

Core – IT / News

- Mailbox move to Exchange2010 finished
- FAIR mail domain fair-center.eu in production
- Home license programm (MS Campus contract)
- New windows domain concept starting with administration
- Plans to build a GSM antenna at GSI to increase mobile reception (especially at KBW) => Vodafone is here today!
- All other projects continue...

Upgrade Tape Drives March 2012

Tape library in RZ (IBM 3584-L23) :

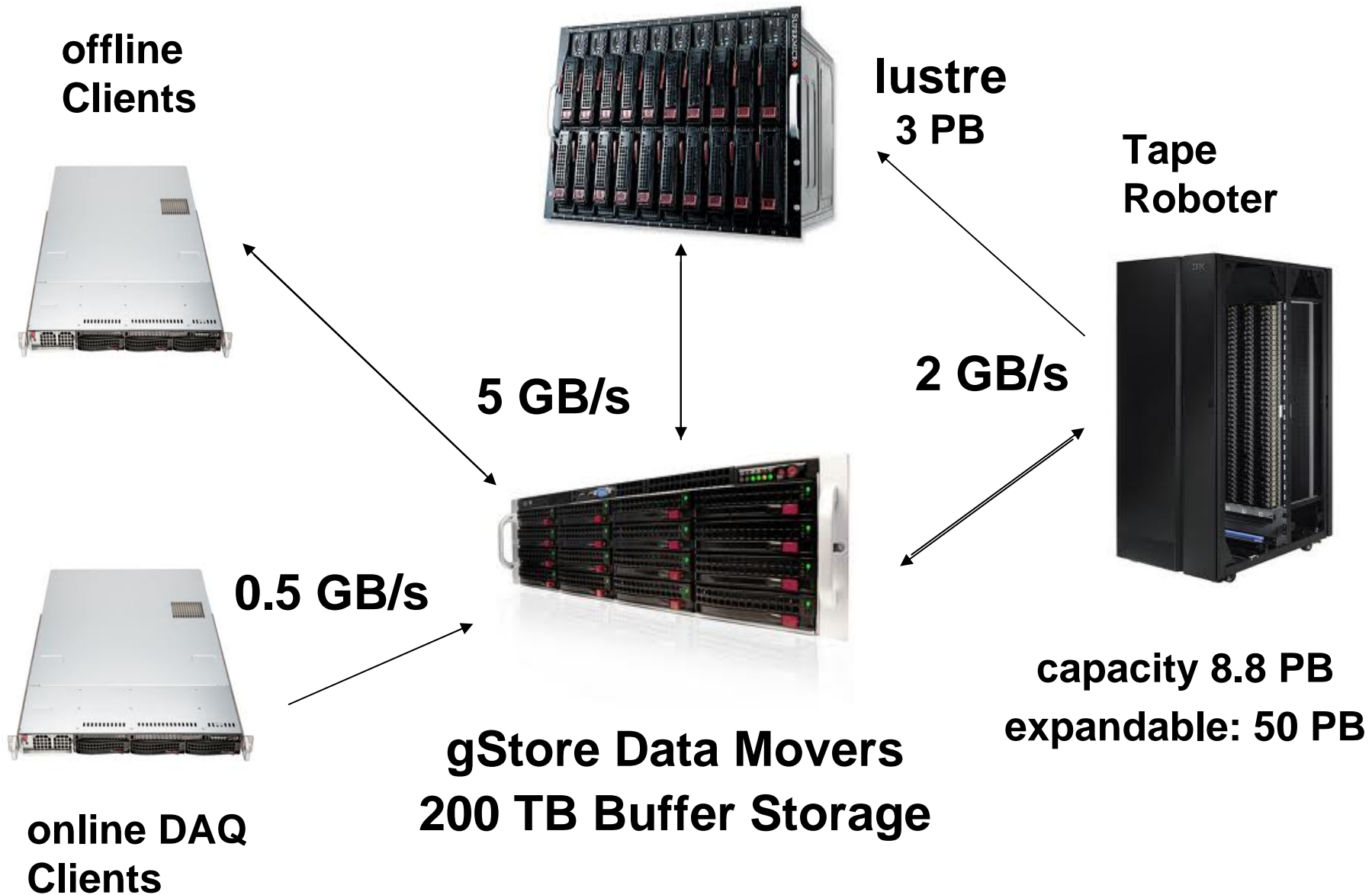
- 8 new tape drives (IBM 3592-E07)
- 250 MB/s read/write (before 160 MB/s)
- 4 TB/medium uncompressed (before 1 TB/med.)

=> overall max:

- ~160 TB/day read/write bandwidth ATL
- 8.8 PB data capacity currently (before 2.2 PB)
- expandable to ~50 PB

Tape storages costs (for primary) will be recalculated,
backup remains at 125 k€/PB

