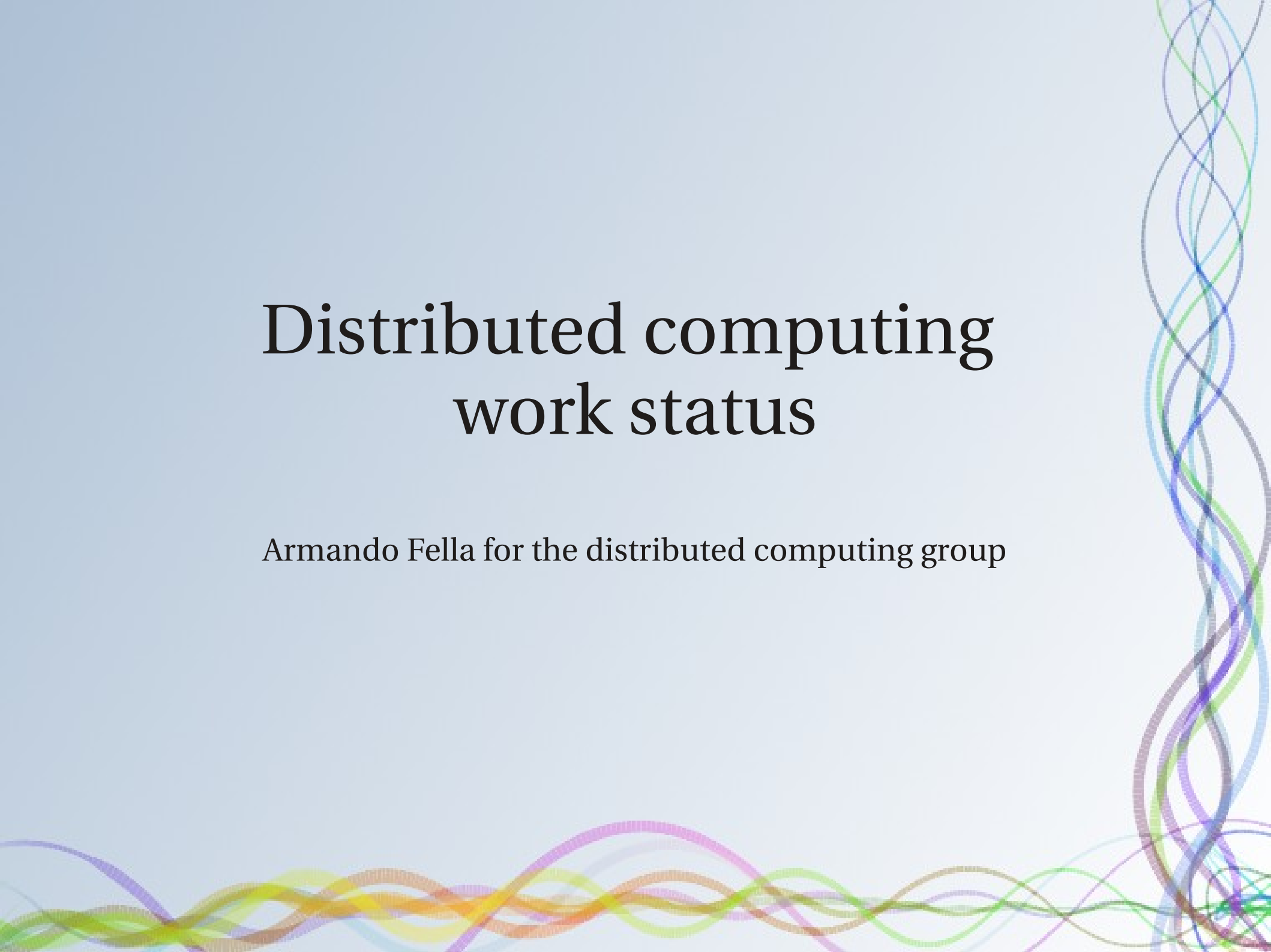


# Distributed computing work status

Armando Fella for the distributed computing group



# Distributed computing topics

- Distributed resources management
  - OSG support
- Production system
- Distributed analysis system
- Information systems updates (see C.Desantis talk)
- Grid resource monitor - Nagios per VO
- Data model definition (stand by)
- Dirac evaluation
- Phedex evaluation (stand by, see A.Fella CHEP report talk)
- WAN data access (see G.Donvito talk)
- Storage system evaluation (see G.Donvito talk)

# Distributed resource summary

Site	Min (cores)	Max (cores)	Disk (TB)	SRM layer	Grid Org.	Site contacts
RAL(T1)	200	1000	25	Castor	EGI	F. Wilson, C. Brew
Ralpp	50	500	5	dCache	EGI	F. Wilson, C. Brew
Queen Mary	300	2000	150	StoRM	EGI	A. Martin, C. Walker
Oxford Univ.	50	200	1	DPM	EGI	K. Mohammad, E. MacMahon
IN2P3-CC(T1)	500	1000	16	dCache	EGI	N. Arnaud, O. Dadoun
Grif	50	300	2	DPM	EGI	N. Arnaud, O. Dadoun
in2p3-lpsc	50	100	2	DPM	EGI	J.S. Real
in2p3-ires	50	100	2	DPM	EGI	Y. Patois
CNAF(T1)	500	1000	180	StoRM	EGI	A. Fella, P. Franchini
Pisa	50	500	0.5	StoRM	EGI	A. Ciampa, E. Mazzoni, D. Fabiani
Legnaro	50	100	1	StoRM	EGI	G. Maron, A. Crescente, S. Fantinel
Napoli	500	2000	15	DPM	EGI	S. Pardi, A. Doria
Bari	160	260	0.5	StoRM/Lustre	EGI	G. Donvito, V. Spinoso
Ferrara	10	50	0.5	StoRM	EGI	L. Tomassetti, A. Donati
Cagliari	10	50	1	StoRM	EGI	D. Mura
Perugia	10	50	1	StoRM	EGI	L. Fano'
Torino	50	100	2	DPM	EGI	S. Bagnasco, R. Brunetti
Frascati	30	100	2	DPM	EGI	E. Vilucchi, G. Fortugno, A. Martini
Milano	50	100	2	StoRM	EGI	N. Neri, L. Vaccarossa, D. Rebatto
Catania*	?	?	?	StoRM	EGI	G. Platania
Slac	400	400	10	NFS	OSG	S. Luiz, W. Yang
Caltech	200	400	4.5	NFS	OSG	S. Lo, F. Porter, P. Ongmongkolkul
Fnal*	50	400	1	dCache	OSG	M. Slyz
OhioSC*	?	?	?	dCache	OSG	R. Andreassen, D. Johnson
Victoria	50	100	5	dCache	EGI	A. Agarwal
McGill*	100	200	1	StoRM	EGI	S. Robertson, S.K. Nderitu
Cyfronet	100	500	10	DPM	EGI	L. Flis, T. Szepienie, J. Chwastowski
<b>Total</b>	<b>3570</b>	<b>11510</b>	<b>440</b>			

