Computing Closeout

La Biodola, 06/01/2011

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INFN - Torino

Outline

- **Support of Studies for Detector TDR.**
  - Full Simulation.
  - Distributed Computing.
  - Production.
  - Supported OS, Releases.
  - Collaborative Tools, SuperB Web Portal.

- **Designing the SuperB Computing Model.**

- **Next Steps.**

Full Simulation: Packaging Completed

- **BrnCore**: implements the core simulation functionality, including file/tree management, MCTruth recording, physics-list-related code.
- **Brn3BGen**: implements the RadBhabha generator.
- **BrnIfr**: IFR-specific code (like hits and sensitive detectors)
- **BrnSvt**: SVT-specific code (like hits and sensitive detectors)
- **BrnEmc**: EMC-specific code (like hits and sensitive detectors)
- **BrnGeoMag**: contains the code needed for geometry and magnetic field construction.
- **BrnApp**: contains the code for the main executable
- **BrnRunTime**: this is where the executable must be run from. Contains gdml and mac files
- **BrnAnalysis**: container to hold analysis code (i.e. ROOT macros)
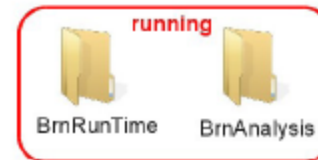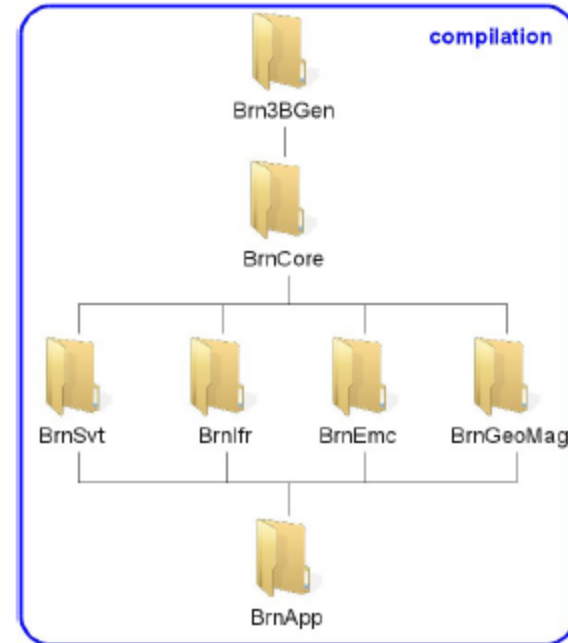
New Developments only in the packaged BRUNO

Full Sim Core Team: A. De Simone (Roma2), E. Paoloni (Pisa), A. Perez (Pisa) 3

Distributed Computing

- G. Donvito   INFN Bari
- A. Fella   INFN Pisa
- S. Luitz   SLAC
- E. Luppi   INFN Ferrara
- M. Manzali   INFN Ferrara
- A. Paolini   INFN CNAF
- S. Pardi   INFN Napoli
- B. Santeramo   INFN Bari
- L. Tomassetti   INFN Ferrara
- + some Ferrara students

Remote sites

- **15 (+5)** sites, two 'flavors' (EGI, OSG)

- Tier-1
  INFN-T1 (Bologna, Italy),
  IN2P3-CC (Lyon, France),
  RAL-LCG2 (Oxford, UK)

- Tier-2
  UKI-LT2-QMUL (London, UK),
  UKI-SOUTHGRID-RALPP (London, UK),
  UKI-SOUTHGRID-OX-HEP (Oxford, UK),
  GRIF (Orsay, France),
  SLAC (Stanford, USA),
  CIT-CMS-T2B / CIT-HEP-CE (Caltech, USA),
  OSC (Ohio, USA),
  VICTORIA-LCG2 (Victoria, Canada),
  INFN-BARI (Bari, Italy),
  INFN-CAGLIARI (Cagliari, Italy),
  INFN-FERRARA (Ferrara, Italy),
  INFN-LNL-2 (Legnaro, Italy),
  INFN-MILANO (Milano, Italy),
  INFN-NAPOLI (Napoli, Italy),
  INFN-PISA (Pisa, Italy),
  INFN-TORINO (Torino, Italy)

- PL-GRID (Poland)

More sites being enabled:
Ohio OSC, Oxford Tier-2, INFN-Ferrara, INFN-
Milano, PL-Grid, ...