gStore 2012



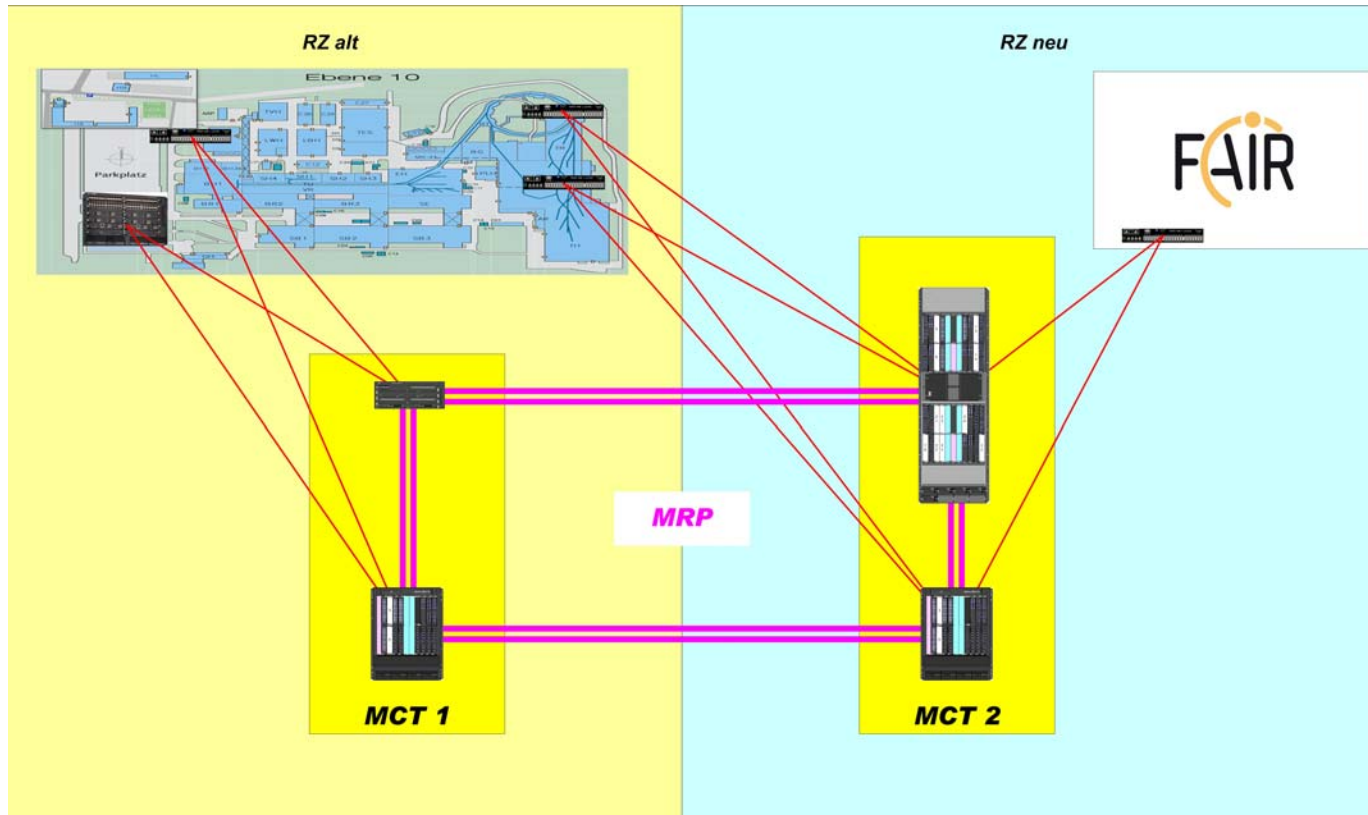
Core IT – WAN

Dark Fiber-Connection to Frankfurt:

- 12x10 Gb LOEWE CSC <-> GSI Lustre
- 10 Gb Uni FFM <-> GSI Lustre
- Optional Uni Mainz <-> GSI (10-40 Gb)
- Expandable to Terabit
- Using one dark fiber and dense wavelength-division multiplexing technology (DWDM)
- Open for offers now, order May, delivery June/July, **production -> August 2012**

Core IT – Network Plans for Green IT-Cube

- 2 additional small backbone switches
- all 4 connected by metro ring protocol (failover)
- „old“ modules can be used



Administrative IT

- Content management typo3 and new web site – production delayed due to content
- Project tools FAIR/GSI – SAP PS <-> MS Project (PS customizing in progress)
- SAP-ebiss start June EE and Core-IT/July for everybody
- New sub-domain for administration (-> Core-IT)

Document Management System

- GDS (OnTEAM) insecure, no features...
- EDMS: in future, use will require contribution
- Invenio – optimized for library service
- Evaluation of DMS solutions such as ELO, DOXiS, OpenText, Alfresco...
- ➡ Goal – one system for GSI (administration, accelerator and experiments)
 - ➡ Feature wish list?
 - ➡ Requirements (how many users, file system space...)

Presentation of possible solutions and discussion (May 2012) – who is interested?

Prometheus / Hera

- IB cluster in the Minicube

Executive summary: works! Success! :-)

- **Prometheus: 10,000 core cluster, based on Infiniband**
- **Hera: 2,300 disk parallel filesystem (lustre)**
- **IB interconnect + connection to IP world (IP router)**
- **4 LNET router: connecting 6,000 disk lustre system**
- **Deployment of system, configuration, GE, Monitoring of Prometheus and Hera in a couple of days:
Thanks to our new „large scale fabric management“
(including boot over IB :-))**

Prometheus + Hera – first results

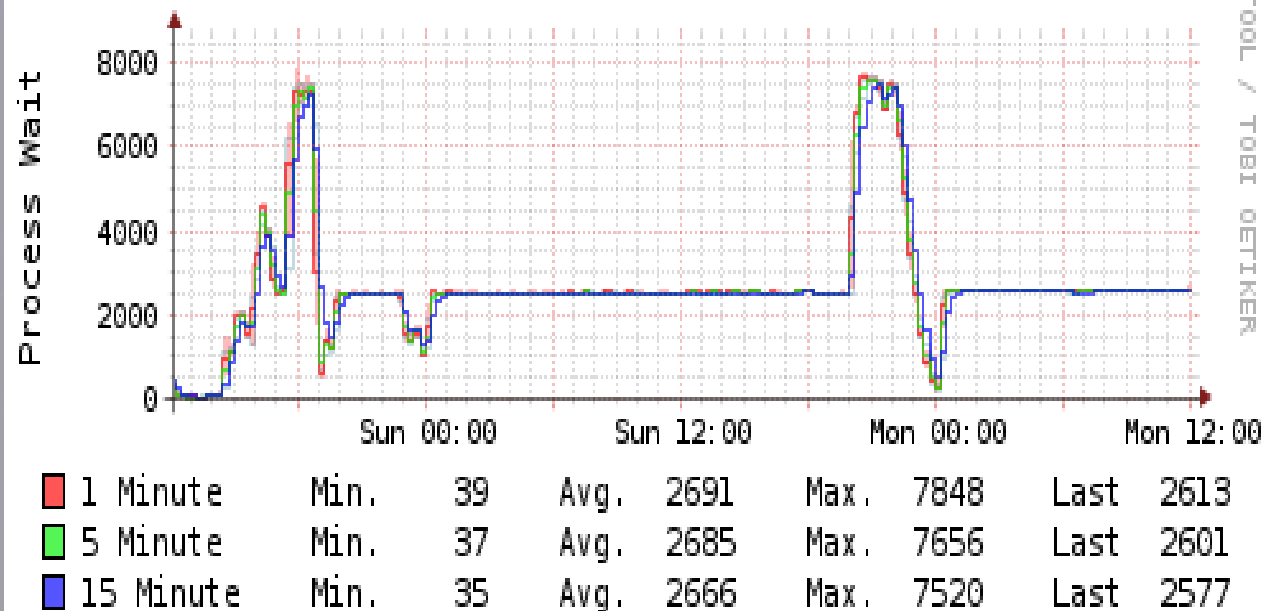
- 200,000 physics jobs already finished,
- 2.8 PB data throughput
- ~.5 Tbit/s I/O throughput already reached (in the Hera part)

