

Computing Summary

Dr. Silvio Pardi
INFN-Napoli

- **Distributed Computing**
- **Physics Tools**
- **Collaborative tools**
- **R&D Activities**
- **Distributed Tier1**

Distribuite Computing

Distributed computing
work status

A. Fella on behalf of Distributed Computing group

Armando Fella

- Production Tools
- Dirac evaluation
- PhEDEx evaluation
- Distributed resources status
- Ganga use case analysis
- CNAF services

Distribuite Computing

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	3456	120	StoRM	EGI	A. Martin, C. Walker
Oxford Univ.	50	200	1	DPM	EGI	K. Mohammad, E. MacMahon
IN2P3-CC(T1)	500	1000	10	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	127	StoRM	EGI	A. Fella
Pisa	50	500	0.5	StoRM	EGI	A. Ciampa, E. Mazzone, D. Fabiani
Legnaro	50	100	1	StoRM	EGI	G. Maron, A. Crescente, S. Fantinel
Napoli-inf	50	100	5	DPM	EGI	S. Pardi, A. Doria
Napoli-grisu	50	300	5	DPM	EGI	S. Pardi, A. Doria
Napoli-unina	50	300	5	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	R. Cefala'
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	F. Porter, P. Ongmongkolkul, S. Lo
OhioSC	?	?	?	dCache	OSG	R. Andreassen, D. Johnson
Victoria	50	100	5	dCache	EGI	A. Agarwal
Cyfronet	100	500	10	DPM	EGI	L. Flis, t.Szepienie, J. Chwastowski
Total	3070	11066	349			