Polish Grid
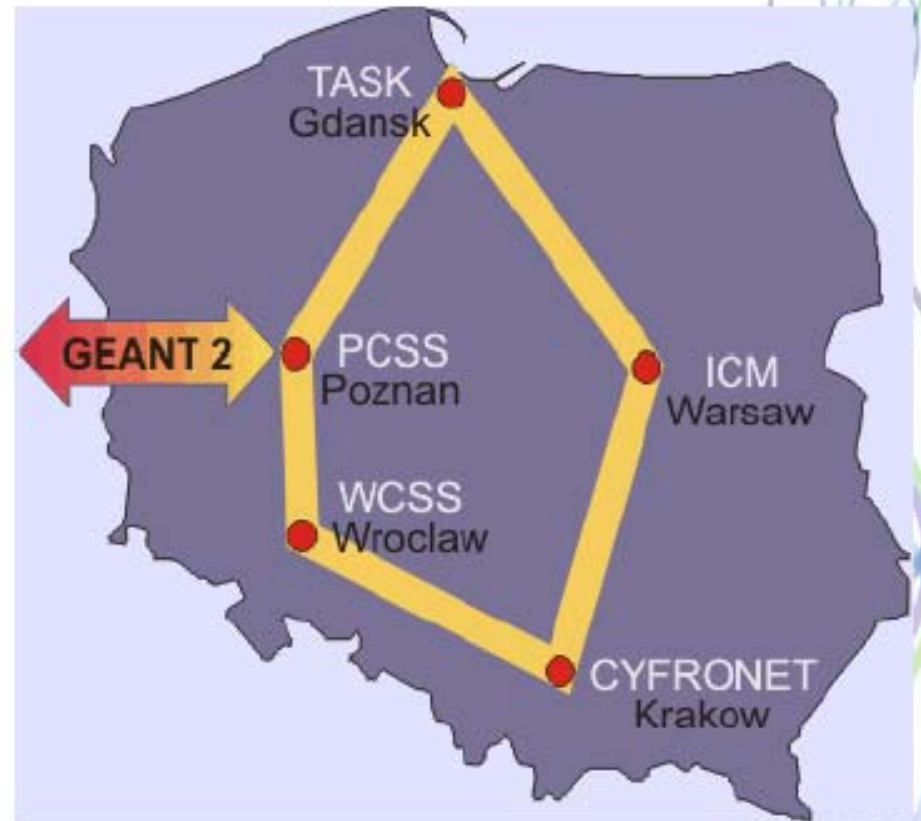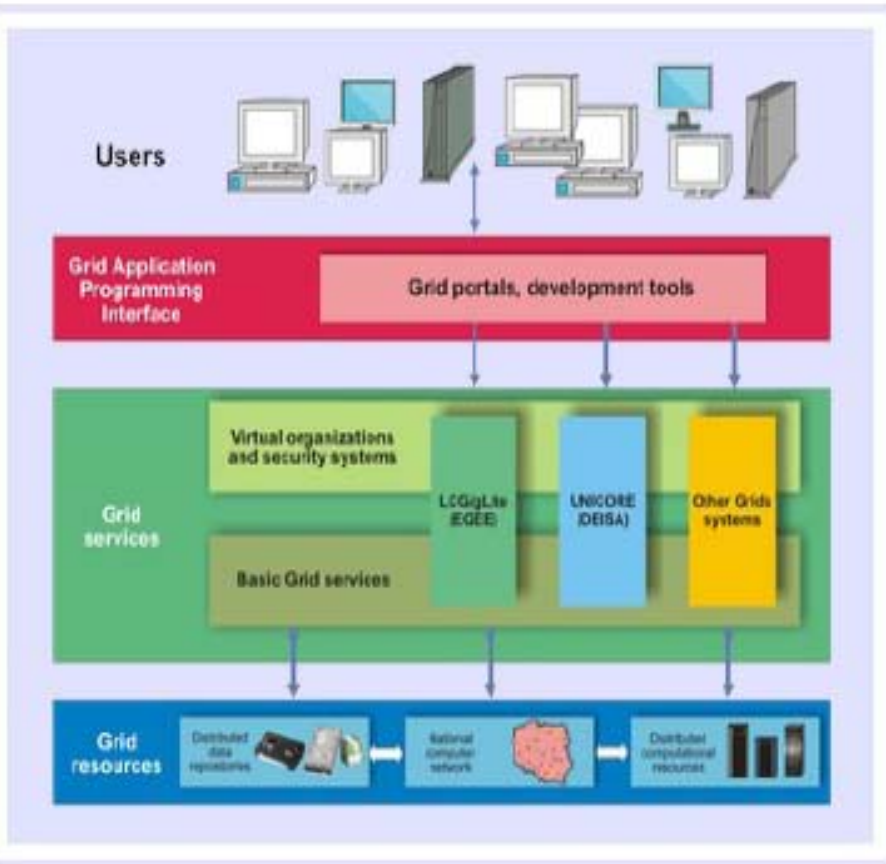
Site info summary

Site	Min (cores)	Max (cores)	Available (TB)	Data Access	Grid Flavor	Site contacts
CNAF	500	1000	66	StoRM	EGI	A. Fella
SLAC	400	400	10	NFS	OSG	S. Luiz, W. Yang
CALTECH	250	680	4.5	NFS	OSG	F. Porter, P. Ongmongkolkul, S. Lo
RAL	200	1000	10	Castor	EGI	F. Wilson, C. Brew, A. Martin
RALPP	50	300	5	dCache	EGI	F. Wilson, C. Brew, A. Martin
Queen Mary	300	3456	120	StoRM	EGI	A. Martin, C. Walker
Oxford Univ.	50	200	1	DPM	EGI	K. Mohammad, E. MacMahon
CCIN2P3	500	1000	10	dCache	EGI	N. Arnaud, O. Dadoun
GRIF	50	300	2	DPM	EGI	N. Arnaud, O. