



Enabling Grids for
E-science in Europe

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Experiment monitoring and filtering of LCG-2 resources

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Contents

- Introduction
- Summary of traditional practices
- SFTs + FCR
- Experiment views
 - Biomed
 - Alice
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- How experiments decide what resources to use...
 - Based on what?
 - Using what tools/procedures?
 - Problems, possible improvements?
- What can LCG-2 offer...
 - Site Functional Tests
 - Freedom of Choice for Resources
 - Is that enough?

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Summary of traditional practices

- Simplest (worst) case: No filtering at all
 - All resources considered for match-making / data access
- Next step: Manual blacklist of sites
 - Visual inspection of SFT results
 - Custom tests (testing specific characteristics with VO cert.)
 - Past experience (resources failing recently)
 - Exclusion/inclusion of resources (CEs) via JDL requirements

```
SiteRequirement =  
    other.GlueCEInfoHostName == "grid001.fi.infn.it"  ||  
    other.GlueCEInfoHostName == "bogrid5.bo.infn.it"  ||  
    other.GlueCEInfoHostName == "t2-ce-01.mi.infn.it"  ||  
    [ ... ]
```

- Automation: Script to parse SFT (or other tests) results

Problems with traditional practices

- Problems of manually maintained black-lists
 - Tiresome, error-prone procedure
 - Not dynamic enough
 - Updates depend on maintainer's action
- Problems of home-made parser script
 - Not flexible enough
 - CEs can be excluded in the JDL, but what about SEs?
 - Why should every VO reinvent the wheel?
- Problems of traditional SFTs...
 - No VO-specific tests (what is critical?)
 - Tests only with *dteam* certificate

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Site Functional Tests (SFTs)

- What are the SFTs?
 - Small jobs sent to the sites to test basic functionalities
 - Their results are published in a web page
 - Problems with sites and individual resources are thus pointed out to experiments and sites
- New functionalities
 - SFTs with experiment's certificate
 - ➔ VO-specific problems can be detected
 - Custom (experiment-made) SFTs
 - ➔ Testing any functionality relevant for the VO
 - User's views
 - ➔ See only the tests (and VO...) you are interested in

SFT web interface: results

[Help page](#)
[Configure view](#)

Site Functional Tests report

2005-09-21 -- latest reports

Test summary

	SD	JL	JS	CT	OK	total
dteam	20	6	10	14	118	168
biomed	19	104	3	11	22	159

Test abbreviations

cah	CSH test
swdir	VO software directory
rgma	R-GMA
wn	WN host name
ver	Software Version (WN)
ca	CA certs version
rm	Replica Management
votag	VO Tag management
js	Job submission
bi	BrokerInfo
apel	Apel test

Colours definition

SD	Scheduled downtime	#a3a3a3
JL	Job list match failed	#aabbff
JS	Job submission failed	#ff876b
CT	Critical tests failed	#f9d88e
NT	Non-critical tests failed	#ff998e
OK	OK	#b2f98e