D.Comp: Production Tools

Luca Tomassetti

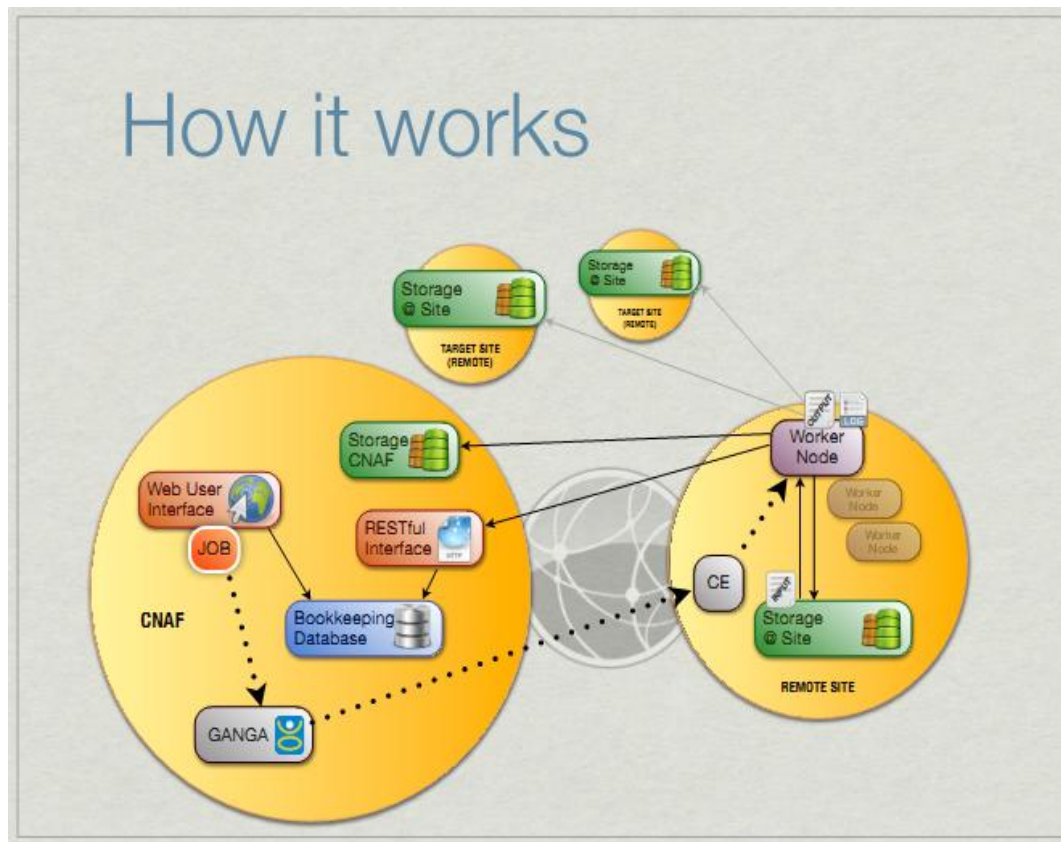
Production Tools v3

L. Tomassetti
University of Ferrara and INFN

Several tools to simplify the job Submission on the Grid Infrastructure for event Production have been implemented and updated.

What News

- A new bookkeeping database
- Severus – a single python scripts for job submission.
- REST-Interface authentication with valid superb-proxy



D.Comp: Production Tools

Several improvement in WEB-UI interface:

- Job Monitor
- Double Profiling: Shift View and Expert
- Automatic procedure for Submission
- Bulk Job submission.



Work In progress

• Integration with Nagios monitoring Services.

• Integration with Logging & Bookkeeping service (Grid infrastructure)

Status

- * The new Production Tools have been tested with both FastSim (V0.2.5 311) and FullSim (V0.0.2 183)
- * Ready for production (FastSim)
FullSim needs further development on the Severus modules
- * Pre-production test will be performed with the actual releases of simulation software

session	job launched	job graph	events generated	total wct (s)
FastSim	4.393		1.454.363	4.566.483,40
FullSim	253		253	120.790,90



D.Comp: DIRAC testbed



Why evaluate DIRAC ?

- It's used by two “similar” experiments: LHCb and Belle II
- It can manage almost all aspect of an experiment's distributed computing

What evaluate in DIRAC ?

- Can manage SuperB sites ? (gLite and OSG)
- Can satisfy requirements for experiment's use cases ?
- How hard/easy is to manage a DIRAC installation ?

DIRAC testbed

2nd SuperB Collaboration Meeting @ INFN-LNF

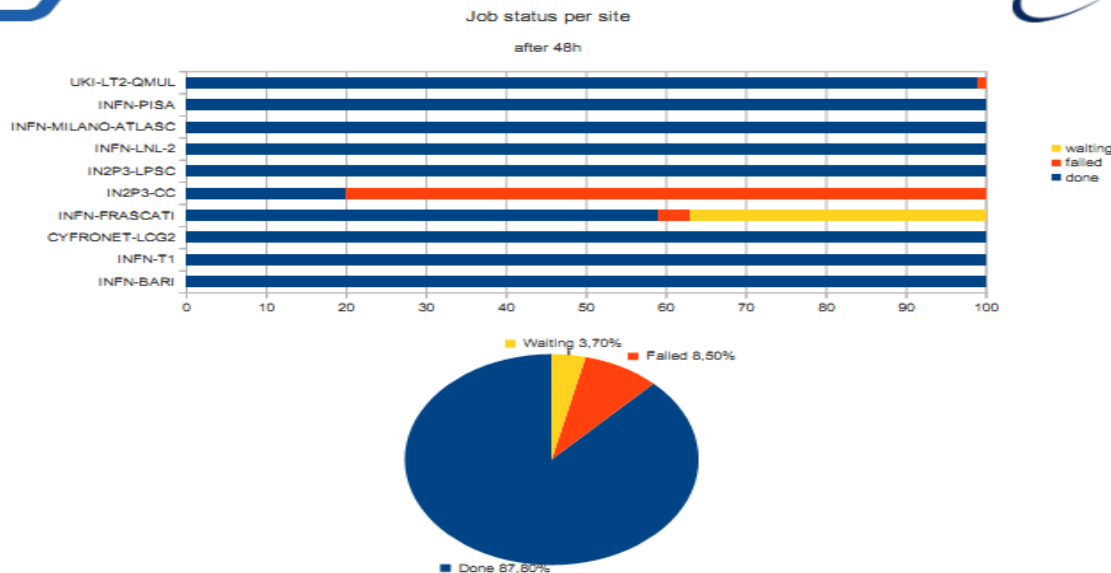
14/12/2011

Bruno Santeramo

Bruno Santeramo – INFN-BARI



MC production - Results



Pardi

Frascati - 16-12-2011

Physics Tools

Physics Tools-

Physics tools WG structure

Physics tools overview

Matteo Rama

2nd SuperB Collaboration Meeting
Frascati, 15 December 2011

Matteo Rama

Subsystem
simulation

SVT

DCH

fDIRC

EMC

IFR

backgrounds

Tools

PID selectors

Flavor tagging

~~Vertexing/Composition tools~~

...

