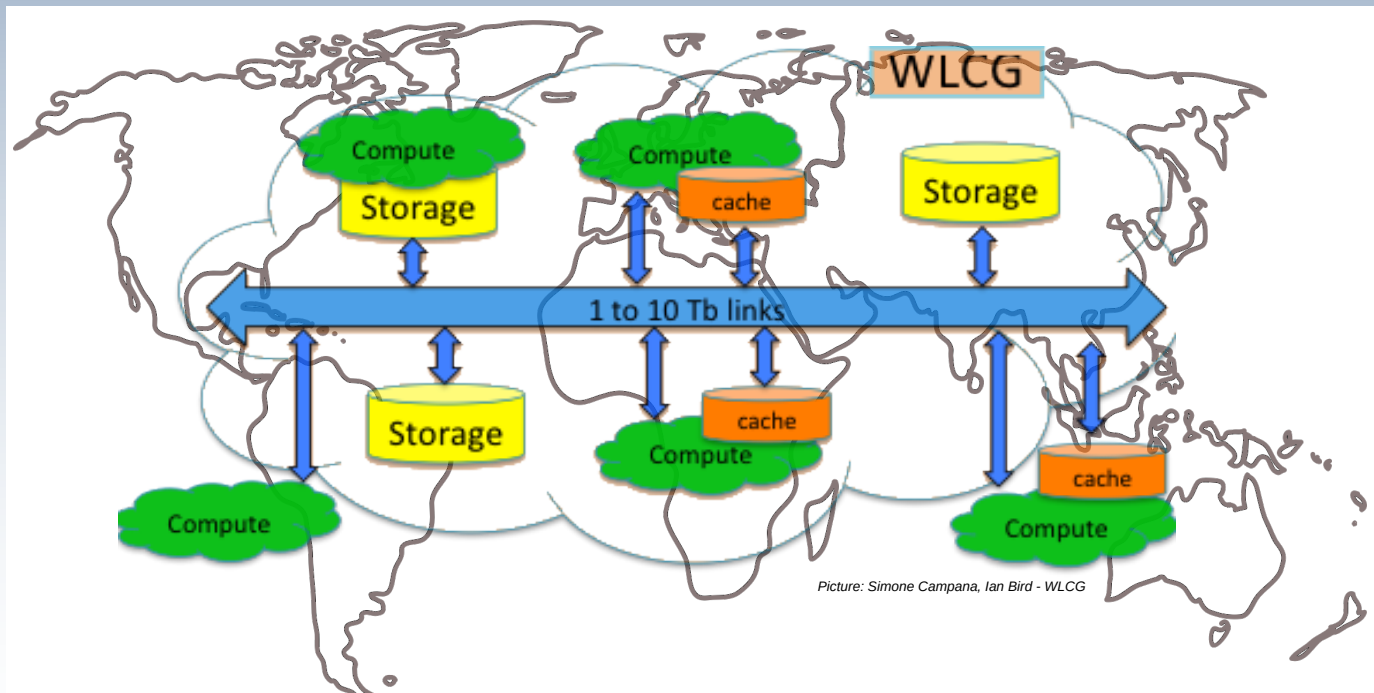
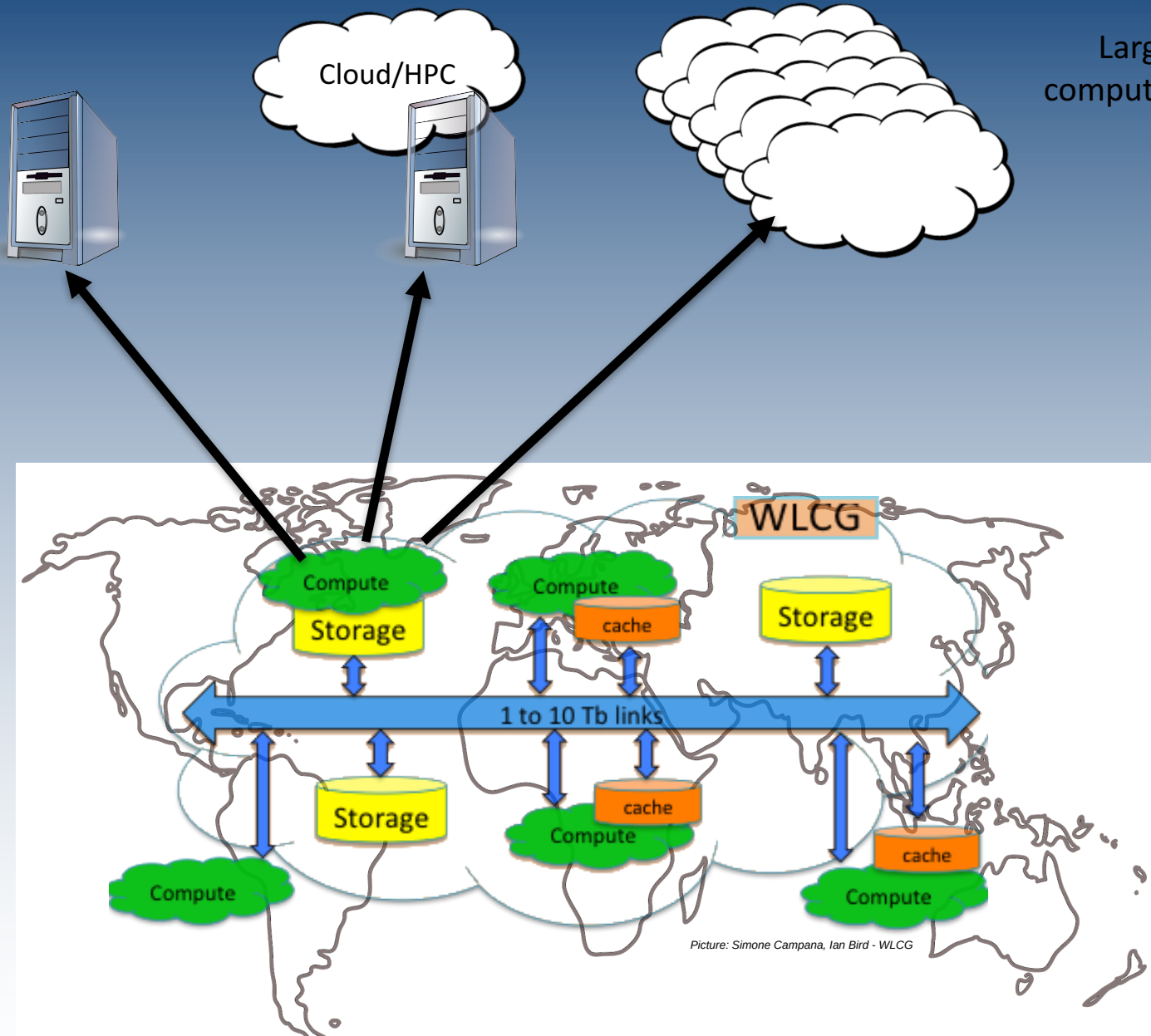


