



ESCAPE
European Science Cluster of Astronomy &
Particle physics ESFRI research Infrastructures

Information Systems: WLCG Use Case

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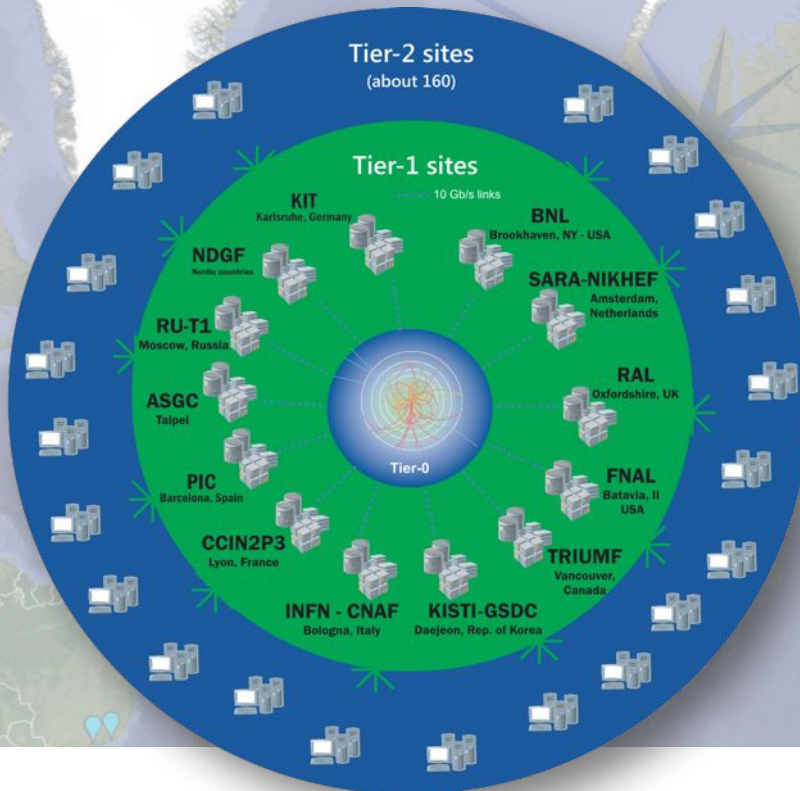


The Worldwide LHC Computing Grid

**Tier-0
(CERN and Hungary):**
data recording,
reconstruction and
distribution

**Tier-1: permanent
storage, re-processing,
analysis**

**Tier-2: Simulation,
end-user analysis**



~170 sites,
42 countries

~1M CPU cores

~1 EB of storage

> 2 million jobs/day

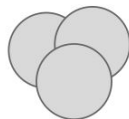
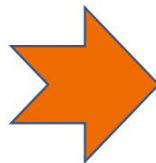
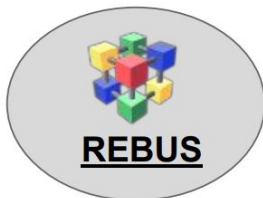
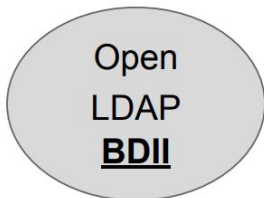
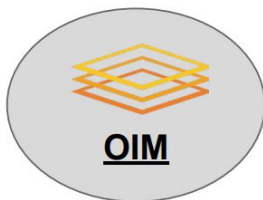
10-100 Gb links

WLCG:

An International collaboration to distribute and analyse LHC data

Integrates computer centres worldwide that provide computing and storage resource into a single infrastructure accessible by all LHC physicists

