

**DUBNA**

# DIRAC Interware as a tool for the organization of scientific computing

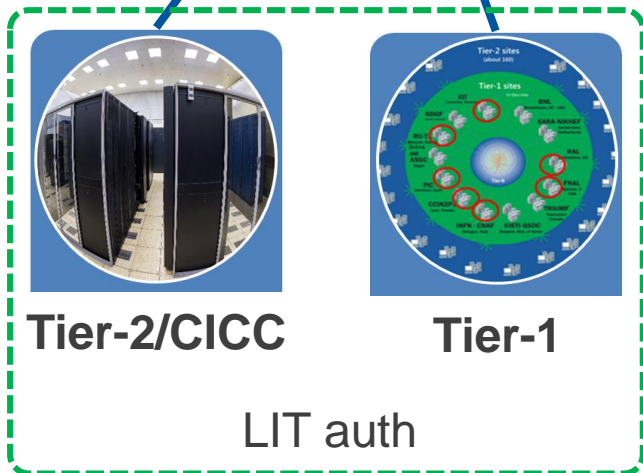
Speaker: Igor Pelevanyuk

# JINR Main Resources

EOS LIT

EOS HybriLIT

EOS LHEP



Tier-2/CICC

Tier-1

LIT auth

PBS job submit



Govorun/HybriLIT

HybriLIT  
auth

SLURM job  
submit



NICA Cluster

NICA CLUSTER  
auth

SGE job submit



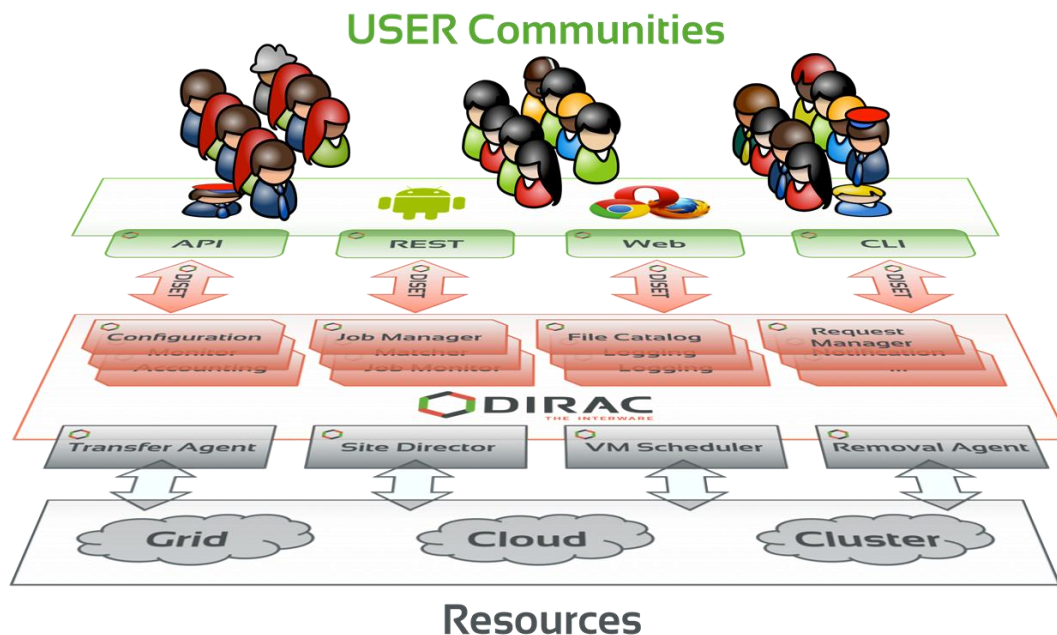
Cloud

LIT auth

Create VM  
manually

# What is DIRAC?

DIRAC provides all the necessary components to build ad-hoc grid infrastructures **interconnecting** computing resources of different types, allowing **interoperability** and simplifying **interfaces**. This allows to speak about the DIRAC *interware*.



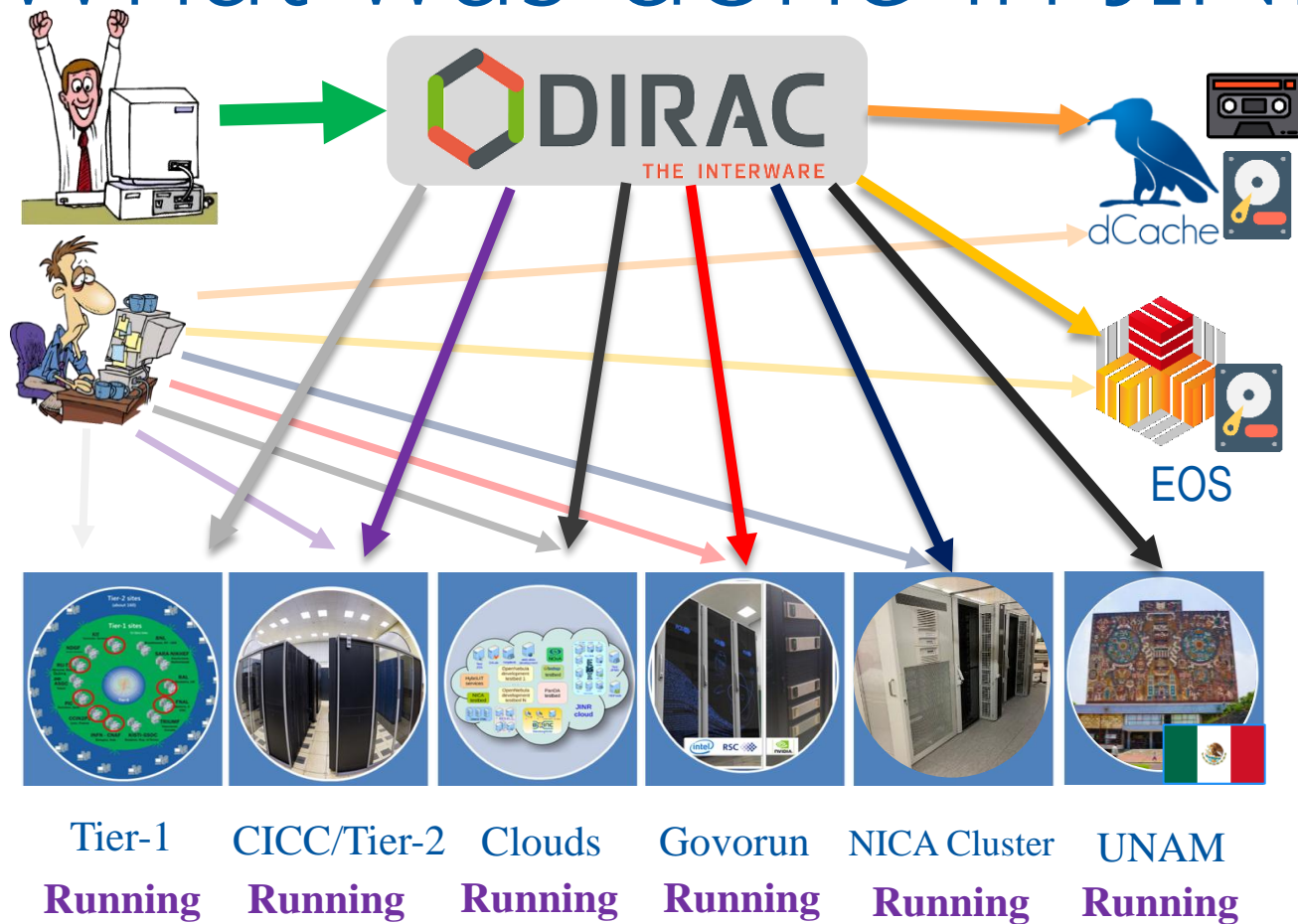
Web

CLI

API

REST

# What was done in JINR



The computing resources of the JINR Multifunctional Information and Computing Complex, clouds in JINR Member-States, cluster from Mexico University were combined using the DIRAC Interware.

# DIRAC provides

User Interface

API

Workload management

Data management

Integration tools

File Catalog

Meta-data management

Accounting

# DIRAC standard job workflow

1. Initial configuration
2. Input data download
3. Processing
4. Output data upload
5. Finalization

# Job example

```
dirac-configure config.cfg
```

```
dirac-dms-get-file /bmn/raw/AuAu/data1002.raw
```

```
root -l -q -b reco.MC("data1002.raw")
```

```
#or
```

```
root -l -q -b reco.MC(/eos/nica/bmn/AuAu/data1002.raw)
```

```
dirac-dms-put-file /bmn/reco/AuAu/data1002.root \\  
                                                           data1002.root \\  
                                                           JINR-EOS-BMN
```

```
rm -f data1002.raw data1002.root
```



# Jobs waiting

← → ↻ 🔒 Not secure | dirac-ui.jinr.ru/DIRAC/sJINR-Production/g:dirac\_admin/?view=tabs&theme=Crisp&url\_state=1]\*DIRAC.JobMonitor.classes.JobMonitor:\*DIRAC.ConfigurationManager.classes.ConfigurationManager:\*DIRAC.Accounting.classes.A...

Menu

Desktops & Applications

- Tools
- Applications
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  - Job Monitor
  - Pilot Monitor
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  - Registry Manager
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  - Request Monitor
  - Pilot Summary
  - Resource Summary
  - Site Summary
  - Proxy Manager
  - Component History
  - Job Summary
  - Space Occupancy
  - Downtimes
  - Virtual Machine
- Help
- DIRAC
- My Desktops
- Shared

Settings

Job Monitor [Untitled 1] × Configuration Manager [Untitled 2] × Accounting [Untitled 3] ×

Selectors

Site:

Status:

Minor Status:

Application Status:

Owner:

Owner Group:

Job Group:

Job Type:

Time Span:

From:

To:

JobID(s):

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JobId	Status	MinorStatus	Application...	Site	JobName	LastUpdate[UTC]	LastSignOfLife[UTC]	SubmissionTime[U...	Owner
738981	Waiting	Pilot Agent Submi...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:19:49	2020-10-25 04:19:49	2020-10-25 04:19:48	amoshkin
738980	Waiting	Pilot Agent Submi...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:19:48	2020-10-25 04:19:48	2020-10-25 04:19:48	amoshkin
738979	Waiting	Pilot Agent Submi...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:19:48	2020-10-25 04:19:48	2020-10-25 04:19:47	amoshkin
738978	Waiting	Pilot Agent Submi...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:19:47	2020-10-25 04:19:47	2020-10-25 04:19:44	amoshkin
738977	Waiting	Pilot Agent Submi...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:19:44	2020-10-25 04:19:44	2020-10-25 04:19:43	amoshkin
738976	Waiting	Pilot Agent Submi...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:19:43	2020-10-25 04:19:43	2020-10-25 04:19:43	amoshkin
738975	Waiting	Pilot Agent Submi...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:19:42	2020-10-25 04:19:42	2020-10-25 04:19:42	amoshkin
738974	Waiting	Pilot Agent Submi...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:19:41	2020-10-25 04:19:41	2020-10-25 04:19:41	amoshkin
738973	Waiting	Pilot Agent Submi...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:19:41	2020-10-25 04:19:41	2020-10-25 04:19:41	amoshkin
738972	Waiting	Pilot Agent Submi...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:19:40	2020-10-25 04:19:40	2020-10-25 04:19:40	amoshkin
738971	Waiting	Pilot Agent Submi...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:19:40	2020-10-25 04:19:40	2020-10-25 04:19:40	amoshkin
738970	Waiting	Pilot Agent Submi...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:19:39	2020-10-25 04:19:39	2020-10-25 04:19:39	amoshkin
738969	Waiting	Pilot Agent Submi...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:19:38	2020-10-25 04:19:38	2020-10-25 04:19:38	amoshkin
738968	Waiting	Pilot Agent Submi...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:19:38	2020-10-25 04:19:38	2020-10-25 04:19:38	amoshkin
738967	Waiting	Pilot Agent Submi...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:19:37	2020-10-25 04:19:37	2020-10-25 04:19:36	amoshkin
738966	Waiting	Pilot Agent Submi...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:19:36	2020-10-25 04:19:36	2020-10-25 04:19:36	amoshkin
738965	Waiting	Pilot Agent Submi...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:19:35	2020-10-25 04:19:35	2020-10-25 04:19:35	amoshkin
738964	Waiting	Pilot Agent Submi...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:19:35	2020-10-25 04:19:35	2020-10-25 04:19:35	amoshkin
738963	Waiting	Pilot Agent Submi...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:19:34	2020-10-25 04:19:34	2020-10-25 04:19:34	amoshkin
738962	Waiting	Pilot Agent Submi...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:19:33	2020-10-25 04:19:33	2020-10-25 04:19:33	amoshkin
738961	Waiting	Pilot Agent Submi...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:19:33	2020-10-25 04:19:33	2020-10-25 04:19:33	amoshkin
738960	Waiting	Pilot Agent Submi...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:19:33	2020-10-25 04:19:33	2020-10-25 04:19:33	amoshkin
738959	Waiting	Pilot Agent Submi...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:19:33	2020-10-25 04:19:33	2020-10-25 04:19:33	amoshkin
738958	Waiting	Pilot Agent Submi...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:19:32	2020-10-25 04:19:32	2020-10-25 04:19:32	amoshkin
738957	Waiting	Pilot Agent Submi...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:19:32	2020-10-25 04:19:32	2020-10-25 04:19:32	amoshkin

Default ×

# Jobs running

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Settings

Job Monitor [Untitled 1] Configuration Manager [Untitled 2] Accounting [Untitled 3]

Selectors

Site:

Status:

Minor Status:

Application Status:

Owner: amoshkin

Owner Group:

Job Group:

Job Type:

Time Span:

From:

To:

Reset Time Panel

JobID(s):

Submit Reset Refresh

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JobId	Status	MinorStatus	Application...	Site	JobName	LastUpdate[UTC]	LastSignOfLife[UTC]	SubmissionTime[U...	Owner
738229	Running	Application	Processing...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:35:40	2020-10-25 18:05:47	2020-10-25 04:13:04	amoshin
738228	Running	Application	Processing...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:31:51	2020-10-25 18:01:55	2020-10-25 04:13:03	amoshin
738227	Running	Application	Processing...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:21:54	2020-10-25 17:51:54	2020-10-25 04:13:02	amoshin
738226	Running	Application	Processing...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:20:32	2020-10-25 17:50:39	2020-10-25 04:13:02	amoshin
738225	Running	Application	Processing...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:23:54	2020-10-25 17:54:00	2020-10-25 04:13:02	amoshin
738224	Waiting	Pilot Agent Sub...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:13:01	2020-10-25 04:13:01	2020-10-25 04:13:02	amoshin
738223	Waiting	Pilot Agent Sub...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:13:01	2020-10-25 04:13:01	2020-10-25 04:13:02	amoshin
738222	Waiting	Pilot Agent Sub...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:13:01	2020-10-25 04:13:01	2020-10-25 04:13:01	amoshin
738221	Running	Application	Processing...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:42:16	2020-10-25 18:12:17	2020-10-25 04:13:01	amoshin
738220	Running	Application	Processing...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:16:07	2020-10-25 18:16:15	2020-10-25 04:13:01	amoshin
738219	Running	Application	Processing...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:18:54	2020-10-25 17:49:01	2020-10-25 04:13:01	amoshin
738218	Running	Application	Processing...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:32:29	2020-10-25 18:02:34	2020-10-25 04:13:01	amoshin
738217	Running	Application	Processing...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:21:29	2020-10-25 17:51:33	2020-10-25 04:13:01	amoshin
738216	Waiting	Pilot Agent Sub...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:13:00	2020-10-25 04:13:00	2020-10-25 04:13:00	amoshin
738215	Running	Application	Processing...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:56:23	2020-10-25 17:56:26	2020-10-25 04:13:00	amoshin
738214	Running	Application	Processing...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:46:41	2020-10-25 18:16:44	2020-10-25 04:12:59	amoshin
738213	Running	Application	Processing...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:17:37	2020-10-25 18:17:44	2020-10-25 04:12:59	amoshin
738212	Running	Application	Processing...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:15:59	2020-10-25 18:16:05	2020-10-25 04:12:58	amoshin
738211	Running	Application	Processing...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:18:35	2020-10-25 18:18:42	2020-10-25 04:12:58	amoshin
738210	Running	Application	Processing...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:18:34	2020-10-25 18:18:42	2020-10-25 04:12:57	amoshin
738209	Waiting	Pilot Agent Sub...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:12:57	2020-10-25 04:12:57	2020-10-25 04:12:56	amoshin
738208	Running	Application	Processing...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:12:55	2020-10-25 18:13:04	2020-10-25 04:12:55	amoshin
738207	Running	Application	Processing...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:25:33	2020-10-25 17:55:40	2020-10-25 04:12:54	amoshin
738206	Waiting	Pilot Agent Sub...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:12:54	2020-10-25 04:12:54	2020-10-25 04:12:54	amoshin
738205	Waiting	Pilot Agent Sub...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:12:53	2020-10-25 04:12:53	2020-10-25 04:12:53	amoshin
738204	Running	Application	Processing...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:28:12	2020-10-25 17:58:16	2020-10-25 04:12:53	amoshin
738203	Waiting	Pilot Agent Sub...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:12:53	2020-10-25 04:12:53	2020-10-25 04:12:53	amoshin
738202	Waiting	Pilot Agent Sub...	Unknown	DIRAC.GOVORUN.ru	empty	2020-10-25 04:12:52	2020-10-25 04:12:52	2020-10-25 04:12:52	amoshin

# Jobs done

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Settings

Job Monitor [Untitled 1] Configuration Manager [Untitled 2] Accounting [Untitled 3]

Selectors

Site:

Status:

Minor Status:

Application Status:

Owner: amoshkin

Owner Group:

Job Group:

Job Type:

Time Span:

From:

To:

Reset Time Panel

JobID(s):