FastSim core

Core

Physics
packages

PacHadRecoilUser

PacSemiLepUser

PacTauUser

...

| uncovered |

Version 14Dec2011

Most items have one person responsible for it.

More manpower needed. Several possibilities to contribute and take responsibilities.

Physics Tools

Next Fastsim production

- Major effort involving many people
- Timeline still under discussion but
 - The physics group has started collecting feedback from potential analysts
 - Tentative goal: analysis ntuples available for Summer 2012

FastSim EMC status and plans

Chih-hsiang Cheng
Caltech

Second SuperB Collaboration Meeting
2011/12/13-16, Frascati, Italy

Cheng Chih-hsiang

2nd SuperB Collaboration Meeting, INF Frascati 13-16 Dec 2011

IFR Fast Simulation: recent developments and plans

M. Rotondo
I.N.F.N. Padova


Marcello Rotondo

FDIRC report

December 15th 2011

Nicolas Arnaud (LAL-Orsay)



• More a 'letter of intent' than a report of real work

Nicolas Arnaud

Status of EMC FastSim

Improvements in simulation of detector effects (resolution) and electronics.

Found problem in background mixing.

Missing SimHits from neutrons and too low photon background

IFR Recent Change

- Improve the simulation of the pion (nucleon) interaction in iron
- Improve the simulation of the lateral hit production
- Implementation of μ selector is ongoing

Plans - FDIRC

- 'Learn' the package – developed by Cincinnati group
- Produce a set of QA plots to validate easily the FDIRC
- Debug the more complex simulation model
- Document all this in the wiki – for future users/developers

Physics Tools- Physic Package

Elisa Manoni

FastSim - BaBar FullSim
comparison with HAD Breco



Elisa Manoni - INFN PG

2nd Superb Collaboration Meeting - LNF

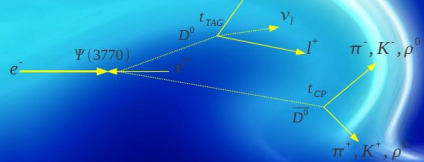
Physics Session, December 14th 2011

Elisa Manoni:

- Validation of FastSim V0.3.0
- shown a first comparison between FastSim Vs BaBar Full Sim Hadronic Tag Reconstruction (FastSim Validation)

Gianluca Inguglia

Computing + Phys - Physics Tools
15/12/2011



**FastSim Tools for charm
threshold running**



Gianluca Inguglia
Queen Mary University of London
g.inguglia@qmul.ac.uk



Developed a set of packages to perform Charm tagging
Running on Charm threshold in FastSim.

Still private code, hopefully will be committed soon ☺

Collaborative Tools

Collaborative Tools



Status of the Collaborative Tools

Stefano Longo

Portal System

<http://superb.infn.it>

At present the portal integrate:

- Alfresco Explorer (with SSO)
- Alfresco Share (with SSO – Beta)
- Indico (no SSO)
- Trac (no SSO – feasibility checked)
- Wiki (work in progress for SSO)

What News

Alfresco Explorer update to the version 4.0b

Repository setup modify to respect the feedback given in the past QMUL meeting.

Alfresco Share Update at 4.0, many new feature: Document management ,Parallel Uploads , Notifications by email.

New hardware has already been acquired to expand the available resources in supporting the Portal and all the subsystem.

There's a public space («Organization» menù) and a private space («Restricted Area») for each SuperB division (if you feel inspired you can start filling them with data)

Collaborative Tools

Introduction 0 Improvements 000 Recently added 0 Plans 00

Status of the Fast and Full Simulation build system based on CMake

Marco Corvo

CNRS and INFN

II SuperB Collaboration Meeting

Frascati December 13-16, 2011

By Marco Corvo

◂ ◃ ◅ ◆ ◇ ◈ ◉ ◊ ○ ◌ ◍ ◎ ● ◐ ◑ ◒ ◓ ◔ ◕ ◖ ◗ ◘ ◙ ◚ ◛ ◜ ◝ ◞ ◟ ◠ ◡ ◢ ◣ ◤ ◥ ◦ ◧ ◨ ◩ ◪ ◫ ◬ ◭ ◮ ◯ ◰ ◱ ◲ ◳ ◴ ◵ ◶ ◷ ◸ ◹ ◺ ◻ ◼ ◽ ◾ ◿ ◰ ◱ ◲ ◳ ◴ ◵ ◶ ◷ ◸ ◹ ◺ ◻ ◼ ◽ ◾ ◿ ◰ ◱ ◲ ◳ ◴ ◵ ◶ ◷ ◸ ◹ ◺ ◻ ◼ ◽ ◾ ◿

- Evaluate the use of CMake in place of SRT currently used for build the Babar Software.
- This project has been presented almost one year ago
- One of our goal was to get definitely rid of SRT as a base for building FastSim

What News

The Goal is Not completely accomplished but a lot of improvements are already there.

A lot of work for the porting phase but the features provide by CMake appear useful.

At this stage CMake proved to be a nice tool in place of SRT

R&D Activities

R&D Topics

Many activities in the following areas:

- Data access and storage management
- Framework parallelization

R&D: Data access

Data access R&D status



G. Donvito - INFN-Bari

On behalf of the Distributed Storage R&D
group

Giacinto Donvito

Try to explore the possibilities of the new emerging data/storage techniques in order to provide efficient solutions to solve the problem of accessing and managing SuperB data

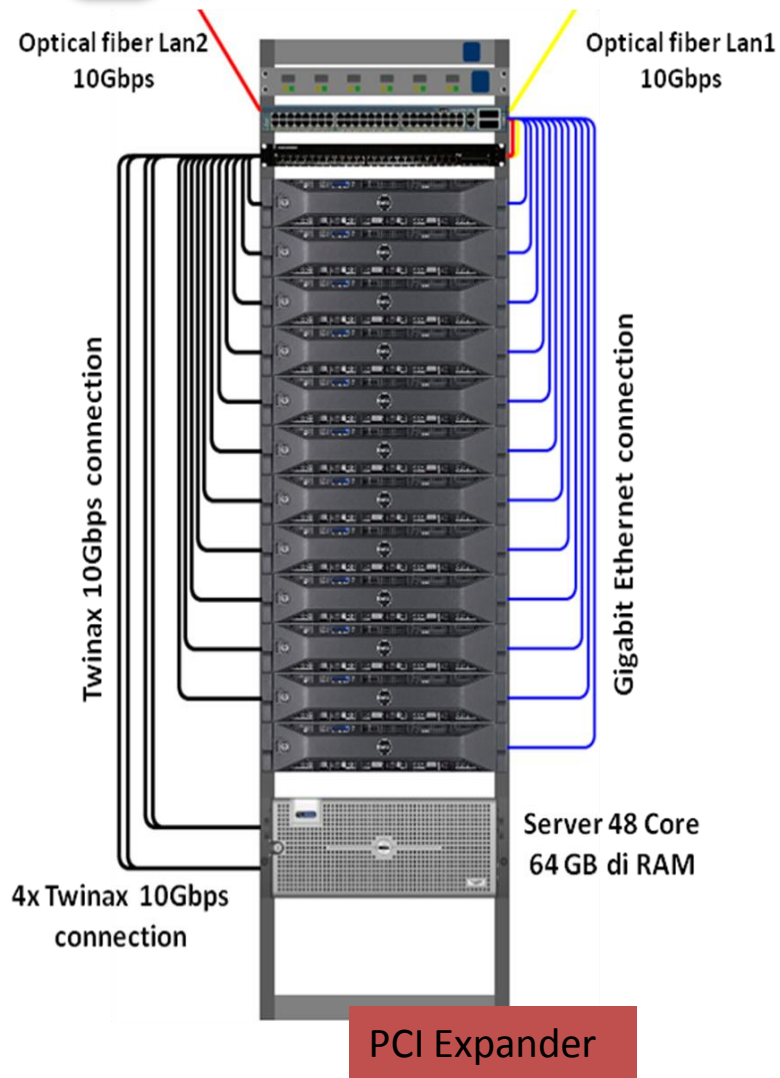


Accessing data, file-systems, transferring and replicate data are part of this work. On-going activities in Bari and in Napoli, Pisa, Perugia and Bologna.