Regional (HTTP/WebDAV) federations

Randall Sobie
University of Victoria



Large or federated
computing/cloud/HPC
systems



Federated storage resources

“Grid storage”

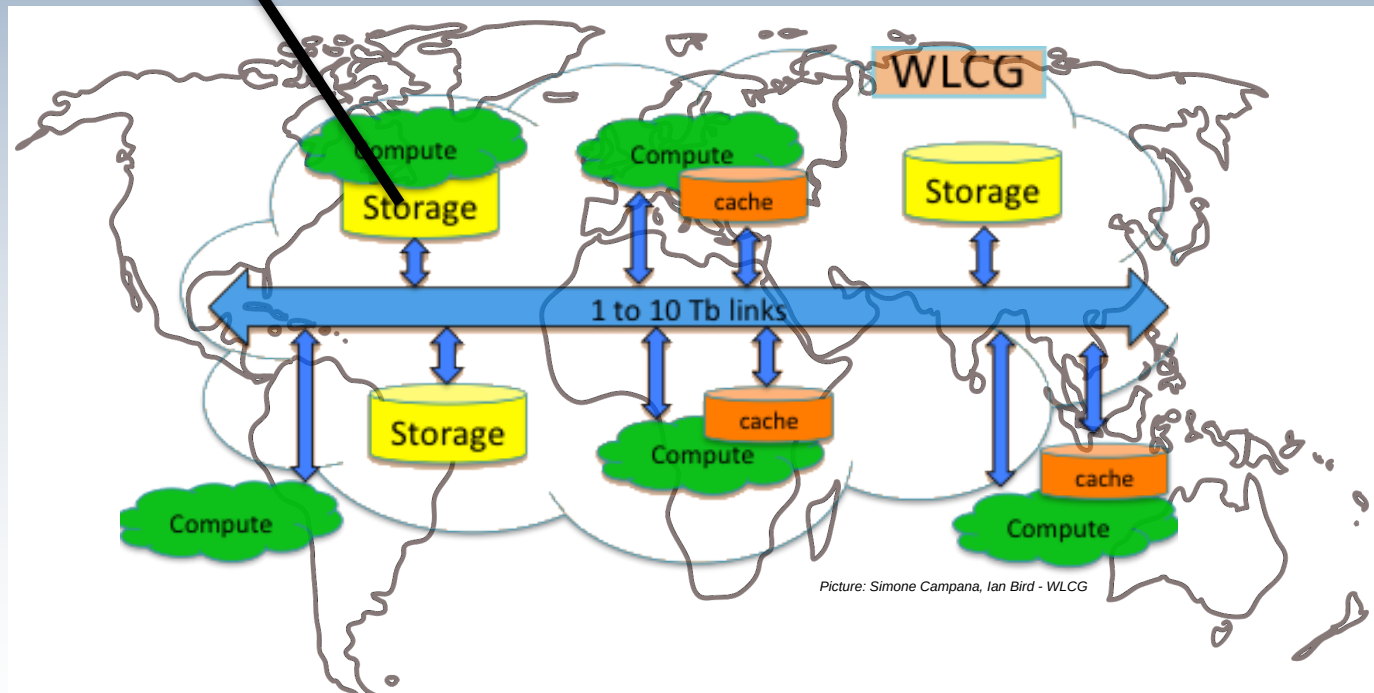
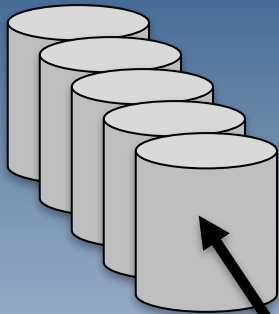
Integrated into the experiment DM systems

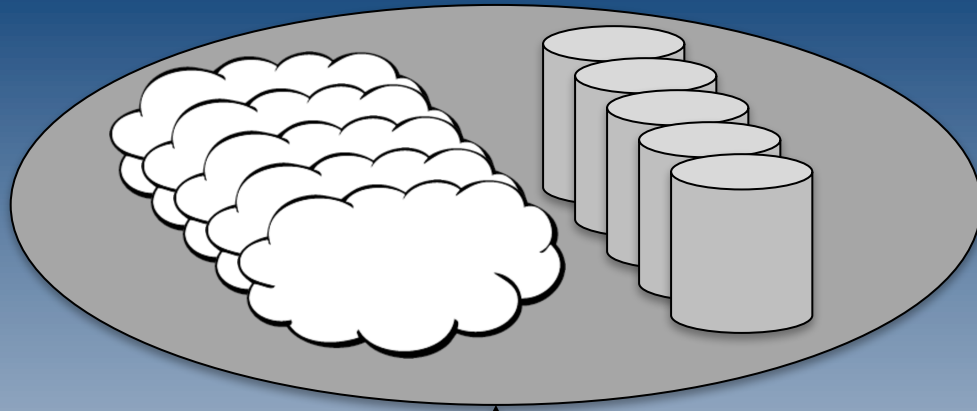
Existing and new storage

Dedicated and opportunistic

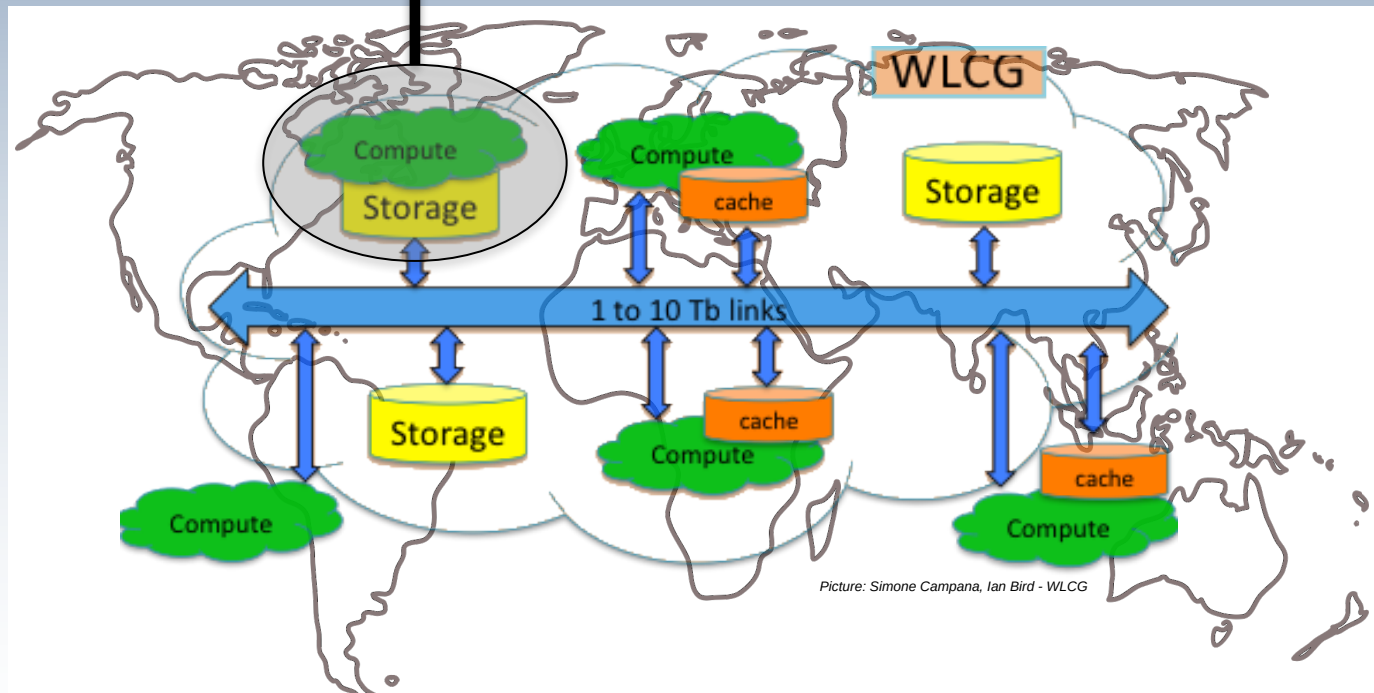
Intelligent use (GeoIP, load, network)

Usable by any project (HEP or non-HEP)





**Regional compute/cloud and
data federation**

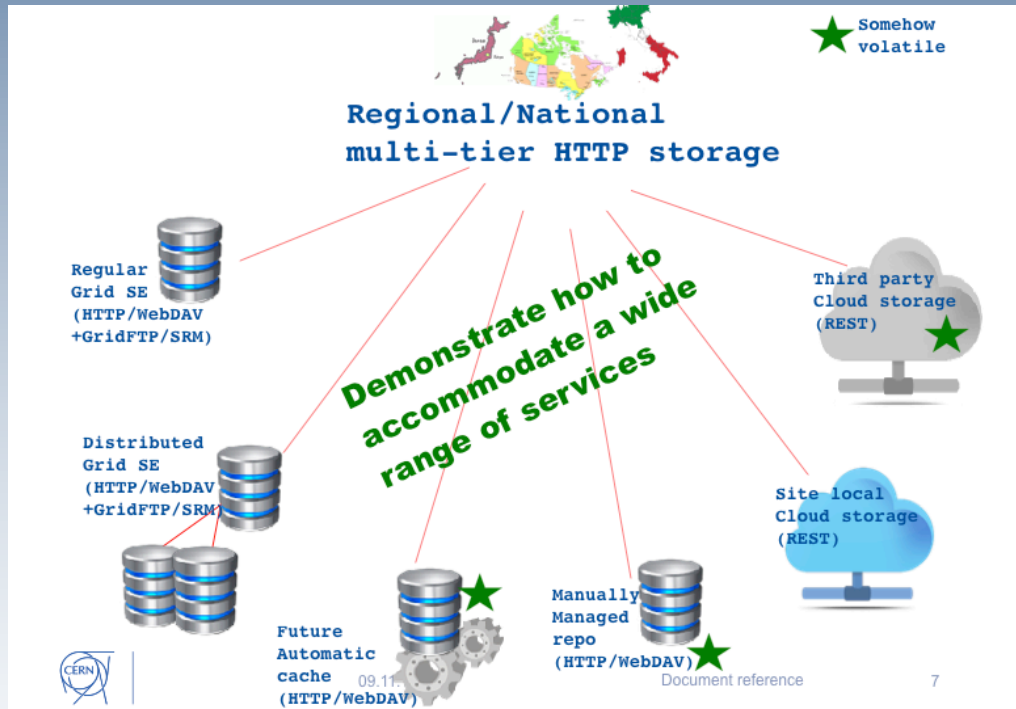


WLCG demonstrator project

(CERN-IT, ATLAS, Belle2, INFN, RAL, UVIC, TRIUMF)

WLCG storage, Cloud Resources and volatile storage into
HTTP/WebDAV-based regional federations

<https://indico.cern.ch/event/578986/contributions/2579126/attachments/1457195/2249106/FeddemonstratorGDBMay2017.pdf>

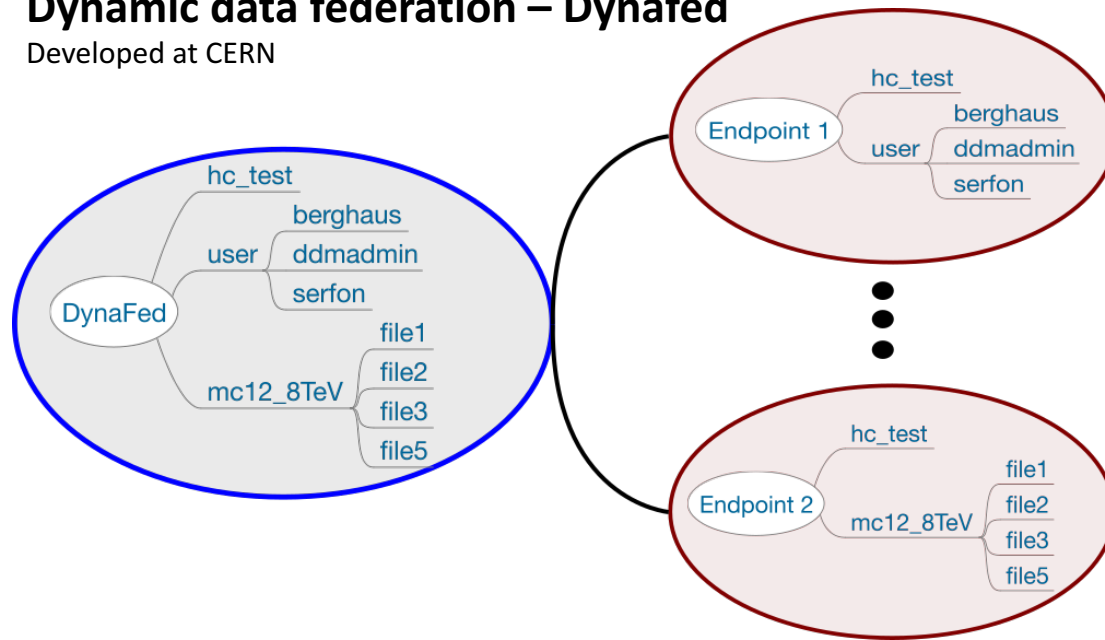


Use of cloud storage
(AWS S3, Ceph S3, Azure)

Consolidate existing storage with
multiple grid sites

Dynamic data federation – Dynafed

Developed at CERN



Aggregates existing storage and metadata farms on-the-fly

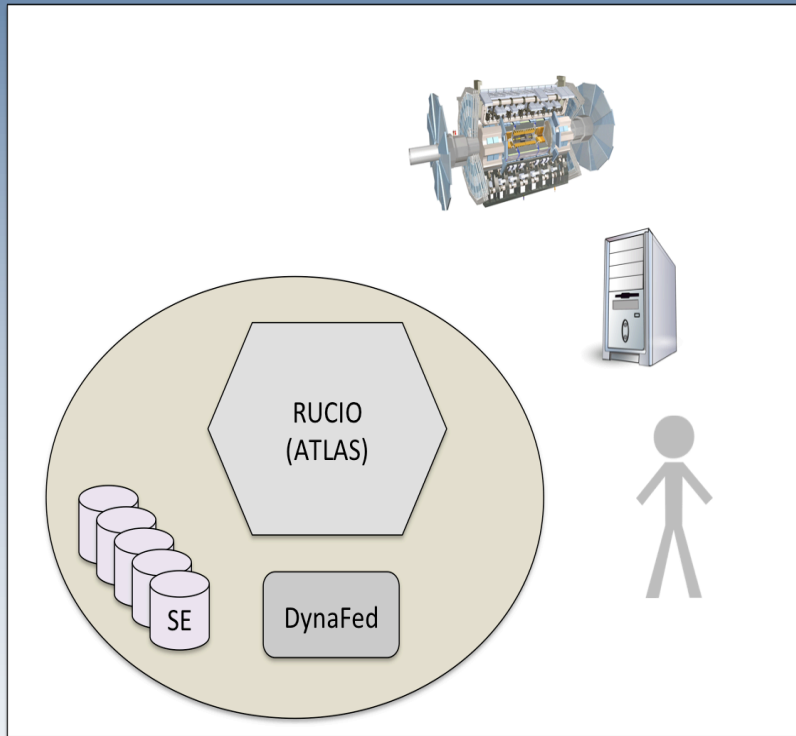
Creates (the illusion of) a unique namespace from a set of distinct storage or metadata endpoints

Exposes standard protocols that support redirections and WAN data access

Read and write; Object storage support

Ability to modify code for application requirements

Integrate into experiment workload and data management systems



DynaFed Developments

- Purge cache entries on file deletion
- Support make directory calls for DAV endpoints

ATLAS Data management (RUCIO)

- Option to not rename file transfers on completion
- Update of replication service using HTTP/DAV

ATLAS Workload (PANDA)

- Queue configuration to allow jobs read/write
- Special jobs to test DM performance

Authentication

- Built-in X.509 (VOMS) proxy based authentication
- grid-mapfile based authentication via python plugin
<https://heprc.blogspot.com/2017/06/grid-mapfile-based-authentication-for.html>

Similar effort for Belle II

Directions

- Multiple development instances of DynaFed
 - DynaFed in front of empty object storage: CERN, RAL, INFN, UVIC
 - DynaFed federating existing/full storage: INFN, UVIC
- Object or conventional storage
 - Accessed using WebDAV
- Plan to start running ATLAS test jobs (summer 2017)

End