Sl.	Region	Site Name	Site CE	VO dteam													VO biomed												
				St.	js	wn	ver	ca	rgma	bi	cah	m	apel	votag	swdir	St.	js	wn	ver	ca	rgma	bi	cah	m	apel	votag	swdir		
1.	OK	SouthEasternEurope	AEGIS01-PHY-SCL	ce.phy.bg.ac.yu	OK	Q	I	Q	Q	Q	Q	Q	Q	Q	Q	Q	JL	X	??	??	??	??	??	??	??	??	??	??	
2.	JS	Canada	ALBERTA-LCG2	legce01.nrc.ualberta.ca	JS	X	I	Q	Q	Q	Q	Q	W	W	Q	JL	X	??	??	??	??	??	??	??	??	??	??	??	
3.	OK	China	BEIJING-LCG2	leg002.thep.ac.cn	OK	Q	I	Q	Q	X	Q	Q	Q	W	Q	Q	JL	X	??	??	??	??	??	??	??	??	??	??	
4.	OK	SouthEasternEurope	BG-INSRNE	ce1.inrme.bas.bg	OK	Q	I	Q	Q	Q	Q	Q	X	Q	Q	JL	X	??	??	??	??	??	??	??	??	??	??	??	
5.	OK	SouthEasternEurope	BG01-JPP	ce001.grid.bas.bg	OK	Q	I	Q	Q	Q	Q	Q	W	Q	Q	OK	Q	I	Q	Q	Q	Q	Q	W	Q	Q	Q		
6.	OK	SouthEasternEurope	BG02-IM	ce001.imbm.bas.bg	OK	Q	I	Q	Q	Q	Q	Q	X	Q	Q	JL	X	??	??	??	??	??	??	??	??	??	??	??	
7.	OK	SouthEasternEurope	BG04-ACAD	ce01.grid.acad.bg	OK	Q	I	Q	Q	Q	Q	Q	W	Q	Q	JL	X	??	??	??	??	??	??	??	??	??	??	??	
8.	OK	UKI	BHAM-LCG2	epgee1.ph.bham.ac.uk	OK	Q	I	Q	Q	Q	Q	Q	Q	Q	Q	OK	Q	I	Q	Q	Q	Q	Q	W	Q	Q	Q		
9.	OK	SouthWesternEurope	BIFI	ce-egce.bifi.unizar.es	OK	Q	I	Q	Q	Q	Q	Q	Q	Q	Q	JL	X	??	??	??	??	??	??	??	??	??	??	??	
10.	OK	UKI	BITLab-LCG	dlgc-grid-35.brunel.ac.uk	OK	Q	I	Q	Q	Q	Q	Q	Q	W	Q	JL	X	??	??	??	??	??	??	??	??	??	??	??	
11.	SD	BNL	BNL-LCG2	leg-ee01.usatlas.bnl.gov	SD	X	??	??	??	??	??	??	??	??	??	SD	X	??	??	??	??	??	??	??	??	??	??	??	
12.	JL	UKI	BRISTOL-PP-LCG	legce01.phy.bris.ac.uk	JL	X	I	Q	Q	Q	Q	Q	Q	Q	Q	JL	X	??	??	??	??	??	??	??	??	??	??	??	
13.	OK	CentralEurope	BUDAPEST	grid109.kfki.hu	OK	Q	I	Q	Q	X	Q	Q	W	Q	Q	JL	X	??	??	??	??	??	??	??	??	??	??	??	
14.	SD	Canada	CARLETON-LCG2	leg02.physics.carleton.ca	SD	X	??	??	??	??	??	??	??	??	??	SD	X	??	??	??	??	??	??	??	??	??	??	??	
15.	JS	UKI	CAVENDISH-LCG2	serv03.hep.phy.cam.ac.uk	JS	X	I	Q	Q	Q	Q	Q	X	Q	Q	JS	X	??	??	??	??	??	??	??	??	??	??	??	
16.	OK	France	CEA-DAPNIA-SACLAY	node03.datagrid.cea.fr	OK	Q	I	Q	Q	Q	Q	Q	W	Q	Q	na	??	I	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	
17.	OK	CERN	CERN-CIC	lxn1184.cern.ch	OK	Q	I	Q	Q	Q	Q	Q	Q	Q	Q	JL	X	??	??	??	??	??	??	??	??	??	??	??	

SFT web interface: view config

Overall selections

Select the VOs: Select regions to display:

alice	▲	AsiaPacific	▲
ams	▤	BNL	▤
argo	▥	CERN	▥
asci	▦	Canada	▦
astron	▧	CentralEurope	▧
astrop	▨	China	▨
atlas	▩	FNAL	▩
atlsgm	▼	France	▼

Show all sites
 Show only sites with problems
 Show only sites that are OK

Selections for VO dteam

Select the tests to display: Select the critical tests:

sft-job	▲	sft-job	▲
sft-wn	▤	sft-wn	▤
sft-software	▥	sft-software	▥
sft-caver	▦	sft-caver	▦
sft-rgma	▧	sft-rgma	▧
sft-brokerinfo	▨	sft-brokerinfo	▨
sft-csh	▩	sft-csh	▩
sft-kg-rm	▼	sft-kg-rm	▼

Selections for VO biomed

Select the tests to display: Select the critical tests:

sft-job	▲	sft-job	▲
sft-wn	▤	sft-wn	▤
sft-software	▥	sft-software	▥
sft-caver	▦	sft-caver	▦
sft-rgma	▧	sft-rgma	▧
sft-brokerinfo	▨	sft-brokerinfo	▨
sft-csh	▩	sft-csh	▩
sft-kg-rm	▼	sft-kg-rm	▼

Freedom of Choice for Resources (FCR)

- What is the FCR tool?
 - Authorized person of the VO can exclude resources from the set of available ones
 - Resources set to:
 - Always present
 - Always banned
 - Present if satisfying some SFTs
- How does it work?
 - It modifies information presented by the BDII (see next slides)
- Integration with VO-specific/custom SFTs
 - Work in progress (finished very soon)

FCR interface

Select list of Critical Tests, or resources (CE and SE) in the view of current Critical Test set

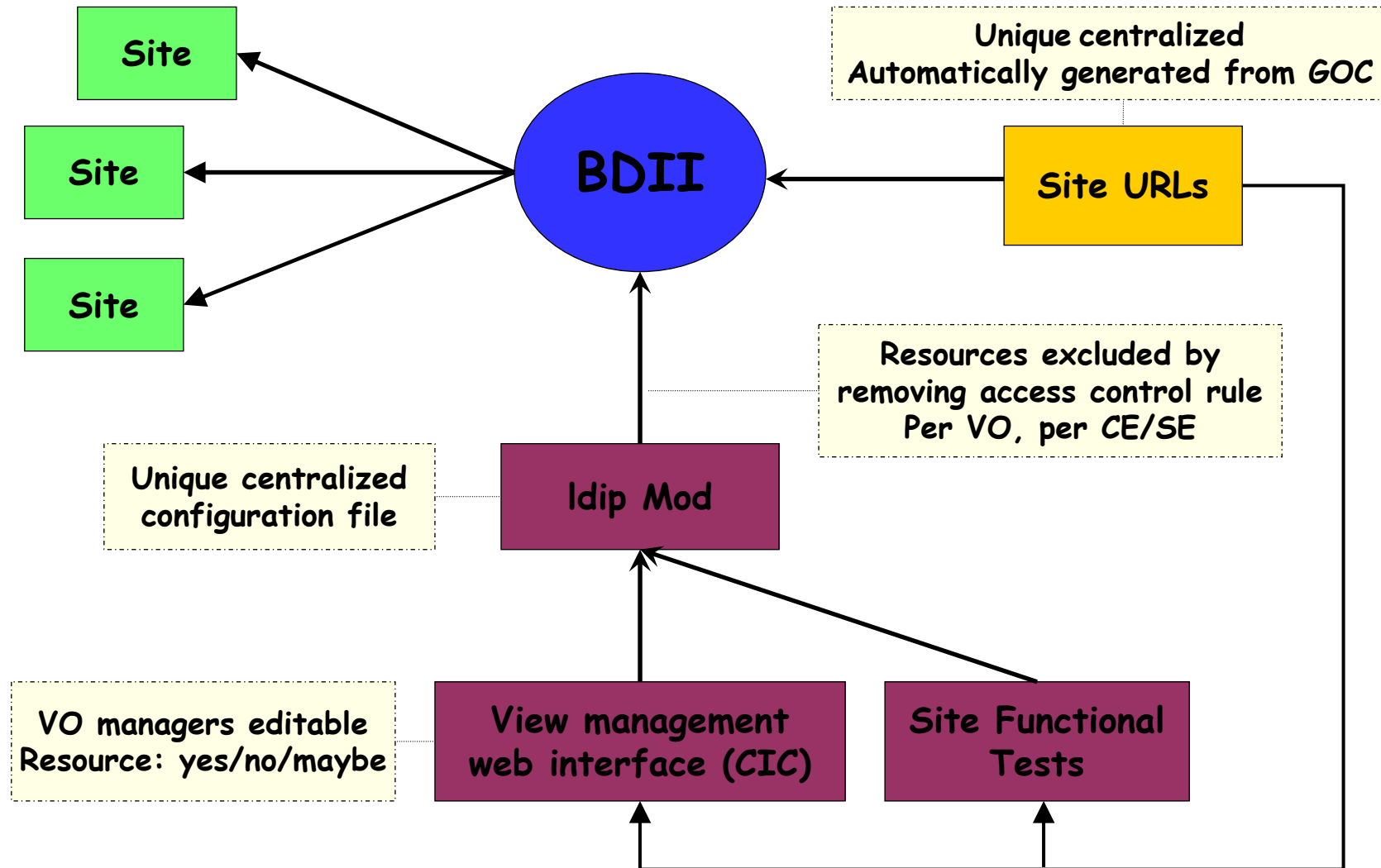
#c8e0bd	Site OK
#ffff	No SFT results for CE
#cacaca	Scheduled Downtime
#f4d9a4	Critical Test Failed
#bed6e1	Job List Match Failed
#e1c0b8	Job Submission Failed

SFT Selection

CE & SE Selection

Sites Functional Tests	sitename	Computing Element	selection	last accessed
<input checked="" type="checkbox"/> Software Version (WN) <input checked="" type="checkbox"/> CA certs version <input type="checkbox"/> R-GMA <input checked="" type="checkbox"/> BrokerInfo <input checked="" type="checkbox"/> CSH test <input checked="" type="checkbox"/> GFAL Information System <input checked="" type="checkbox"/> lcg-cr to local SE <input checked="" type="checkbox"/> lcg-cp from local SE <input checked="" type="checkbox"/> lcg-rep to "central" SE	AEGIS01-PHY-SCL			2005-7-30 19:8:5
		ce.phy.bg.ac.yu.2119/jobmanager-lcgpbs-dteam	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> SFT	2005-6-22 12:22:57
		ce.phy.bg.ac.yu.2119/jobmanager-pbs-dteam	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> SFT	2005-7-30 19:8:5
	BEIJING-LCG2			2005-9-1 1:0:1
		lcg002.ihep.ac.cn.2119/jobmanager-lcgpbs-dteam	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> SFT	2005-9-1 1:0:1
		lcg002.ihep.ac.cn.2119/jobmanager-lcgpbs-infinite	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> SFT	2005-3-11 11:39:54

How the FCR works



FCR results

```
dn: GlueCEUniqueID=ce2.egee.unile.it:2119/jobmanager-lcgpbs-cert,mds-vo-name=spaci-lecce-ia64,mds-vo-name=local,o=grid
changetype:modify
delete: GlueCEAccessControlBaseRule
GlueCEAccessControlBaseRule: VO:dteam
```

```
dn: GlueCEUniqueID=gridgate.ait.ie:2119/jobmanager-lcgpbs-dteam,mds-vo-name=giAITie,mds-vo-name=local,o=grid
changetype:modify
delete: GlueCEAccessControlBaseRule
GlueCEAccessControlBaseRule: VO:dteam
```

```
dn: GlueCEUniqueID=gridgate.arm.ac.uk:2119/jobmanager-lcgpbs-dteam,mds-vo-name=obsARMuk,mds-vo-name=local,o=grid
changetype:modify
delete: GlueCEAccessControlBaseRule
GlueCEAccessControlBaseRule: VO:dteam
```

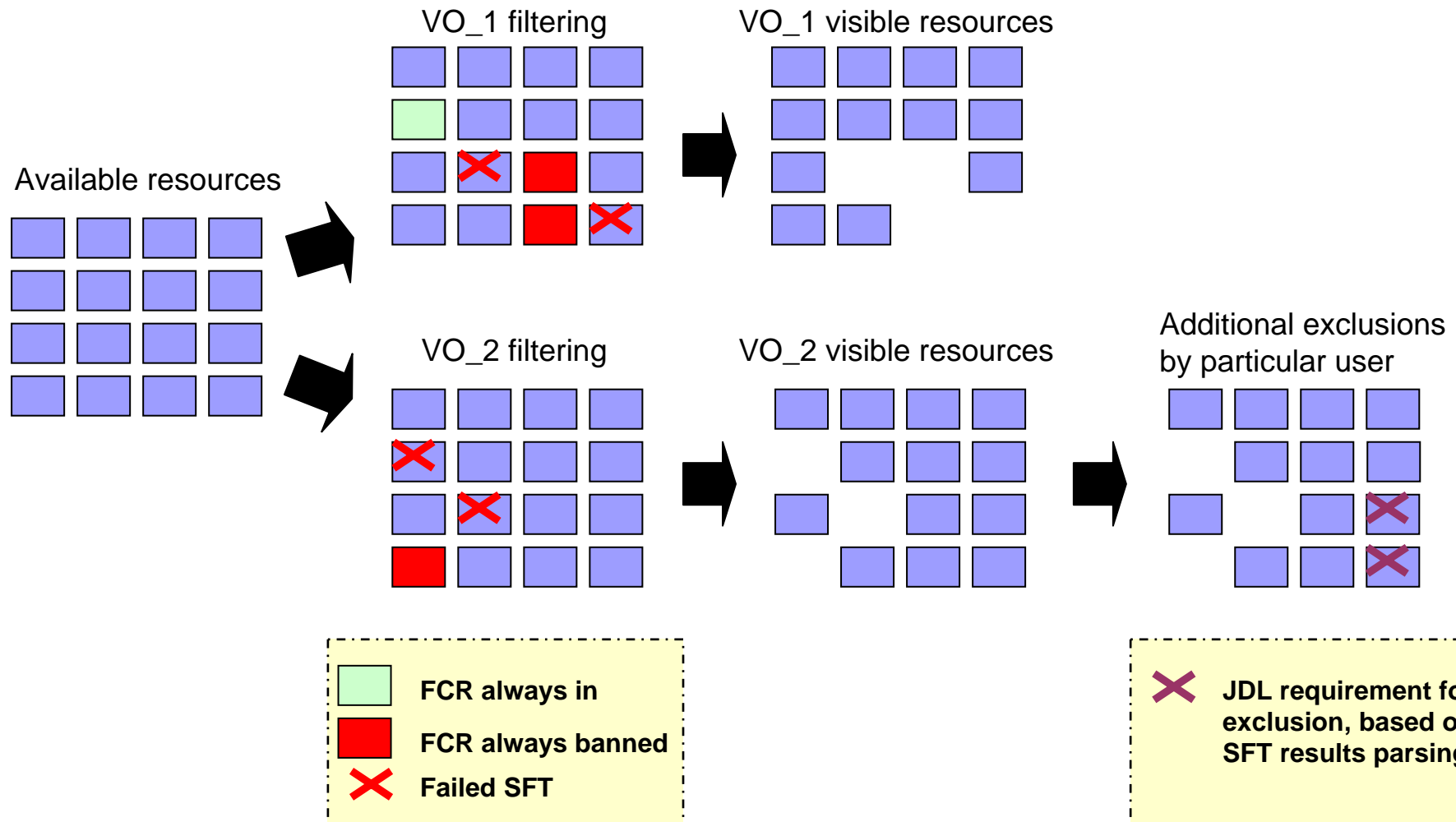
```
dn: GlueCEUniqueID=gridgate.besc.ac.uk:2119/jobmanager-lcgpbs-dteam,mds-vo-name=csQUBuk,mds-vo-name=local,o=grid
changetype:modify
delete: GlueCEAccessControlBaseRule
GlueCEAccessControlBaseRule: VO:dteam
```

```
dn: GlueCEUniqueID=gridgate.dit.ie:2119/jobmanager-lcgpbs-dteam,mds-vo-name=giDITie,mds-vo-name=local,o=grid
changetype:modify
delete: GlueCEAccessControlBaseRule
GlueCEAccessControlBaseRule: VO:dteam
```

```
dn: GlueCEUniqueID=gridgate.it-tallaght.ie:2119/jobmanager-lcgpbs-dteam,mds-vo-name=giITTAie,mds-vo-name=local,o=grid
changetype:modify
delete: GlueCEAccessControlBaseRule
GlueCEAccessControlBaseRule: VO:dteam
```

```
dn: GlueCEUniqueID=gridgate.rcsi.ie:2119/jobmanager-lcgpbs-dteam,mds-vo-name=giRCSIie,mds-vo-name=local,o=grid
changetype:modify
delete: GlueCEAccessControlBaseRule
GlueCEAccessControlBaseRule: VO:dteam
```

Resource exclusion with FCR



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- Atypical VO (in comparison with HEP experiments)
 - No central production model: several independent applications
 - No common procedures in place
- Manual filtering of failing resources (if any) based on...
 - Inspection of SFT results, custom tests, past experiences...
 - Biomed DC: Some sites with many waiting jobs left out
- Have expressed interest in FCR
 - But no clear line of action defined yet
- Different applications may require different tests:
 - FCR to select the common minimum
 - Extra resource exclusion (SFT parser script) for particular needs

- Production model
 - Alice CEs pull jobs from the Alice task queue
 - Blacklist of sites maintained in the task queue
 - Excluded sites will not receive any job
- Filtering...
 - Manually filling the blacklist
 - Based on previous failures in jobs (no performance considerations)
- Adoption of FCR expected
 - No clear plan yet

- Manually maintained black-list of sites
- Based on...
 - Custom test suite: general + some specific (DIRAC) tests
 - Sites with recent job failures (no performance considerations)
 - Reaction of problematic sites (after they are contacted)
- This model requires a lot of human effort
 - Permanently inspecting the number of failures and contacting problematic sites
- FCR has been presented (recommended) to them
 - No reply yet

- Already uses SFTs + FCR
- Manual blacklists abandoned
- But... whitelists maintained for some cases
 - Monte Carlo digitization and reconstruction phase
 - Only selected sites (trusted, big enough...) used
 - Almost static lists
- Plan to add their own custom SFTs

- Evolution...
 - 1,5 years ago: manual edition of the BDII configuration
 - Automation of the procedure: SFT parser script
 - ➔ Problem: Bad CE implies whole site (SE) removed
 - Immediate adoption of FCR
 - ➔ More user-friendly interface, no maintenance
 - ➔ SEs selected independently
- Currently they rely completely on FCR
- They plan to include their own custom SFTs soon

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Conclusions

- Old manual procedures for excluding sites inadequate
 - Require lots of human effort, not dynamic or flexible enough
- Experiments either have taken FCR or are studying it
- Custom SFTs (into FCR) desired
- “Scattered” communities may need per-user granularity
 - Script to parse SFT results and generate additional JDL requirements may be enough
- No other major problems or missing functionalities
 - May appear with time and widespread usage