Technologies in testing

- Hadoop
- EOS
- Http remote access /WebDav for GRID
- Test Gluster FS /Gluster with SRM Interface

We start to interact with EMI people (Patrick Fuhrmann, Fabrizio Furano) in order to individuate some possible common issues to approach together.



NEW COMPUTING FARM IN NAPOLI FOR R&D ACTIVITIES

- ❑ 12 DELL Server PowerEdge R510
biprocessor quadcore Intel(R) Xeon(R)
- ❑ 1 PCI expander 4 Tesla S2050
- ❑ 1 Server - 48 core, 64 GB RAM
- ❑ 3 New Dell R200 as frontend machine
- ❑ Memory 32Gbyte RAM, a *PERC H200 controller RAID* and 8 local disk of 500GB in Raid0 configuration.
- ❑ Broadcom NetXtreme I 57711 double port SFP+ 10GbE NIC with offload TOE e iSCSI, PCIe x8.
- ❑ OS SL 5.5

R&D: Framework




Report on
Workshop on Concurrency in the
many-Cores Era – @FNAL
Impact for SuperB

Francesco Giacomini – INFN

Francesco Giacomini

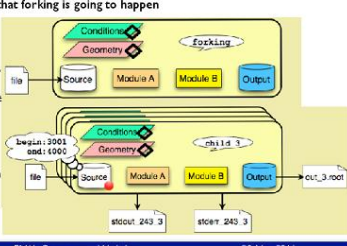
2nd SuperB Collaboration Meeting
LNF – 13-16/12/2011

ONE GROUP OF THE SUPERB PEOPLE JOINT IN THIS DISCUSSION



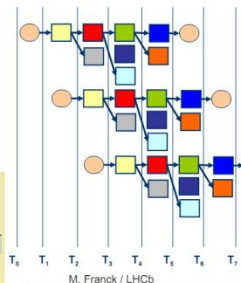
Current Application Overview

- A Fork and Copy On Write application
- The parent process
 - Reads configuration and loads modules. The WMDM system sets configuration of how many children and # events/child to use.
 - Opens input file and reads first run, modules are not called
 - Pre-fetches conditions, calibrations and geometry
 - Sends message to all modules that forking is going to happen
 - source closes file then forks
- The child process
 - Redirects stdout and stderr to own files whose names contain parent PID and child #
 - Send messages to modules saying process is child X
 - Sources calculate their event ranges to process and re-open the file
 - Process events in child's start/end range normally





What next?



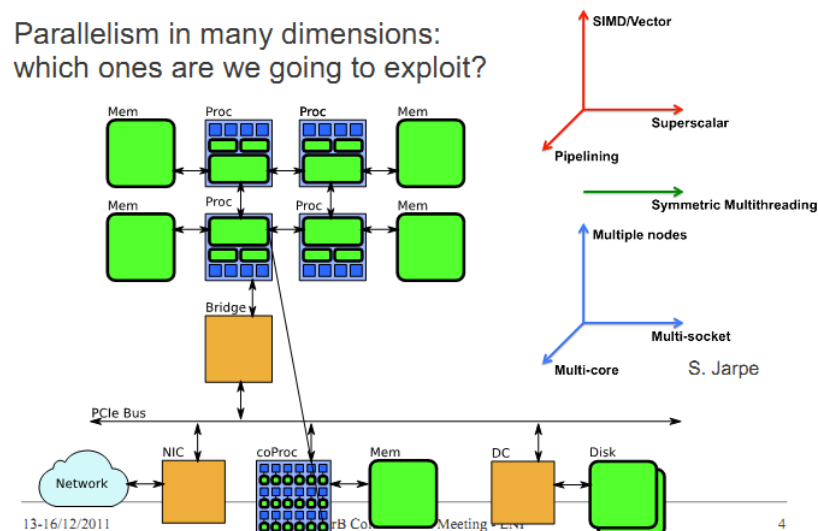
- Multiple events, multiple stages per event at once
 - Multi-threaded
- Each stage/algorithm can be parallelized as well
 - Can be run on an accelerator too
- Various technologies
 - GCD, TBB, CnC, OpenMP, ...

Some Experience in CMS



The problem: Heterogeneous and Parallel Systems

Parallelism in many dimensions:
which ones are we going to exploit?



S. Pardi

Frascati - 16-12-2011

R&D: Framework

Introduction
Title of Tbb

Introducing Intel Tbb

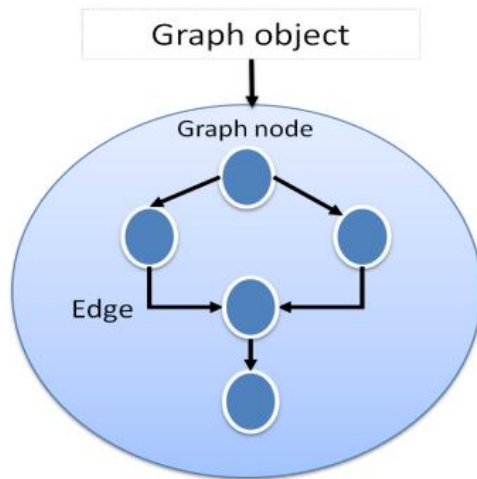
Marco Corvo

CNRS and INFN

II SuperB Collaboration Meeting

Frascati December 13-16, 2011

Navigation icons



Introducing Intel Tbb

Intel Threading Building Blocks is a runtime-based parallel programming model for C++ code that uses threads

It consists of a template-based runtime library to help you harness the latent performance of multicore processors

Tbb allows the user to write scalable applications that
Specify logical parallel structure instead of threads
Emphasize data parallel programming

Take advantage of concurrent collections and parallel Algorithms.

Is currently under investigation (people in Padova and Bologna) look promising but must be compared with already available solutions.

R&D: Framework



Parallelization and
Legacy code:
a preliminary work on EvtGen

Stefano Longo

Is it possible to run in parallel BaBar code (legacy code)? If this is the case, what kind of performances can be expected?

What type of parallelization can be done on this code with the minimum impact?

EvtGen is an event generator designed for the simulation of the physics of B decays.

First tests as be done with two different approach:

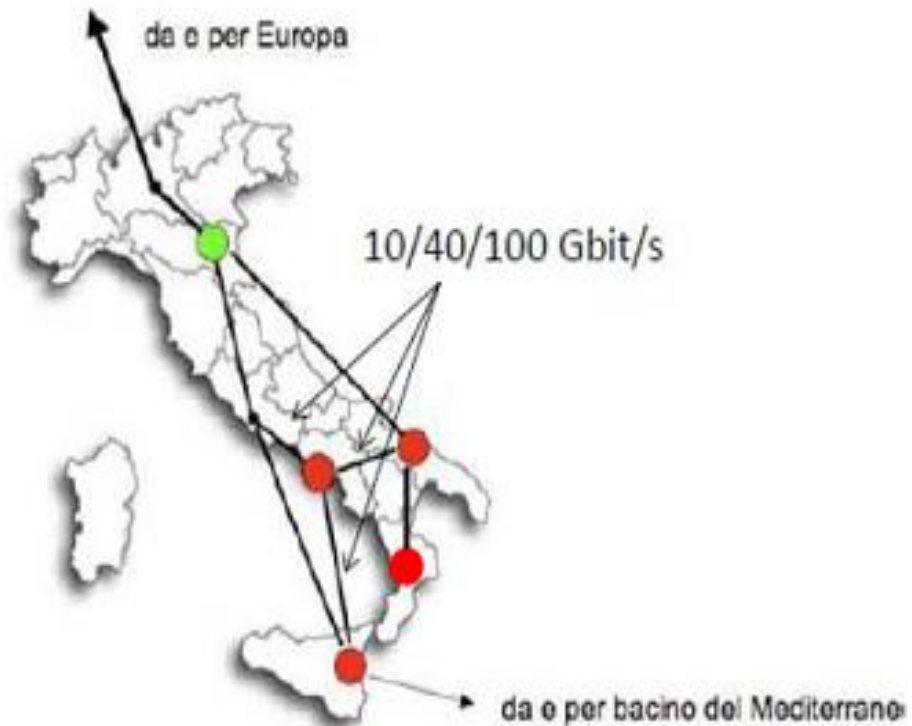
- TBB Approach
- OpenMP Approach

Very preliminary results shown the potentiality of both the approach but more investigation must be done.

Distributed Tier1

Distributed Tier1

- In Italy:
 - CNAF
 - 4 new centers in Bari, Catania, Cosenza, Napoli

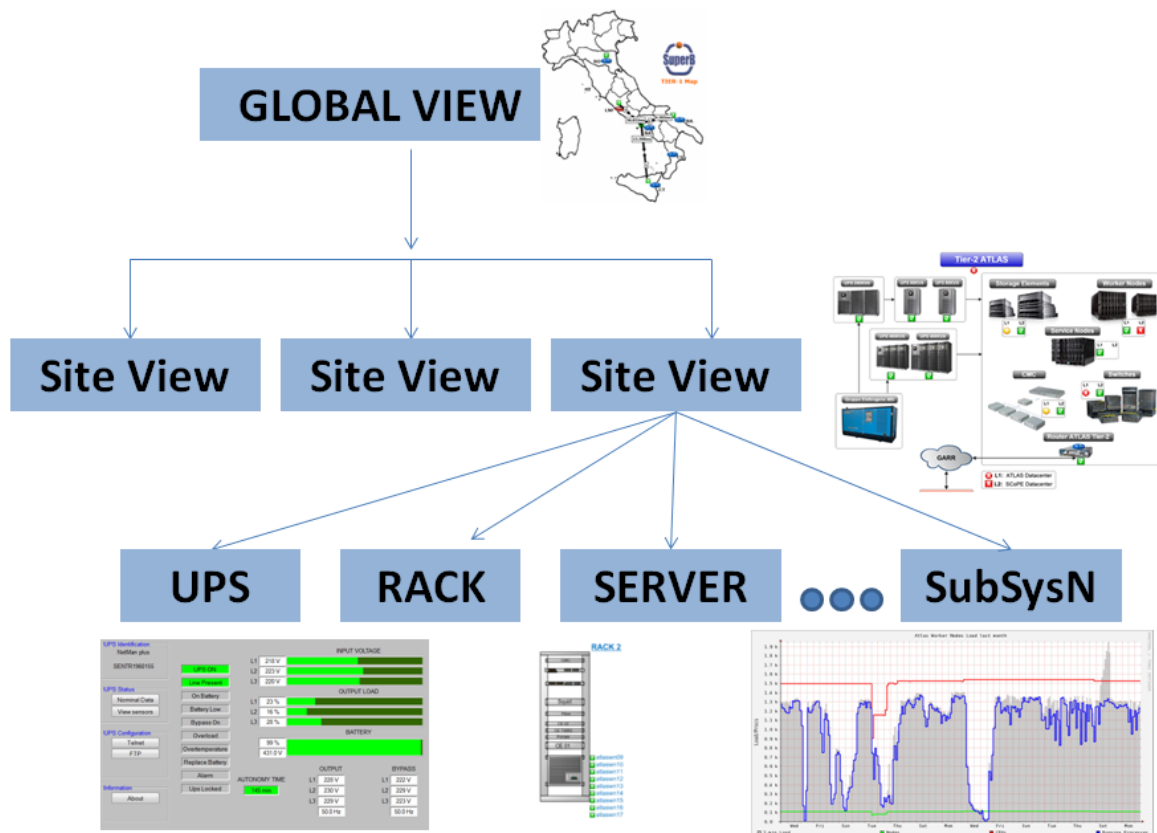


The Infrastructure is funded with 13.7MEuro through the ReCaS Project approved by the Italian Government within the Operative National Program

Distributed Tier1 Monitoring development

A central Monitoring System for the distributed infrastructure will be implemented in Napoli in collaboration with the other partners within the activities of the ReCaS project.