Components of the WLCG Information System



Other sources

WLCG information consumers

Rucio



Phedex



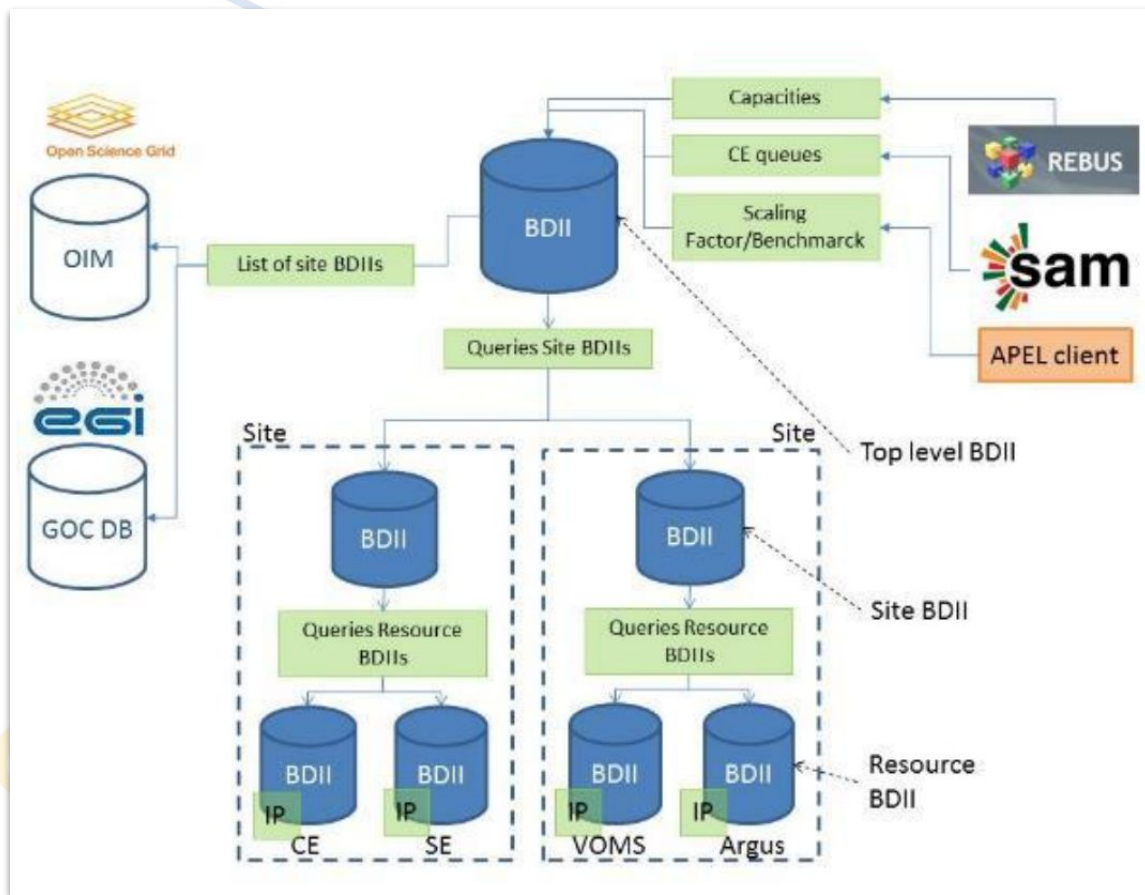
GlideinWMS



HammerCloud



- Distributed/Layered system
- Can work with Dynamic Data
- Complex schema prone to misconfiguration
- Integrating new type of resources is troublesome
- Some trust in info provided by BDII was lost



- Can define systems with complex configuration
- Can validate data
- Designed having ATLAS in mind

ATLAS Grid Information System

RC Site ATLASite DDMEndpoint PANDA Queue Service Central Services DDM Groups Service object details Docs Twiki OLD

Service

Name: CERN-PROD_SE_145 Site.state: ACTIVE State: ACTIVE Operations:

Type: SE Last modified: 2018-05-15 10:59 State updated: 2018-05-15 10:59

Site: CERN-PROD Implementation: State comment: Object was created using WebUI

is_new: True Description:

Associated Protocols

Name	Flavour	Endpoint	Basepath	State	Status	Activities	Is_monitored	Description	Settings	Operations
CERN-PROD-SE-GRIDFTP-eulakeftp.cern.ch	GRIDFTP	gsftp://eulakeftp.cern.ch:2811		ACTIVE	OK	read_wan0, third_party_copy0, write_wan0	False			
CERN-PROD-SE-XROOTD-eulake.cern.ch	XROOTD	root://eulake.cern.ch:1094	/	ACTIVE	OK	delete_lan0, delete_wan0, read_lan0, read_wan1, third_party_copy1, write_lan0, write_wan1	False			

Add new Service protocol

Manage Service protocols for activity: READ WAN WRITE WAN DELETE WAN READ LAN WRITE LAN DELETE LAN Third party copy

Service Resources

Name	Basepath	Endpoint	DDMEndpoints	Extra settings	Operations
ATLASDATAKEPPS		/eulake/cg/test/hammercloud/atlas/	CERN-PROD_DATADISK_DATALAKES_PPS path=ruco/ CERN-PROD_DATADISK_DATALAKES_PPS_TESTA path=testa/ruco CERN-PROD_DATADISK_DATALAKES_PPS_TESTB path=testb/ruco CERN-PROD_DATADISK_DATALAKES_PPS_TESTC path=testc/ruco CERN-PROD_DATADISK_DATALAKES_PPS_TESTD path=testd/ruco CERN-PROD_DATADISK_DATALAKES_PPS_TESTD_CLONED path=testd/ruco		
ATLASDATAKEPPS_PNPI		/eos/eulake/tests/rutests/spb/data.pnpionly_1/hammercloud/atlas/	CERN-PROD_DATADISK_DATALAKES_PPS_PNPI_TESTA path=testa/ruco CERN-PROD_DATADISK_DATALAKES_PPS_PNPI_TESTB path=testb/ruco CERN-PROD_DATADISK_DATALAKES_PPS_PNPI_TESTC path=testc/ruco CERN-PROD_DATADISK_DATALAKES_PPS_PNPI_TESTD path=testd/ruco		
ATLASDATAKEPPS_RU		/eos/eulake/tests/rutests/spb/data.ruonly_1/hammercloud/atlas/	CERN-PROD_DATADISK_DATALAKES_PPS_RU_TESTA path=testa/ruco CERN-PROD_DATADISK_DATALAKES_PPS_RU_TESTB path=testb/ruco CERN-PROD_DATADISK_DATALAKES_PPS_RU_TESTC path=testc/ruco CERN-PROD_DATADISK_DATALAKES_PPS_RU_TESTD path=testd/ruco		
ATLASDATAKEPPS_RU_HYBRID		/eos/eulake/tests/rutests/spb/rain/ruandcern/hammercloud/atlas/	CERN-PROD_DATADISK_DATALAKES_PPS_RU_HYBRID_TESTA path=testa/ruco CERN-PROD_DATADISK_DATALAKES_PPS_RU_HYBRID_TESTB path=testb/ruco CERN-PROD_DATADISK_DATALAKES_PPS_RU_HYBRID_TESTC path=testc/ruco CERN-PROD_DATADISK_DATALAKES_PPS_RU_HYBRID_TESTD path=testd/ruco		
ATLASDATAKEPPS_RU_RAIN6		/eos/eulake/tests/rutests/spb/rain/hammercloud/atlas/	CERN-PROD_DATADISK_DATALAKES_PPS_RU_RAIN6_TESTA path=testa/ruco CERN-PROD_DATADISK_DATALAKES_PPS_RU_RAIN6_TESTB path=testb/ruco CERN-PROD_DATADISK_DATALAKES_PPS_RU_RAIN6_TESTC path=testc/ruco CERN-PROD_DATADISK_DATALAKES_PPS_RU_RAIN6_TESTD path=testd/ruco		

Add new Service resource

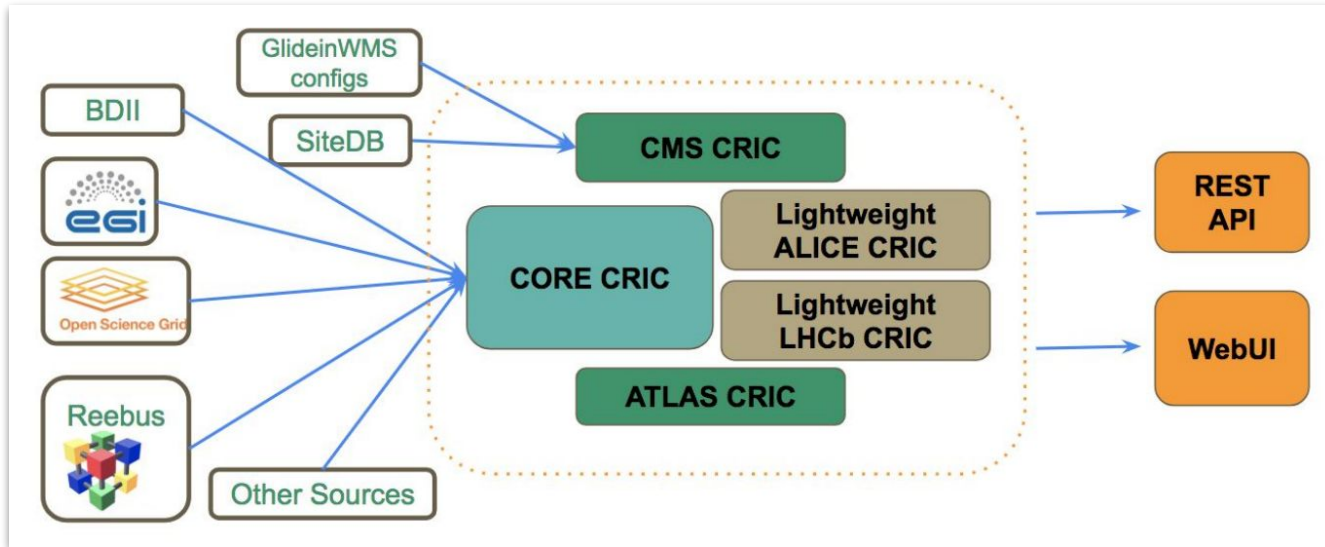
Changes Log (last 100 entries)

Event ID	Date	Object	Operation	PK	IP	User	Changes	Data	Old Values
16919674	2018-12-05 11:51	Resource	New	420	194.12.179.232	/DC=ch/DC=cern/OU=Organic Units/OU=Users/CN=dchriso/CN=801339/CN=Dimitrios Christidis	{'endpoint': 'u/eos/eulake/tests/rutests/spb/rain/ruandcern/hammercloud/atlas/', 'name': 'u/ATLASDATAKEPPS_RU_HYBRID', 'basepath': 'u', 'last_modified': '2018-12-05 11:51:44.553904', 'service_id': '19258', 'uid': '420'}		



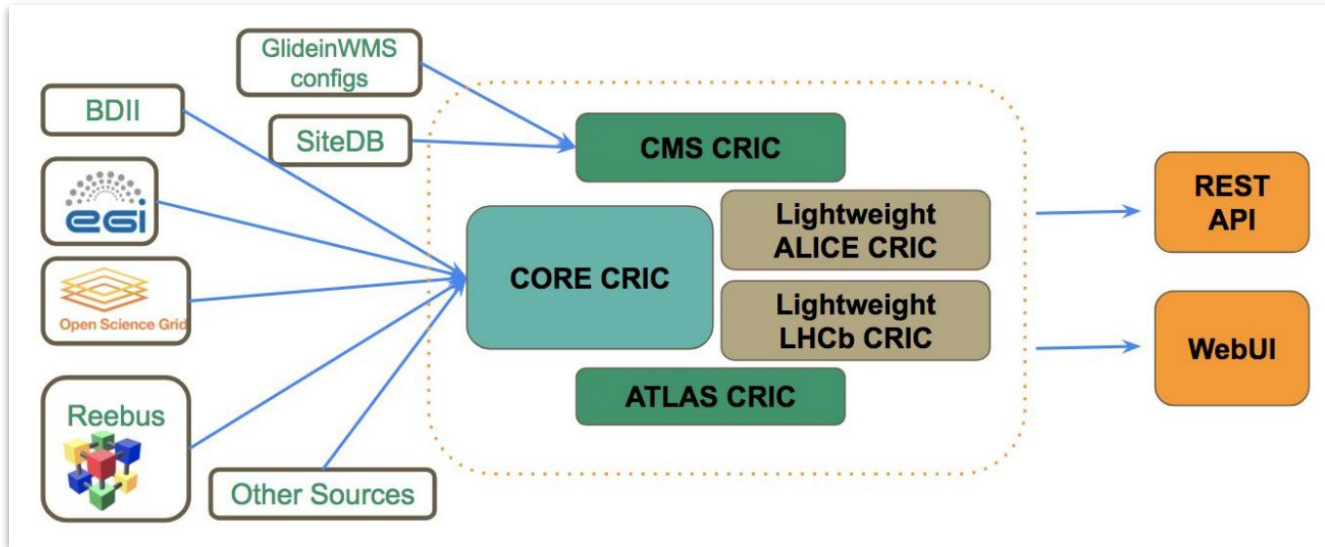
CRIC: Computing Resource Information Catalogue

- High level information system aiming to describe the topology of the WLCG infrastructure (resources provided by the WLCG sites) and experiment-specific configuration required to exploit this infrastructure according to the experiments Computing models .



CRIC: Computing Resource Information Catalogue

- CRIC can consume data from any kind of primary information source, whatever is relevant for a particular service or its implementation.
- Flexible CRIC schema allows to easily introduce new types of objects



Cric features 1/2

- Ensures all clients get consistent topology and configuration information
- Can validate input is correct
- Logging all Actions performed, easily track changes and responsible user
- Subscribing to changes / Notifications



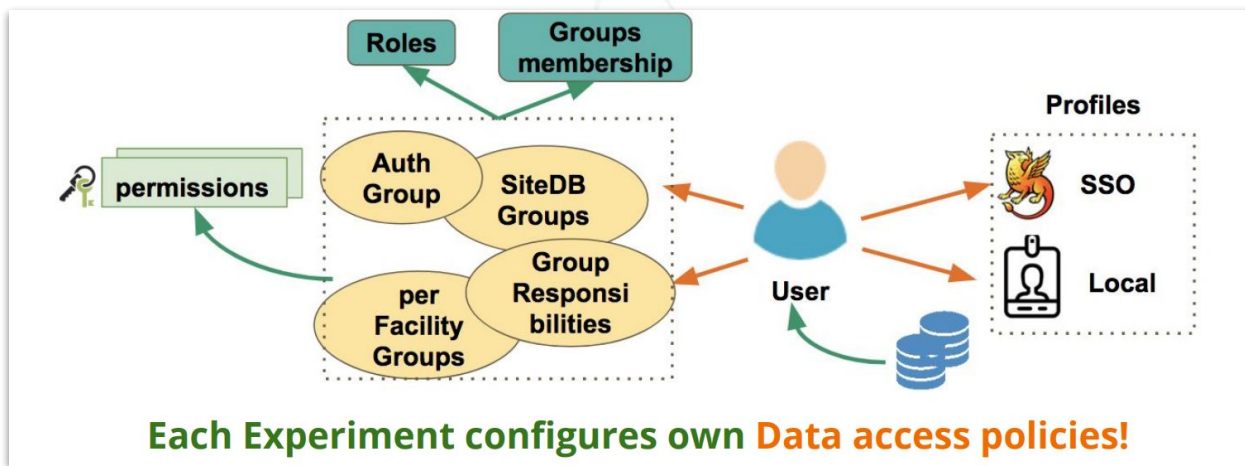
Cric features 2/2

- Modular / Extendable
- Clean Web UI, REST API, JSON Exports
- Can define user access rights to be enforced by other services
- Fine grained user permissions to edit objects



CRIC Authentication / Authorization

- Several Authentication methods
- Flexible utilisation of Permissions, Roles and Groups at various levels
- Ability to bootstrap User info from external sources (CERN user DB, experiment specific DB, config files, e-groups etc)



[Home](#)
[Core](#)
[Core API](#)
[CMS](#)
[CMS API](#)
[Docs](#)
[Admin](#)
[Logs](#)
[Help](#)
[aristeidis.fkiaras@cern.ch](#)
[Exit](#)

[Reload](#)
[Index View](#)
 Show entries
 Search:

[filter by State](#)
[filter by Tier level](#)
[filter by Country](#)
[filter by Status](#)

State	Tier level	Country	Status
ACTIVE	0	Switzerland	test
ACTIVE	0	Switzerland	production
ACTIVE	1	NULL	test
ACTIVE	1	Germany	production
ACTIVE	1	Spain	production
ACTIVE	1	France	production
ACTIVE	1	Italy	production
ACTIVE	1	Russian Federation	production
ACTIVE	1	NULL	test
ACTIVE	1	United Kingdom	production
ACTIVE	1	NULL	test
ACTIVE	1	United States	production
ACTIVE	1	NULL	test
ACTIVE	2	Austria	production

- List Resources
- Federations
- Pledges
- Resource Centre Sites
- Services
- Storage Protocols
- Queues
- Experiment Sites List
- Crons List
- CacheCheckers List
- Downtime List
- Operations
- Create Federation
- Create Federation pledge
- Create CacheChecker
- Create Resource Centre Site
- Create Service (LFC, Squid, Frontier)
- Create Resource
- Create Computing Element
- Create Queue
- Add Site Downtime

- filter by S
- Site
- T0_CH
- T0_CH
- T1_CH
- T1_DE
- T1_ES
- T1_FR
- T1_IT
- T1_RU
- T1_RU
- T1_UK
- T1_UK
- T1_US_FINAL
- T1_US_FINAL_Disk
- T2_AT_Vienna



Home Core API DOMA DOMA API Docs Admin Logs Help afkiaras Exit

Define New RSE Object

Basic relations

RSE Name:

Storage Unit:

Storage Resource:

Attributes

Space Usage URL:

Deterministic: True

Volatile: True

LFN to PFN Algorithm:

Credentials:

RSE Type:

Relation to FTS:

Verify Checksum: True

State

Object state:



Further reading

- [Grid Information System Docs](#)
- [WLCG Information System Evolution: HOW2109 Presentation](#)
- [CMS CRIC](#)



Thank you!

Question?