**=> Already (successfully) used by
Alice, Beschleuniger-Physik, HPC**

Prometheus + Hera – first results

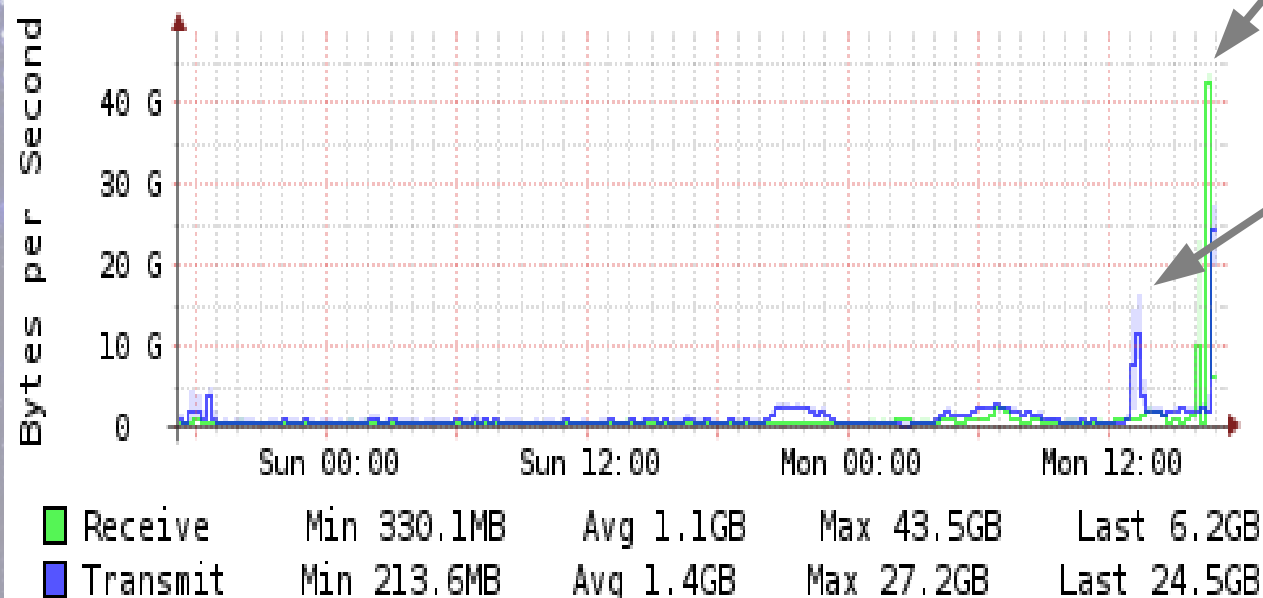
- IB works reliable and much much faster as Ethernet ...
 - Speed measured with Prometheus
 - RDMA per node: 3.1 Gbyte/s (expected: Mellanox: ~3GB)
 - Parallel access to lustre per node: Read ~2 Gbyte/s
 - Fileserver performance now limited by the switched backplane...
 - core performance: constant (about the same as with the older Icarus cluster (16 cores per node))
- => however we have now 24 cores per node ...

Prometheus Cluster Load



HPC Test
450 Gbit/s
(close to the
backplane limit)

Hera Infiniband Traffic



Alice Train,
160 Gbit/s

GridEngine Accounting Summary of Last Week

Last updated: Mon Apr 16 14:00:52 +0200 2012

Clear

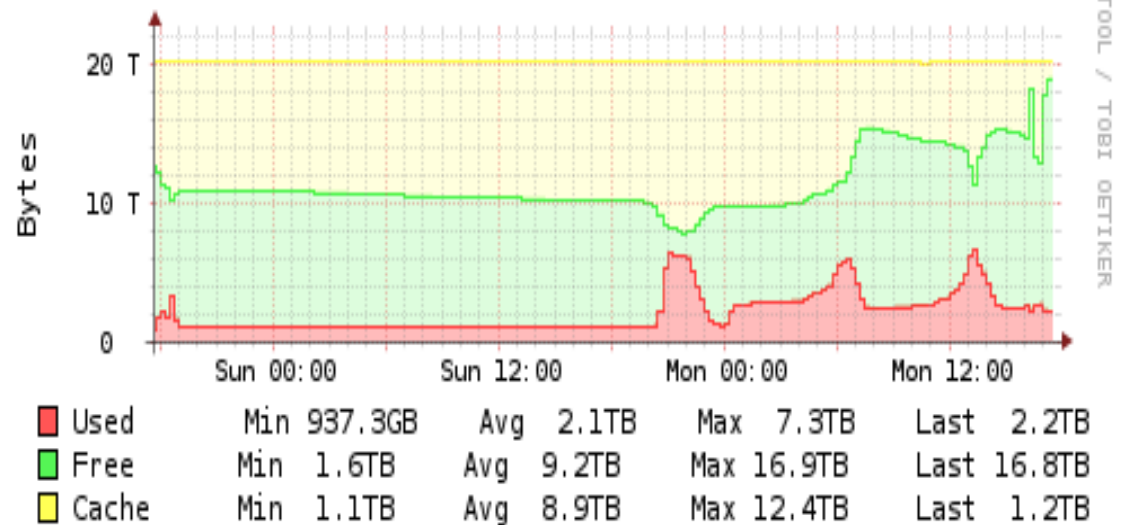
User	Jobs	CPU Time	Run Time	Memory Used Over Time	I/O	Jobs Max Resident Memory				Jobs Run Time				Exits
						<1GB	<2GB	<4GB	>4GB	<1h	<4h	<12h	>12h	not 0
cpreuss	26	5m0s	1h11m	0.0B/s	490.72KB	26	0	0	0	26	0	0	0	23
vpensio	5	0s	1m6s	0.0B/s	4.15MB	5	0	0	0	5	0	0	0	0
root	11	0s	8m12s	0.0B/s	11.98MB	11	0	0	0	11	0	0	0	0
sma	34739	8kh	28kh	32.02EB/s	318.2TB	9853	24728	64	94	28241	6493	5	0	1
jthaeder	142336	238kh	250kh	1.27EB/s	2.5PB	128004	175	14157	0	83177	44686	11912	2561	12827

/report/gridengine-accounting?format=html

142,000 jobs

2.5 PB

Prometheus Memory Utilization



To do:

- One rack is missing (PDU issue => Infrastructure)
- LNET router instability at the Ethernet side
=> HPC, under investigation
- ALICE: migrate data from /lustre => /hera
- HPC: migrate “Icarus” cluster to Prometheus
 - Decommissioning of old, aged, unreliable lustre file servers
 - Buy, install new file servers at minicube
 - Building + testing a LNET router cluster for the WAN lustre Tera Scale project

Focus of Scientific Computing:

Subgroups: Experiment Simulation and Analysis, e-Infrastructure, DBs

- Development, maintenance and support of the common software framework of the FAIR experiments (FairRoot)
- Participation in national and international research - and development activities for software of the experimental and theoretical particle - and nuclear physics; Community software support at GSI / FAIR
- Support of the software environment of the ALICE experiment at the German Tier-1 center GridKa at KIT and the Tier-2 center at GSI, LOEWE CSC, ...
- Strategic planning and design of the e - Infrastructure for the FAIR experiments, development of models for the resource integration of regional universities, national and international FAIR partners with methods of the Grid and Cloud Computing