Submit Reset Refresh

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JobID	Status	MinorStatus	Application...	Site	JobName	LastUpdate[UTC]	LastSignOfLife[UTC]	SubmissionTime[U...	Owner
737780	Done	Execution Comp...	urqmd5305...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:21:22	2020-10-25 17:21:22	2020-10-25 04:10:12	amoshkin
737779	Done	Execution Comp...	urqmd5261...	DIRAC.GOVORUN.ru	empty	2020-10-25 16:53:27	2020-10-25 16:53:27	2020-10-25 04:10:12	amoshkin
737778	Done	Execution Comp...	urqmd1373...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:26:58	2020-10-25 17:26:58	2020-10-25 04:10:11	amoshkin
737777	Running	Application	Processing...	DIRAC.GOVORUN.ru	empty	2020-10-25 16:28:16	2020-10-25 18:28:26	2020-10-25 04:10:11	amoshkin
737776	Running	Application	Processing...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:52:44	2020-10-25 18:29:23	2020-10-25 04:10:11	amoshkin
737775	Running	Application	Processing...	DIRAC.GOVORUN.ru	empty	2020-10-25 18:07:43	2020-10-25 18:11:08	2020-10-25 04:10:11	amoshkin
737774	Done	Execution Comp...	urqmd5818...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:09:11	2020-10-25 17:09:11	2020-10-25 04:10:10	amoshkin
737773	Done	Execution Comp...	urqmd5464...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:32:02	2020-10-25 17:32:02	2020-10-25 04:10:10	amoshkin
737772	Running	Application	Processing...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:57:42	2020-10-25 18:29:09	2020-10-25 04:10:10	amoshkin
737771	Running	Application	Processing...	DIRAC.GOVORUN.ru	empty	2020-10-25 18:04:20	2020-10-25 18:08:36	2020-10-25 04:10:10	amoshkin
737770	Done	Execution Comp...	urqmd5937...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:14:59	2020-10-25 17:14:59	2020-10-25 04:10:09	amoshkin
737769	Done	Execution Comp...	urqmd5853...	DIRAC.GOVORUN.ru	empty	2020-10-25 16:45:59	2020-10-25 16:45:59	2020-10-25 04:10:09	amoshkin
737768	Running	Application	Processing...	DIRAC.GOVORUN.ru	empty	2020-10-25 18:19:28	2020-10-25 18:19:28	2020-10-25 04:10:09	amoshkin
737767	Done	Execution Comp...	urqmd5783...	DIRAC.GOVORUN.ru	empty	2020-10-25 16:44:33	2020-10-25 16:44:33	2020-10-25 04:10:09	amoshkin
737766	Done	Execution Comp...	urqmd1361...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:27:22	2020-10-25 17:27:22	2020-10-25 04:10:08	amoshkin
737765	Running	Application	Processing...	DIRAC.GOVORUN.ru	empty	2020-10-25 18:04:20	2020-10-25 18:26:56	2020-10-25 04:10:08	amoshkin
737764	Done	Execution Comp...	urqmd1302...	DIRAC.GOVORUN.ru	empty	2020-10-25 16:52:48	2020-10-25 16:52:48	2020-10-25 04:10:07	amoshkin
737763	Done	Execution Comp...	urqmd5866...	DIRAC.GOVORUN.ru	empty	2020-10-25 16:45:16	2020-10-25 16:45:16	2020-10-25 04:10:07	amoshkin
737762	Done	Execution Comp...	urqmd1389...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:27:06	2020-10-25 17:27:06	2020-10-25 04:10:06	amoshkin
737761	Done	Execution Comp...	urqmd1358...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:27:48	2020-10-25 17:27:48	2020-10-25 04:10:06	amoshkin
737760	Done	Execution Comp...	urqmd5902...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:01:28	2020-10-25 17:01:28	2020-10-25 04:10:06	amoshkin
737759	Done	Execution Comp...	urqmd1374...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:47:21	2020-10-25 17:47:21	2020-10-25 04:10:06	amoshkin
737758	Done	Execution Comp...	urqmd1306...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:15:27	2020-10-25 17:15:27	2020-10-25 04:10:05	amoshkin
737757	Done	Execution Comp...	urqmd1310...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:07:15	2020-10-25 17:07:15	2020-10-25 04:10:05	amoshkin
737756	Done	Execution Comp...	urqmd5254...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:13:50	2020-10-25 17:13:50	2020-10-25 04:10:05	amoshkin
737755	Done	Execution Comp...	urqmd5330...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:35:17	2020-10-25 17:35:17	2020-10-25 04:10:04	amoshkin
737754	Done	Execution Comp...	urqmd5699...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:21:06	2020-10-25 17:21:06	2020-10-25 04:10:04	amoshkin
737753	Done	Execution Comp...	urqmd1366...	DIRAC.GOVORUN.ru	empty	2020-10-25 17:27:14	2020-10-25 17:27:14	2020-10-25 04:10:04	amoshkin

# Jobs failed

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Settings

Accounting [Untitled 1] Job Monitor [Untitled 2] Configuration Manager [Untitled 3]

Selectors

Site:

Status:

Minor Status:

Application Status:

Owner:

Owner Group:

Job Group:

Job Type:

Time Span:

From:

To:

JobID(s):

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JobId	Status	MinorStatus	Application...	Site	JobName	LastUpdate[UTC]	LastSignOfLife[UTC]	SubmissionTime[U...	Owner
736517	Failed	Application Finished ...	Unknown	CLOUD.JINR.ru	simgvd_3_2999	2020-10-24 14:15:51	2020-10-24 14:15:51	2020-10-23 15:47:35	dzaborov
736516	Failed	Application Finished ...	Unknown	CLOUD.JINR.ru	simgvd_3_2998	2020-10-24 14:16:16	2020-10-24 14:16:16	2020-10-23 15:47:34	dzaborov
736515	Failed	Application Finished ...	Unknown	CLOUD.JINR.ru	simgvd_3_2997	2020-10-24 14:14:59	2020-10-24 14:14:59	2020-10-23 15:47:33	dzaborov
736514	Failed	Application Finished ...	Unknown	CLOUD.JINR.ru	simgvd_3_2996	2020-10-24 14:15:17	2020-10-24 14:15:17	2020-10-23 15:47:32	dzaborov
736513	Failed	Application Finished ...	Unknown	CLOUD.JINR.ru	simgvd_3_2995	2020-10-24 14:17:27	2020-10-24 14:17:27	2020-10-23 15:47:29	dzaborov
736512	Failed	Application Finished ...	Unknown	CLOUD.JINR.ru	simgvd_3_2994	2020-10-24 14:15:56	2020-10-24 14:15:56	2020-10-23 15:47:28	dzaborov
736511	Failed	Application Finished ...	Unknown	CLOUD.JINR.ru	simgvd_3_2993	2020-10-24 14:16:01	2020-10-24 14:16:01	2020-10-23 15:47:25	dzaborov
736510	Failed	Application Finished ...	Unknown	CLOUD.JINR.ru	simgvd_3_2992	2020-10-24 14:16:34	2020-10-24 14:16:34	2020-10-23 15:47:24	dzaborov
736509	Failed	Application Finished ...	Unknown	CLOUD.JINR.ru	simgvd_3_2991	2020-10-24 14:17:26	2020-10-24 14:17:26	2020-10-23 15:47:23	dzaborov
736508	Failed	Application Finished ...	Unknown	CLOUD.JINR.ru	simgvd_3_2990	2020-10-24 14:15:26	2020-10-24 14:15:26	2020-10-23 15:47:22	dzaborov
736507	Failed	Application Finished ...	Unknown	CLOUD.JINR.ru	simgvd_3_2989	2020-10-24 14:16:28	2020-10-24 14:16:28	2020-10-23 15:47:21	dzaborov
736506	Failed	Application Finished ...	Unknown	CLOUD.JINR.ru	simgvd_3_2988	2020-10-24 14:16:03	2020-10-24 14:16:03	2020-10-23 15:47:20	dzaborov
736505	Failed	Application Finished ...	Unknown	CLOUD.JINR.ru	simgvd_3_2987	2020-10-24 14:16:46	2020-10-24 14:16:46	2020-10-23 15:47:19	dzaborov
736504	Failed	Application Finished ...	Unknown	CLOUD.JINR.ru	simgvd_3_2986	2020-10-24 14:15:40	2020-10-24 14:15:40	2020-10-23 15:47:18	dzaborov
736503	Failed	Application Finished ...	Unknown	CLOUD.JINR.ru	simgvd_3_2985	2020-10-24 14:14:34	2020-10-24 14:14:34	2020-10-23 15:47:17	dzaborov
736502	Failed	Application Finished ...	Unknown	CLOUD.JINR.ru	simgvd_3_2984	2020-10-24 14:16:33	2020-10-24 14:16:33	2020-10-23 15:47:16	dzaborov
736501	Failed	Application Finished ...	Unknown	CLOUD.JINR.ru	simgvd_3_2983	2020-10-24 14:16:46	2020-10-24 14:16:46	2020-10-23 15:47:14	dzaborov
736500	Failed	Application Finished ...	Unknown	CLOUD.JINR.ru	simgvd_3_2982	2020-10-24 14:17:18	2020-10-24 14:17:18	2020-10-23 15:47:13	dzaborov
736499	Failed	Application Finished ...	Unknown	CLOUD.JINR.ru	simgvd_3_2981	2020-10-24 14:15:35	2020-10-24 14:15:35	2020-10-23 15:47:12	dzaborov
736498	Failed	Application Finished ...	Unknown	CLOUD.JINR.ru	simgvd_3_2980	2020-10-24 14:14:59	2020-10-24 14:14:59	2020-10-23 15:47:11	dzaborov
736497	Failed	Application Finished ...	Unknown	CLOUD.JINR.ru	simgvd_3_2979	2020-10-24 14:15:09	2020-10-24 14:15:09	2020-10-23 15:47:10	dzaborov
736496	Failed	Application Finished ...	Unknown	CLOUD.JINR.ru	simgvd_3_2978	2020-10-24 14:16:56	2020-10-24 14:16:56	2020-10-23 15:47:09	dzaborov
736495	Failed	Application Finished ...	Unknown	CLOUD.JINR.ru	simgvd_3_2977	2020-10-24 14:13:56	2020-10-24 14:13:56	2020-10-23 15:47:07	dzaborov
736494	Failed	Application Finished ...	Unknown	CLOUD.JINR.ru	simgvd_3_2976	2020-10-24 14:14:16	2020-10-24 14:14:16	2020-10-23 15:47:06	dzaborov
736493	Failed	Application Finished ...	Unknown	CLOUD.JINR.ru	simgvd_3_2975	2020-10-24 14:14:16	2020-10-24 14:14:16	2020-10-23 15:47:05	dzaborov

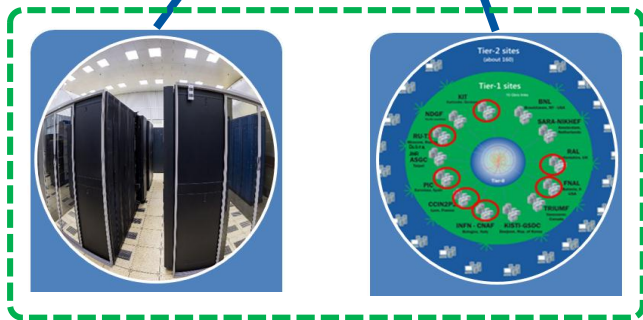
Default

# JINR Main Resources

EOS LIT

EOS HybriLIT

EOS LHEP



/eos

/eos/eos.jinr.ru

/eos/eosnica.jinr.ru

/eos/hybrilit.jinr.ru

----- /eos

Read - OK  
Write - OK

Read - OK  
Write - ??

Read - OK  
Write - OK

How to pass credentials to processes to write?

# JINR Main Resources

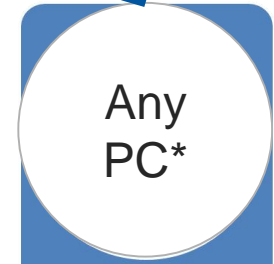
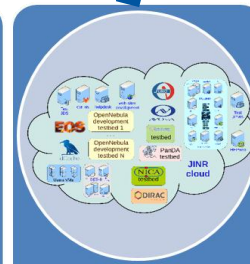
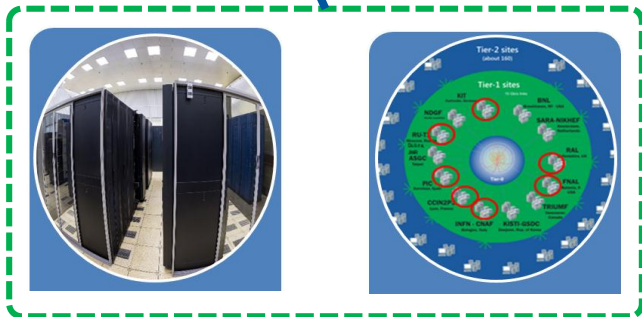
EOS LIT

EOS HybriLIT

EOS LHEP



root – transfer protocol  
X509 – authentication  
VOMS - authorization

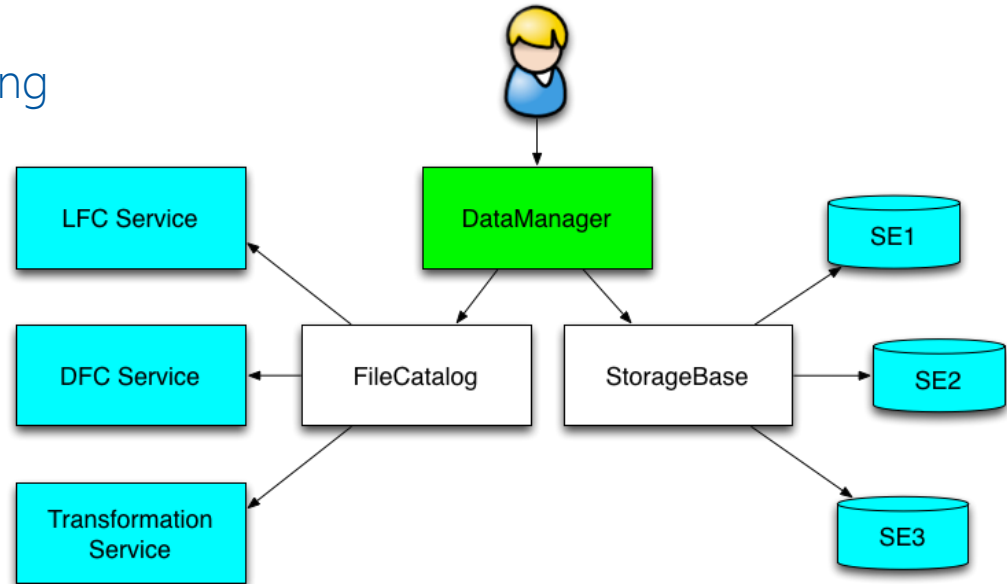


\* Any computer with xrdcp,  
your certificate, or proxy of  
your certificate\*\*

\*\*How to pass credentials to processes to write?  
Proxy is the answer!

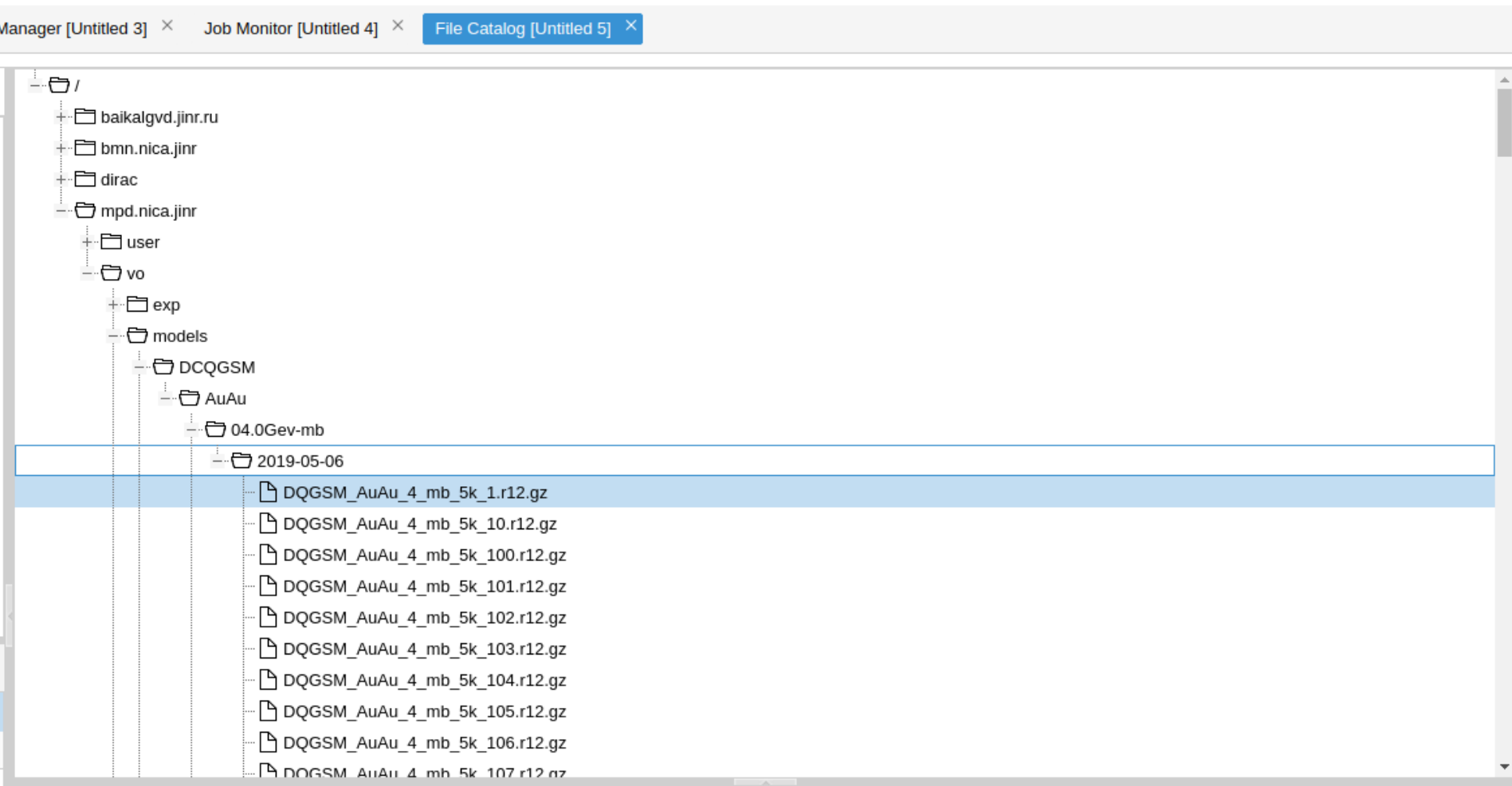
# Data Management

- DIRAC File Catalog(DFC) is maintaining a single global logical name space
- A user sees it as a single catalog with additional features
- DataManager is a single client interface for logical data operations



- Upload file(example):  
`dirac-dms-add-file /mpd/vo/model/DQGSM/data.root ./data.roor EOS-MPD`
- Download file(example):  
`dirac-dms-get-file /mpd/vo/model/DQGSM/data.root`