\* VO enabling procedure in progress

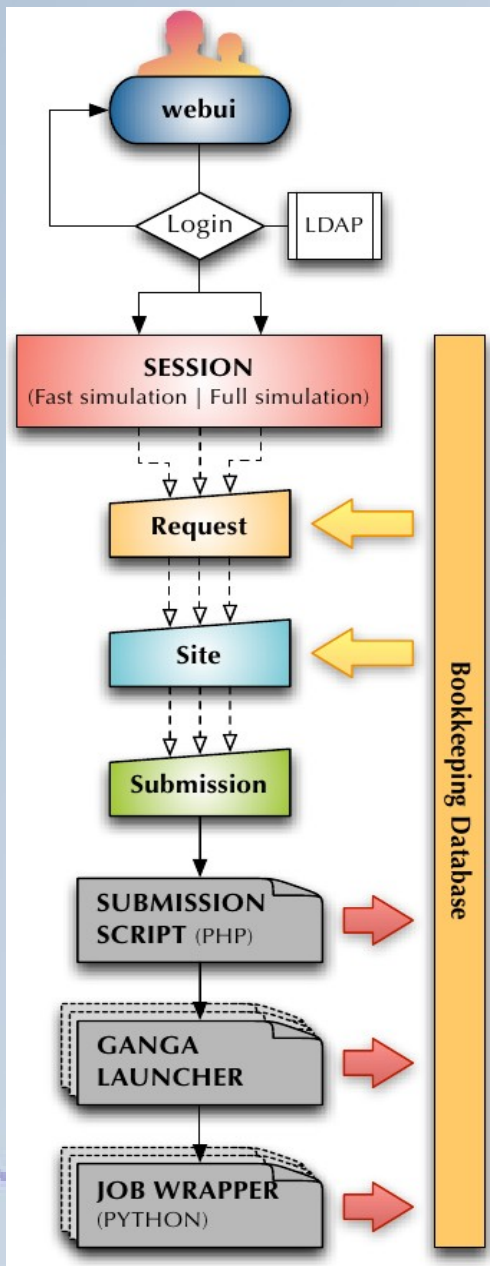
# OSG collaboration

- An official cooperation with OSG support group is in place since four months
  - Meeting participants: G.Garzoglio (OSG support leader), S. Luiz, M.Slyz, T.levshin
- Goal of the collaboration is permitting the SuperB requirements to fit OSG computing peculiarities
  - Authentication, resource setup, training issues
    - Site contacts interface
    - Potentially all OSG sites can be enabled
      - Efforts focused on SLAC, Caltech, Fermilab and Ohio Supercomputing Center

# Distributed resources status

- Full distributed resource testing phase is in progress
  - ~1/3 of the sites results misconfigured
    - Testing, fixing, reinstalling, contacting are in progress
    - Need manpower
- VO enabling operations at remote sites
  - **McGill**: testing services in progress
  - **SLAC**: new services under testing
  - **Caltech**: enabled for the VO
  - **Fermilab**: final test phase

# Production system



- Porting of framework code permitting interaction with new PostgreSQL bookkeeping DB, **completed**
- New dataset management and job submission monitor features **completed and tested**
- New monitor features related to Logging and Bookkeeping service interactions **completed**
- New resource integrated monitor **completed**
- Bookkeeping Wide Area Network interface is **under refactoring**
- **M.Manzali, the primary developer is leaving now, next production is at risk**

# Analysis system prototype

- Main functionality implemented and tested
  - Analysis of personal, official production and generic dataset
  - Personal production
  - Basic dataset management, status and transfer tasks
- SuperB ganga plugin passed the code review session with Ganga developers
- SuperB plugin code resides now on official Ganga project SVN
  - The complete integration with official Ganga release is in progress
- Development of few remaining basic functionality is on course
- Todo list still long and large test scale is under evaluation
- Tutorial page completed:
  - [http://mailman.fe.infn.it/superbwiki/index.php/Tutorial\\_%28draft%29](http://mailman.fe.infn.it/superbwiki/index.php/Tutorial_%28draft%29)

# Analysis system prototype

- Feedback from analysis working group is needed
  - Request from last CM did not result in a list of available beta testers
- A. Galvani, the primary developer will leave within July
  - We are looking for new developers!

Join the group !!



# WAN BK interface

- The present time implementation includes a customized solution which can be classified as a REST way of proceeding
  - SQL query mapping to http protocol is hadoc, difficult to maintain and update
- Various new, more stable and robust solutions are under study
  - First includes the use of apache mod\_proxy module
  - Second includes the use of a general php or python library capable of parse SQL statements to json and back
  - Third based on the use of Cherrypy python web framework, still a proposal
- All the solutions need more time to be investigated in deep

# Dirac evaluation

- New Dirac installation has been setup at CNAF
  - New Dirac release has been installed
    - Better documentation, improved configuration workflow, the entire system has moved to a more general design in terms of VO requirements
- On June 7<sup>th</sup> Dirac training workshop, Bruno Santeramo is trying to participate
- Work in progress: Mass data transfer test, direct submission

# Testbed Infrastructure

DIRAC testbed Infrastructure

3 servers: 64bit VM – 2 GB Ram

site	host	gLite	OS
INFN-T1	bbrbild01	3.2.0	SL 5.4
	sb-serv04	3.2.0	SL 5.4
INFN-BARI	gridtest-05	3.2.0	SL 5.7

## SuperB resources configured

- 23 gLite sites
- 1 OSG site
- 50 Computing Elements
- 19 Storage Elements
- 1 DIRAC File catalog
- 2 FTS server
- 4 FTS channels

## DIRAC tested components

**Framework:** Core system of DIRAC

**DataManagement:** Storage elements and data management, file catalog, FTS transfers

**WorkloadManagement:** Jobs management

**Accounting:** Monitoring functionalities

**Configuration:** Computing Elements automatic discovery and configuration

# Mass Data Transfer in Dirac

- SRM access to Storage Elements
- catalogue automatically updated
- no need to upload long-lived proxy on myproxy server
- FTS servers configured in DIRAC (user do not need to remember them)
- target and source SE by name, not by url
- source file by lfn, not by pfn

dirac fts transfer example:

```
dirac-dms-fts-submit /superbvo.org/data/datasetsXXX.root SourceSE TargetSE
```

# Real Use Case Test

## User Analysis

real user application reading MC data  
performing analysis on  $B^+B^- \rightarrow nn$  and  
 $B_0 \rightarrow k_0^* nn$  with  $k_0^* \rightarrow \pi$  using standard  
ROOT libraries and SuperB libraries

exploited DIRAC parametric jobs, input  
and output saved on DIRAC File Catalog  
(DFC)

thanks to failover solution provided by  
DIRAC, no failures from user point of  
view

In case of failures at INFN-T1 storage  
element, output files automatically  
stored on a fallback storage element

## MonteCarlo Production

10 sites, 100 jobs per site, totally 1000  
jobs submitted, 10.000 events simulated  
per jobs (about 2-3 hours per job)

Each job has 5 input files (about 3GB)  
saved in DFC and replicated on several  
Storage Elements.

Output data stored at INFN-T1 and  
registered in DFC according to SuperB  
data model

*LFN:/superbvo.org/test\_dir/output\_testbe  
d/<job\_output\_dir>/<file\_name>.root*

# Dirac future Works

- Share metadata and replicas info among LFC and DFC
- Massive FTS transfer of an entire dataset
- Resources estimation to improve a DIRAC production ready test infrastructure for SuperB
- test data integrity check
- test data recovery capabilities
- Setup ready for testing a SuperB proper Montecarlo production

# Nagios per VO

- Nagios per VO service is up and running at CNAF  
<https://sb-serv01.cr.cnaf.infn.it/nagios/>
- The **EGI Standard checks** are executed:
  - Job submission (direct to CREAM and through WMS), replicas test from WNs to SRM and directly on SRM
- Specific superbvo.org checks will be added within next month
- Services have been monitored, not the host
  - Each check is performed using Grid tools
- Integration with production and analysis system is completed
- Interoperability with new VO dashboard portal has been tuned
- Still some bugs unresolved impacting xml configuration file
  - A solution is in place, test phase is on course

# VO dashboard I



## Superbvo.org

OVERVIEW >> **MONITORING** > HISTORY > CRITICAL ADMINISTRATION EVENTS OPERATIONS PORTAL TOOLS



OSG	117
NGI_IT	53
NGI_FRANCE	5
NGI_UK	2

monitoring > ngi ( 4 )

NGI	WARNING	CRITICAL	UNKNOWN	OPENED GGUS TICKET(S)	OPENED NOTEPADS
NGI_FRANCE	1	4			

monitoring > site ( 2 )

SITE	NGI	WARNING	CRITICAL	UNKNOWN	OPENED GGUS TICKET(S)	OPENED NOTEPADS
IN2P3-CC	NGI_FRANCE		2			
GRIF	NGI_FRANCE	1	2			

- [+ GOCDB Site information](#)
- [+ Add a GGUS Ticket](#)
- [+ Add a notepad](#)

NGI_IT	40	13			
NGI_UK	2				

monitoring > site ( 1 )

SITE	NGI	WARNING	CRITICAL	UNKNOWN	OPENED GGUS TICKET(S)	OPENED NOTEPADS
UKI-SOUTHGRID-OX-HEP	NGI_UK	2				

monitoring > issues > site > UKI-SOUTHGRID-OX-HEP ( 2 )

TEST	HOST	SERVICE	SITE	NGI	STATUS	EXEC. TIME	REC. TIME	FRESH.			
org.sam.CREAMCE-DirectJobSubmit-/superbvo.org/Role=SoftwareManager	t2ce06.physics.ox.ac.uk	CREAM-CE	UKI-SOUTHGRID-OX-HEP	NGI_UK	warning	2012-05-17 10:52:57	2012-05-17 10:54:20	1 (min)			
org.sam.CREAMCE-DirectJobSubmit-/superbvo.org/Role=SoftwareManager	t2ce04.physics.ox.ac.uk	CREAM-CE	UKI-SOUTHGRID-OX-HEP	NGI_UK	warning	2012-05-17 15:37:59	2012-05-17 15:39:21	1 (min)			

OSG	111	6			
-----	-----	---	--	--	--



# VO dashboard II

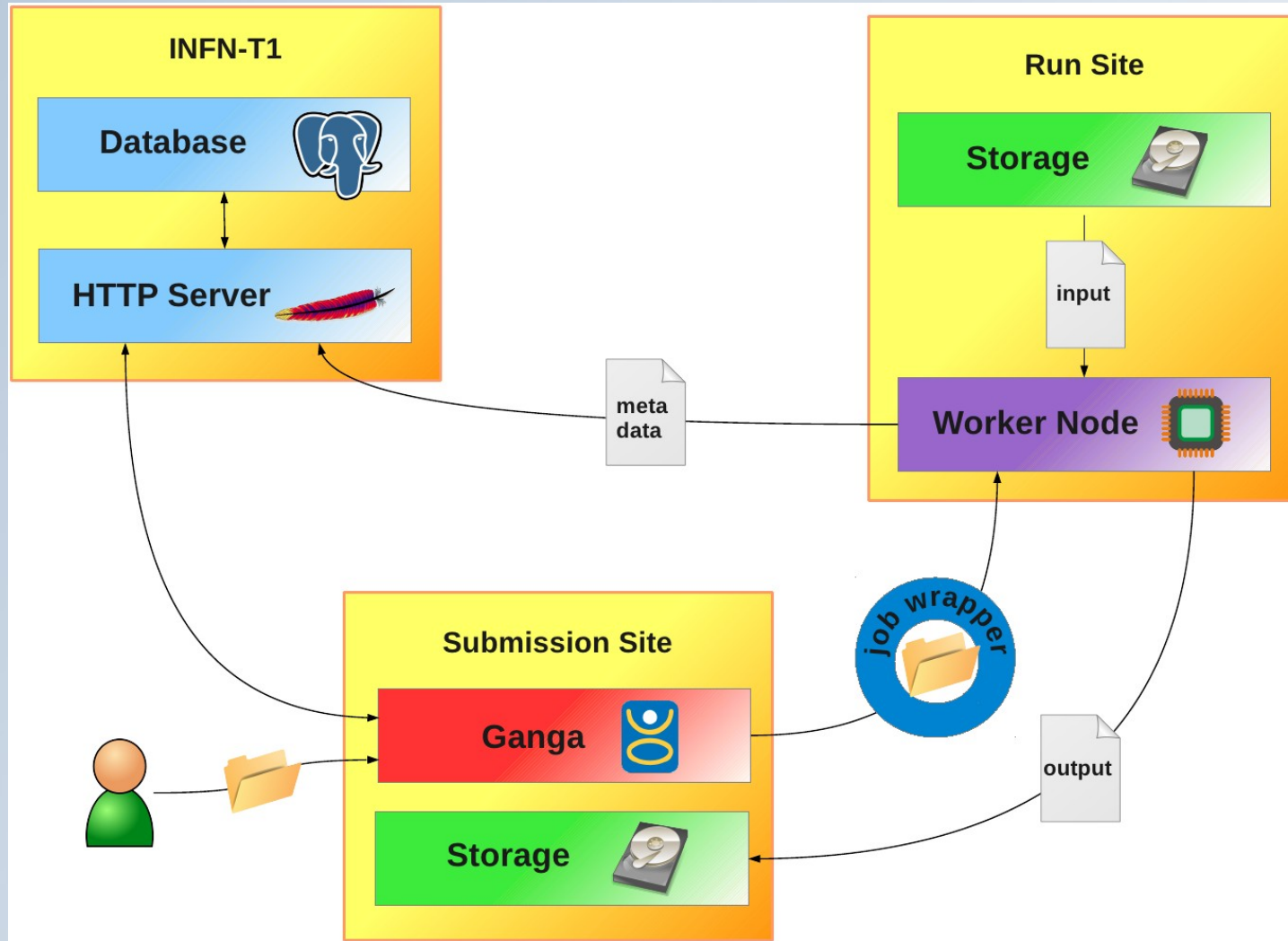
- Tool provided by Operations Portal Team
- <https://operations-portal.egi.eu/voDashboard?vo=superbvo.org>
- Access only for registered people (several roles available)
- It receive notifications by nagios
- It is displayed alarms related to failing checks for the monitored sites
- Sites are grouped by NGI
- Opening GGUS tickets for not working sites and problems follow-up

# Conclusions

- The mile stone tasks for distributed computing group has been respected until now
- In very short term distributed resource management, production and analysis systems works will slow down
- Distributed storage related works are going on with profit
- CHEP12 conference offered a rich and large amount of very interesting R&D lines

Backup slides

# Analysis workflow schema



# Production system: news