In the next month will start a discussion about the requirement, the feature to implement, the architecture and the products to use.

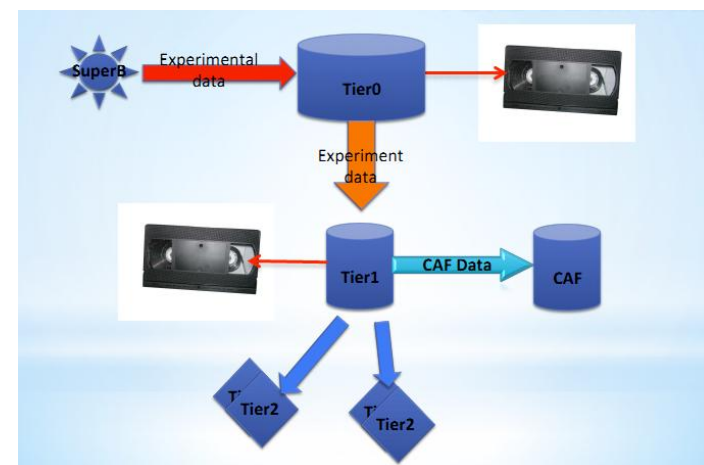
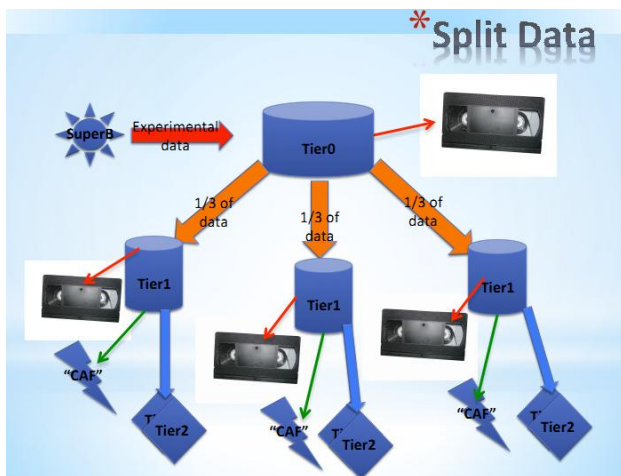
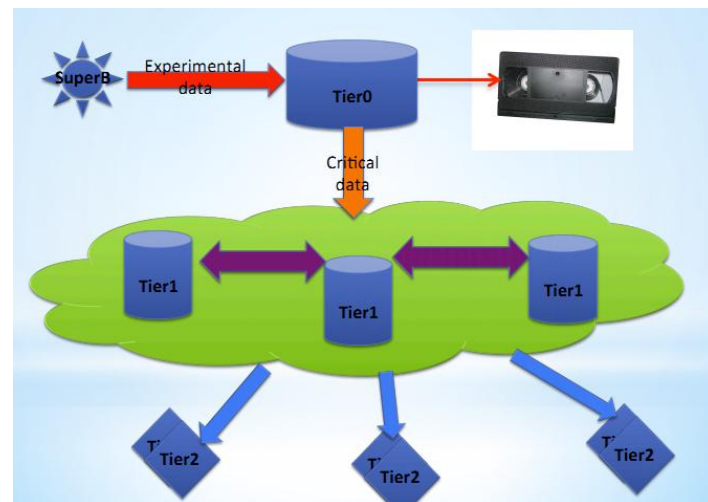


Distributed Tier1

Data management

Discussed in the planning session the architecture of the future computing infrastructure that will support data analysis.

Some preliminary models have been presented. The discussion is now open and will be continue in the next CSG meeting and phone conferences.



Conclusion

Very active meeting.

Progresses have been shown on many computing related areas (FastSim, Distr. Computing, Collaborative tools).

New R&D entry: First attempts exploiting software parallelization on multi-many cores architectures.

Major issue is the lack of manpower.



Thank you