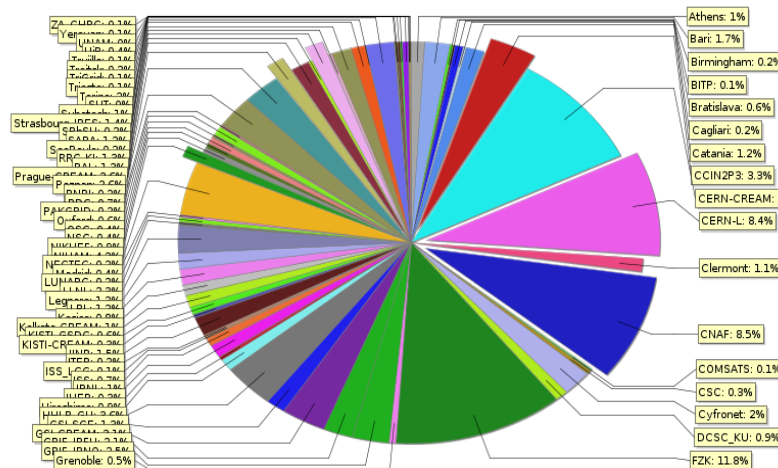
ALICE Repository

- ALICE Repository
- Google Map
- Shifter's dashboard
- Run Condition Table
- Production Overview
- Production info
- Job Information
- SE Information
- Services
- Network Traffic
- FTD Transfers
- CAF Monitoring
- SHUTTLE
- Build system
- HepSpec
- Dynamic charts

close all

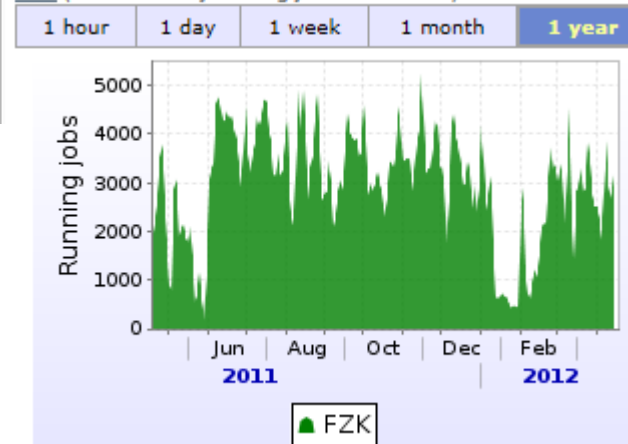


Average running jobs

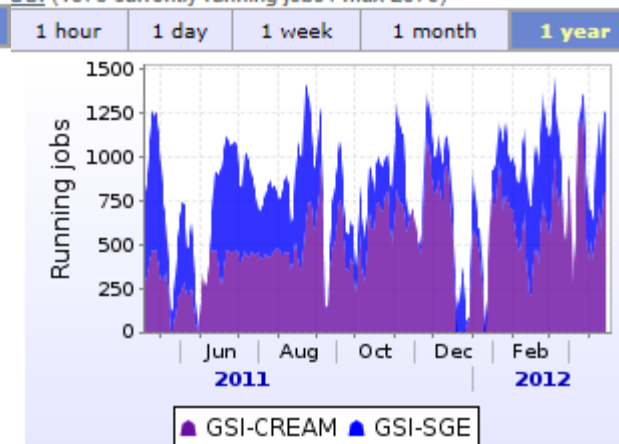


FZK ~12%, GSI ~4%, CSC ~4%,

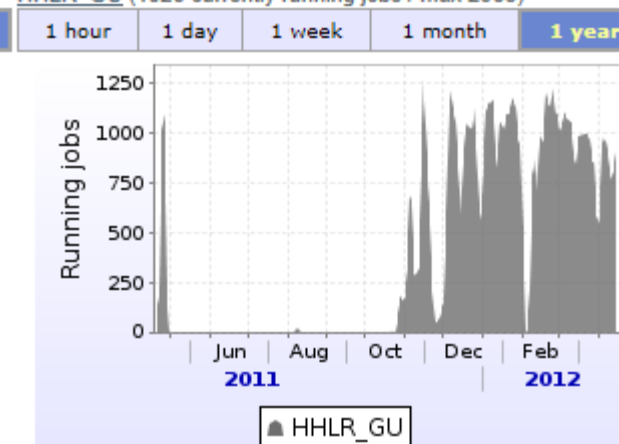
FZK (1277 currently running jobs / max 6918)



GSI (1878 currently running jobs / max 2379)



HHLR_GU (1020 currently running jobs / max 2988)



Main problem: we do not have enough disc: < 300TB SE, we need 550 TB

Grid & Cloud for FAIR

PandaGrid, Cloudification of LOEWE CSC, Ffm Cloud, ...

PANDA GRID

[Repository Home](#) | [Administration Section](#) | [Events XML Feed](#) | [Firefox Toolbar](#) | [MonaLisa GUI](#)

PANDA Repository

- PANDA Repository
- Google Map
- Job Information
- Production
- Data Storage
- Services
- Network Traffic
- FTD Transfers

close all

This page: bookmark, URL

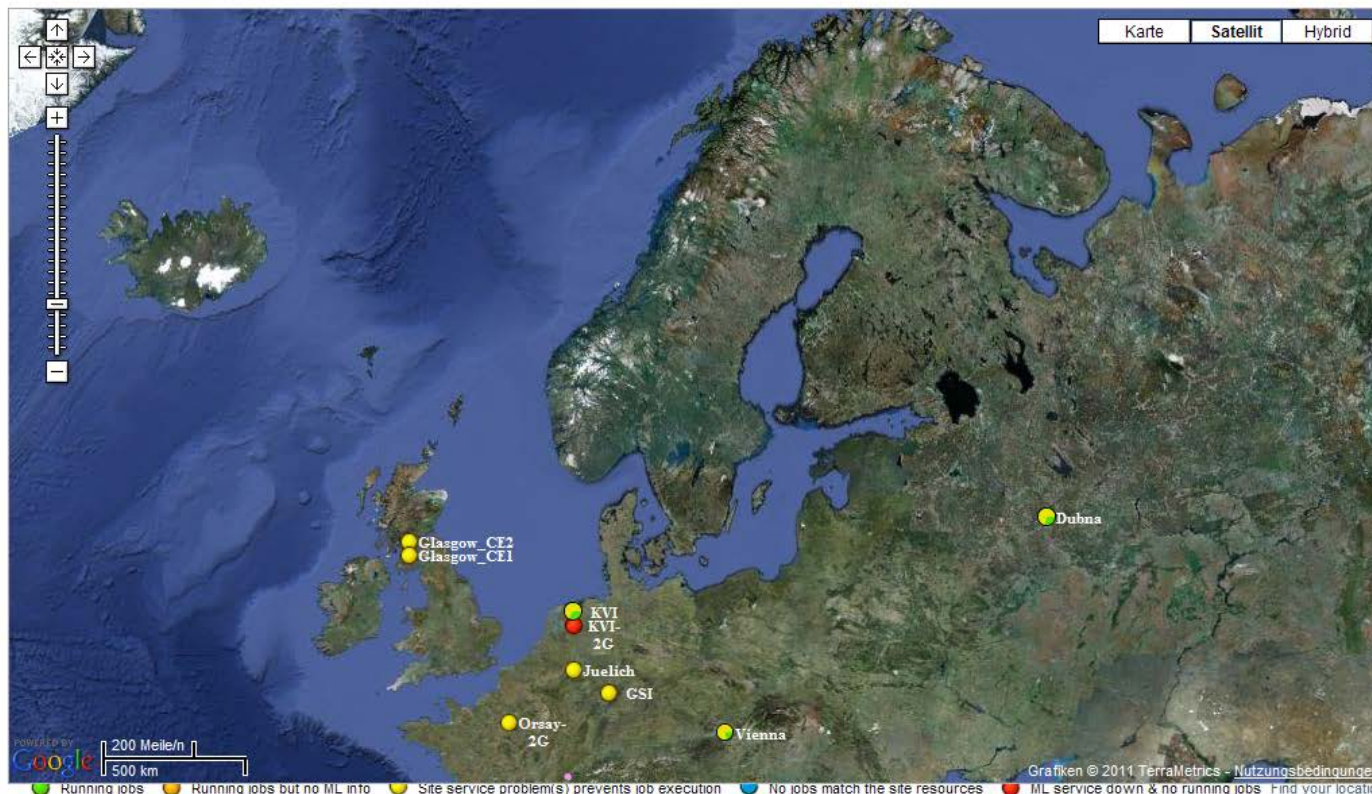
Running jobs trend



Running jobs trend

24h 12h 6h 1h

(click arrows for detailed view)



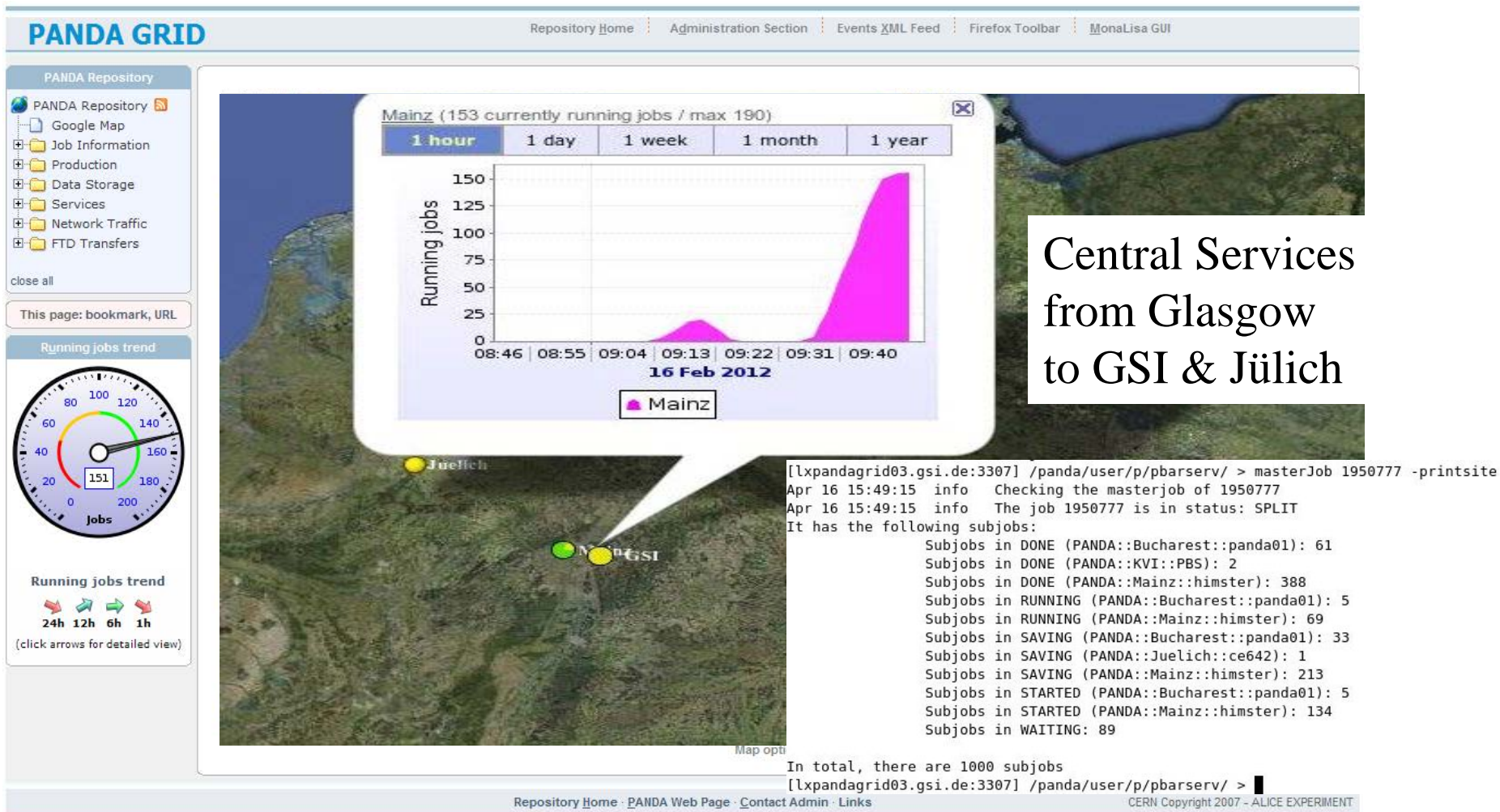
Map options

[Repository Home](#) | [PANDA Web Page](#) | [Contact Admin](#) | [Links](#)

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Grid & Cloud for FAIR

PandaGrid, Cloudification of LOEWE CSC, Ffm Cloud, ...



Central Services
from Glasgow
to GSI & Jülich

<http://www.crisp-fp7.eu/>

CRISP
The Cluster of Research Infrastructures for Synergies in Physics

INDUSTRY SOLUTIONS | ACCELERATORS | DETECTORS AND DATA ACQUISITION | INSTRUMENTS AND EXPERIMENTS | IT AND DATA MANAGEMENT

ESFRI-PP Project Members

www.fair-center.eu
FAIR is a new, unique international accelerator facility for the research with antiprotons and ions being built near Darmstadt, Germany.

About CRISP

CRISP's mission is to encourage and enable collaborating partners to combine their know-how and complementary expertise in an effective manner, to foster novel ideas and to forge new creative solutions to scientific and societal challenges.

CRISP is a partnership which builds collaborations and creates long-term synergies between research infrastructures on the ESFRI (European Strategy Forum on Research Infrastructure) Roadmap in the field of physics, astronomy and analytical facilities to facilitate their implementation and enhance their efficiency and attractiveness. The common intent is to provide a service of the highest quality; sensitive to the needs of a broad range of user communities within the European Research Area; responsive to diverse and changing demands in a highly dynamic environment; and directed towards ensuring that the large investments made at the national and international levels result in significant progress in science for the benefit of society.

CRISP partners intend to retain the lead in technological progress and scientific challenges by exploiting complementary experience and knowledge. Partners will achieve an improved and accelerated learning curve through the mutual exchange of test and commissioning results. This will lead to the faster and more effective implementation of science and technical solutions.

CRISP is a cooperative project covering a wide variety of scientific goals together with a broad range of experimental methods and techniques. Talents in the fields of accelerators, detectors, instruments, experiments, information technology and data management are brought together. This joining of expertise overcomes fragmented approaches and uncoordinated efforts to generate added value on a European scale. Sharing research and development provides infrastructures with the opportunity to enhance performance and reduce the risks associated with individual action giving Europe the chance to compete at the global level in the fast moving economical world.

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The Cluster of Research Infrastructures for Synergies in Physics
is co-funded by the partners and the European Commission under the 7th Framework Programme Grant Agreement 283745

Antrag für das Portfoliothema

„Large-Scale Data Management and Analysis“ (LSDMA)

Beteiligte Helmholtz-Zentren:

KIT	–	Karlsruher Institut für Technologie
DESY	–	Deutsches Elektronen-Synchrotron
FZJ	–	Forschungszentrum Jülich
GSI	–	Helmholtzzentrum für Schwerionenforschung

Beteiligte externe Partner:

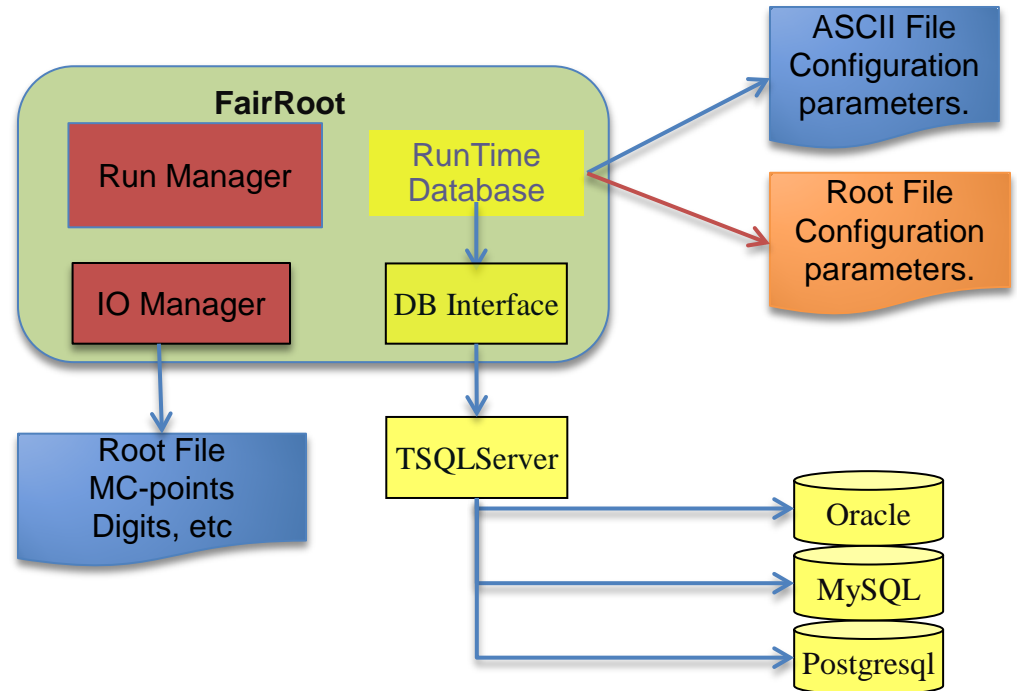
Uni HD	–	Universität Heidelberg
UULM	–	Universität Ulm
UHH	–	Universität Hamburg
GU	–	Johann Wolfgang Goethe-Universität Frankfurt am Main
HTW B	–	Hochschule für Technik und Wirtschaft Berlin
DKRZ	–	Deutsches Klimarechenzentrum
TUD	–	Technische Universität Dresden

Koordinierender Sprecher: Prof. Dr. Achim Streit, KIT

WP16: Common User Identity System
WP19: Distributed Data Infrastructure

Status of the new data base interface

- Database Interface is in SVN
- Ongoing work on
 - RuntimeDB connection and initialization scheme (GSI)
 - Implementation of Generic Parameter Container (KVI)
 - Preparation of realistic tests (R3B, Panda ...)
- In Collaboration with KVI and USC (Nustar collaboration) implement and test the online EPICS database interface.



Yago Gonzales
Software engineer from
U Santiago de Compostella
started this month at the
GSI (Two years)

In FairRoot change one line in the macro to use it:

Proof in FairRoot

```
FairRunAna *fRun = new FairRunAna();
```

to

```
FairRunAna *fRun = new FairRunAna("proof");
```

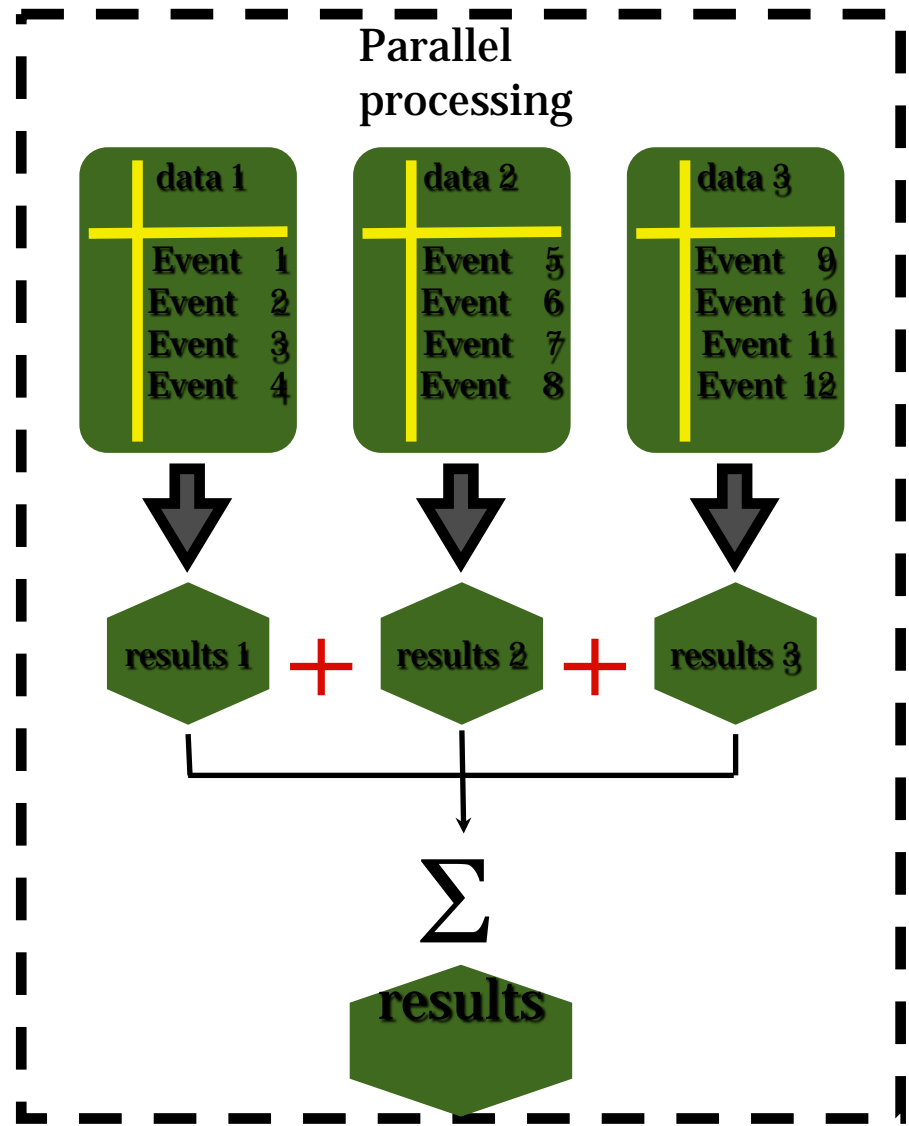
Sequential
processing



Unordered
processing



Parallel
processing



In combination with PoD (PROOF on Demand) : one can use any available resources interactively!

Different job managers



PoD is shipped with a number of plug-ins, which cover all major RMSs, such as local cluster systems and Grid.

If you don't have any RMS, then the SSH plug-in can be used.

The SSH plug-in is also used to setup PROOF clusters on Clouds.

PoD: Anar Manafov

MC Files:

Event Merging

- MC data do not know anything about time structure
- Time structure is calculated when reading the MC for digitization
- Many different signal files can be added to one background file(s)
- Data source (S or B) is stored in EventHeader
- **No overlap (pileup) of events at this level**

Back-
ground

Signal 1

Signal 2

⋮

Digitization

Event 0: from BG
with time 50.3

Event 1: from BG
with time 72.4

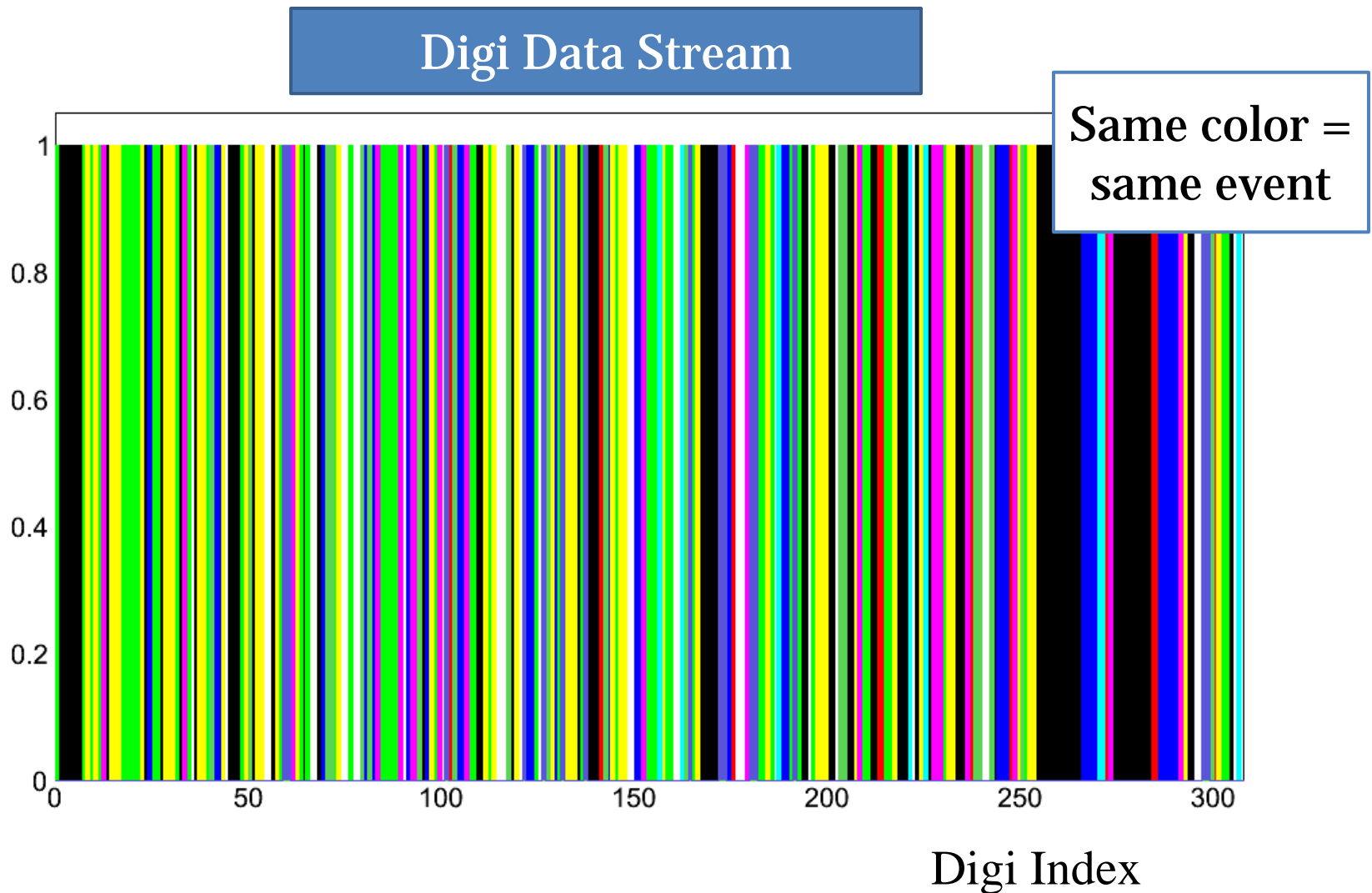
.....
Event 102: from Signal 1
with time 10230.1