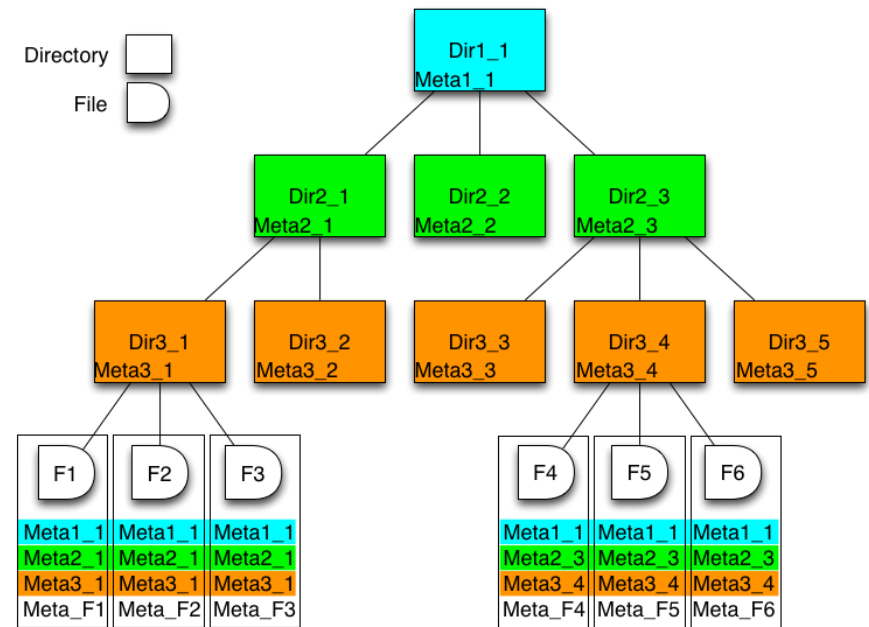
# DIRAC FileCatalog





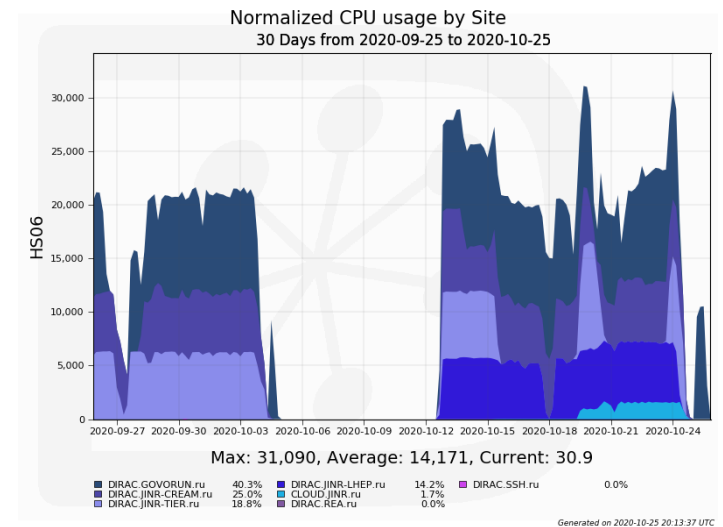
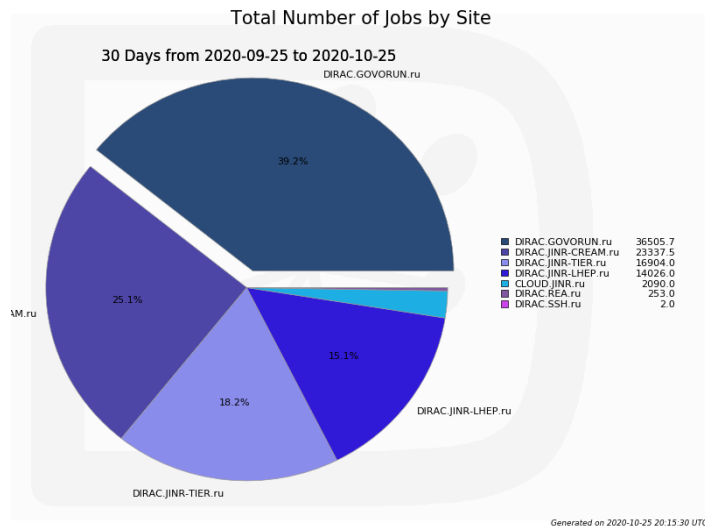
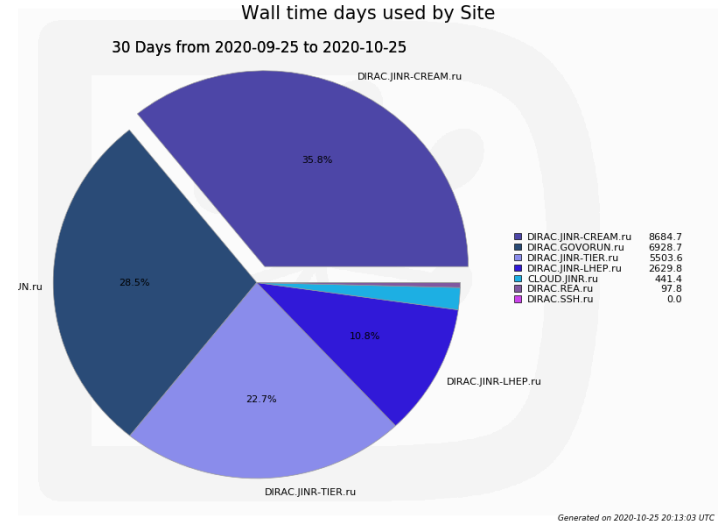
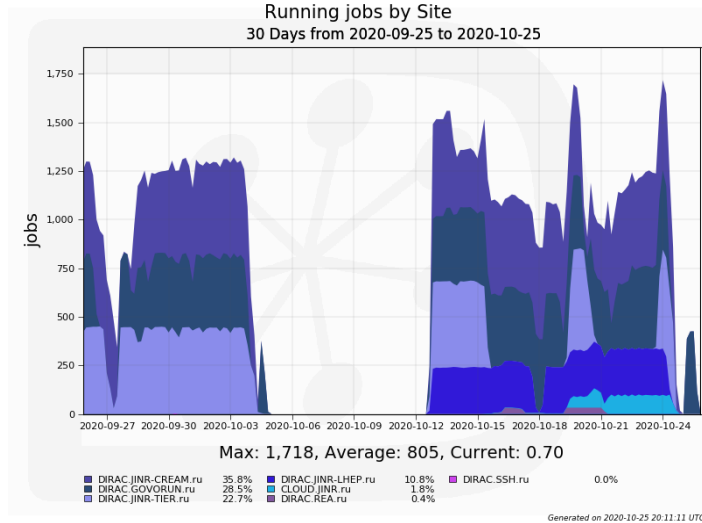
# Meta Data

- DFC also may host Metadata
  - User defined metadata
  - The same hierarchy for metadata as for the logical name space
  - Metadata associated with files and directories
  - Allow for efficient searches
  - Efficient Storage Usage reports

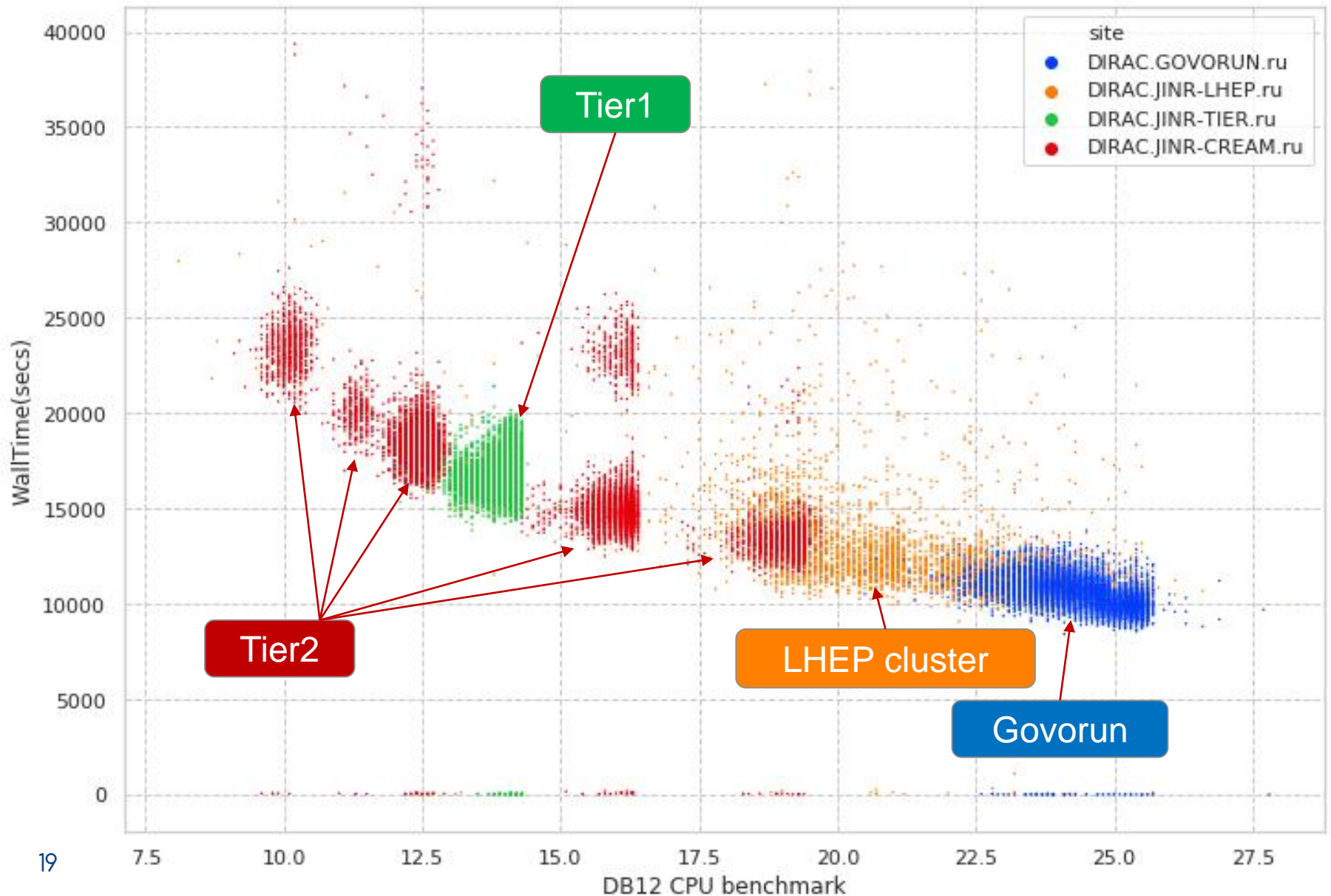


```
find /experiment/model LastAccess<01-10-2020
GaussVersion=v1,v2 SE=EOS-MPD Name=*.raw
```

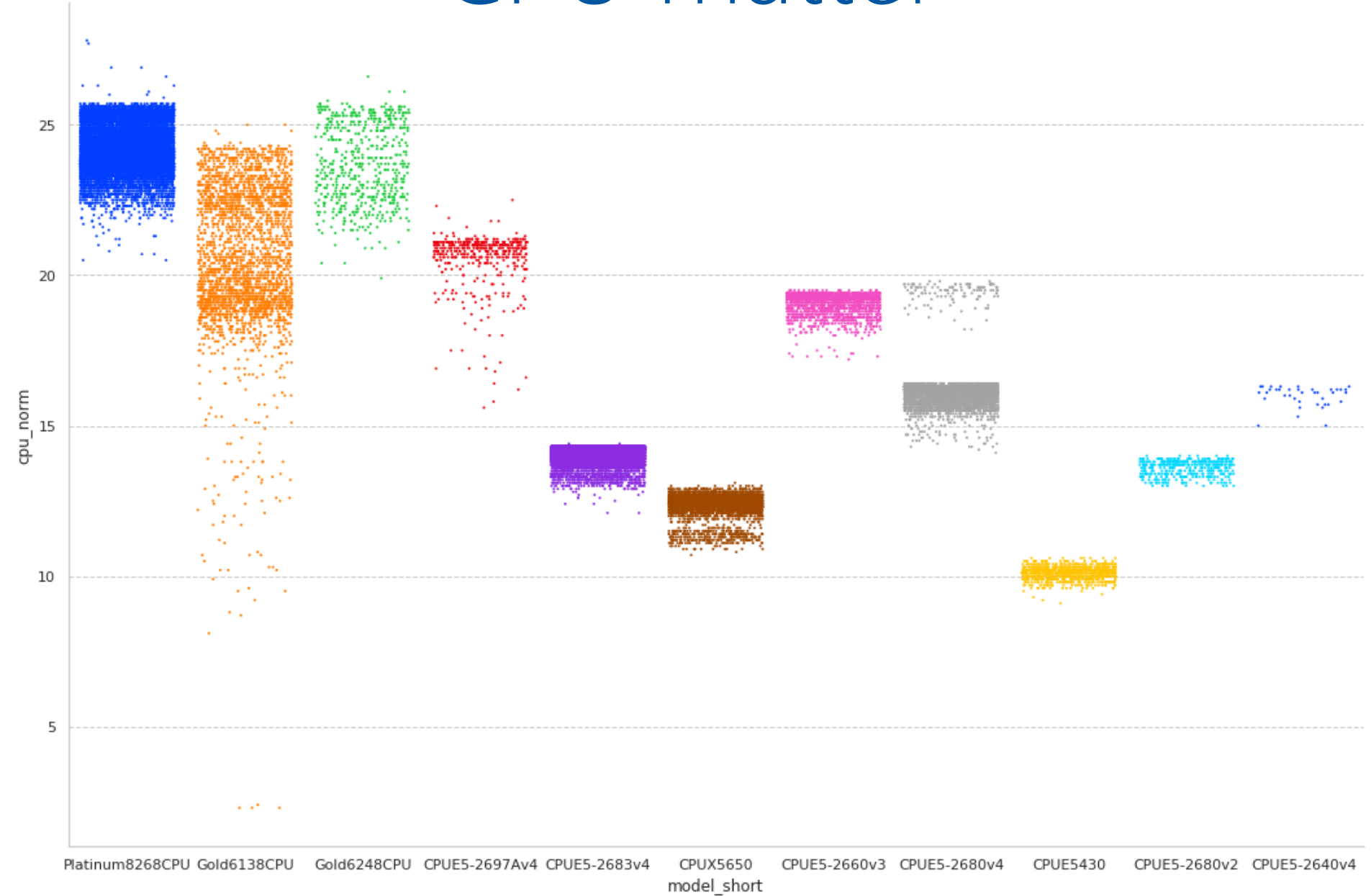
# Accounting



# CPU matters



# CPU matter

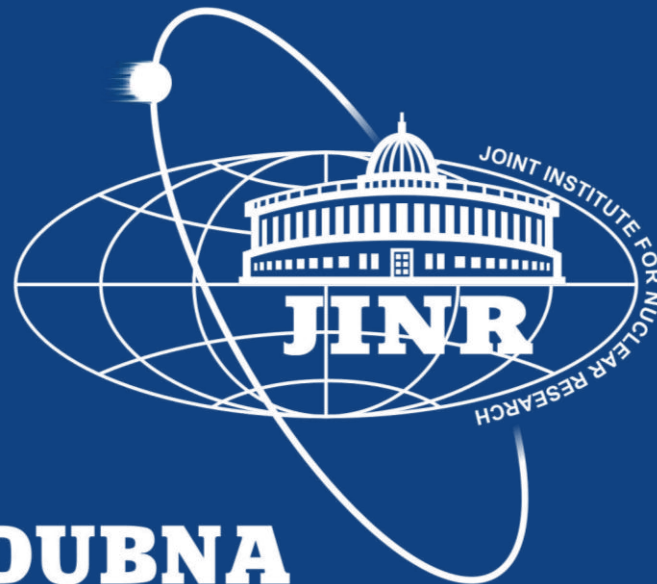


# First of all

You need DIRAC in JINR only if you run hundreds of jobs. Better thousands. And you run them periodically.

# Conclusion on BM@N+DIRAC

- Resources available now:
  - Tier1, Tier2, Cloud, LHEP(need quota), Govorun(need quota)
  - JINR EOS in LIT
  - Tapes could be accessible through DIRAC
  - Quota means that separate user for BM@N for dirac will be created and quota granted
- VOMS bmn.jinr.ru created and working. You just need a certificate.
- It is much better to run software from CVMFS
- You are not going to “fight” with DIRAC alone! All necessary help, recommendations, and my personal phone number will be granted 😊



**DUBNA**