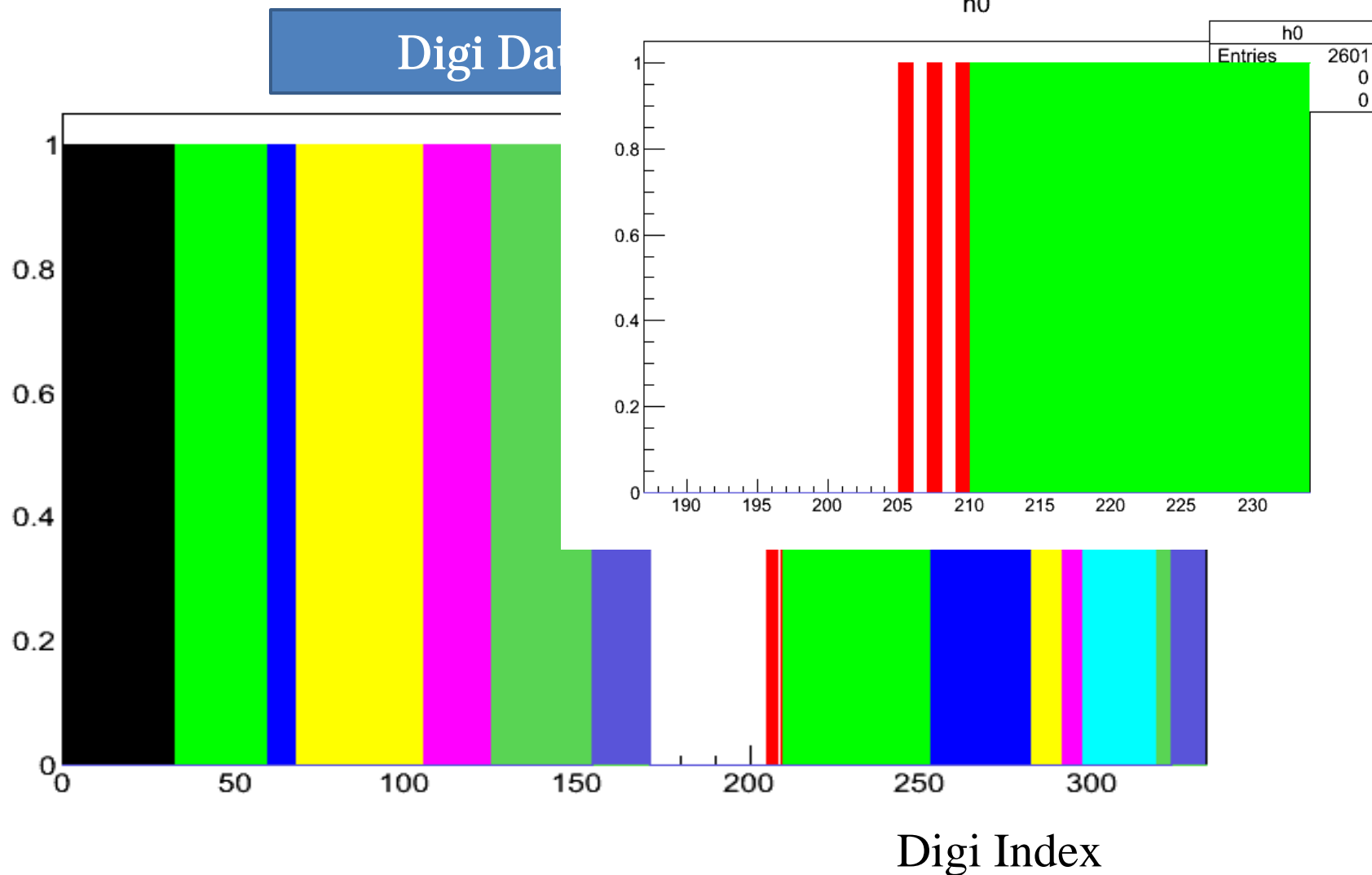
How do events overlap?

- In Detectors:
 - Sensor elements are still blocked from previous hits
 - Electronic is still busy
 - Hits too close in time cannot be distinguished
 - ...
- Special problem for CBM and PANDA:
 - Continuous beam with Poisson statistics → many events with short time between them
 - No hardware trigger
 - Complex event reconstruction
 - → Necessary to simulate data stream as realistic as possible

Digi Data Sorted



Digi Data Sorted



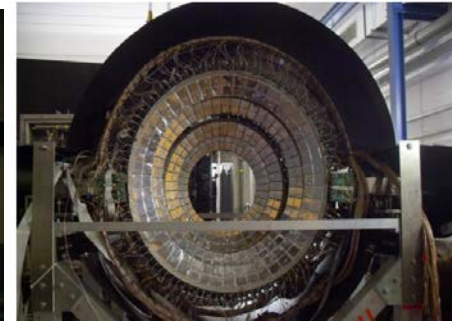
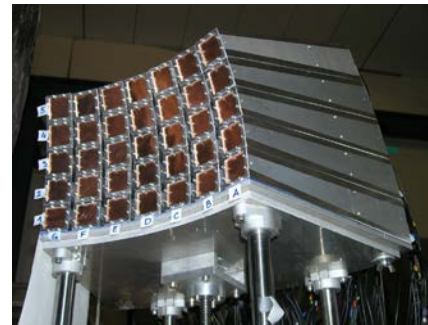


Reading back data

- FairRootManager has new reading algorithms, which make it possible to use the event wise implemented tasks to run on such data streams
- Different algorithms available to extract data:
 - All data up to a given time
 - All data in a time window
 - All data between time gaps of a certain size
- Other algorithms can be (easily) implemented

ASY-EOS collaboration (ASYEOSRoot)

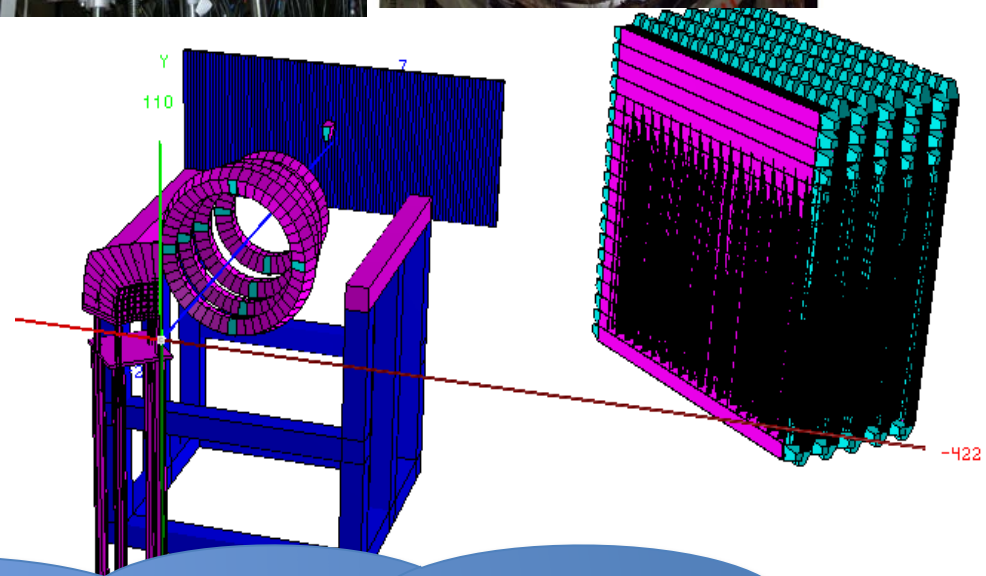
- Simulation is done inside FairRoot, ASYEOSRoot branch in SVN
- MBS API in FairRoot is used to read lmd files and analyse experiment data
- Work is ongoing to move all existing data analysis of existing detector parts to FairRoot



Si
300 μ m

CsI
12 cm

8 Rings
 $7^\circ < \theta < 20^\circ$
352 CsI
32 Si



With the ASYEOS and R3B we are developing:

- Client-server based online analysis and monitoring tool
- Online event display (Extend the existing event display to run online)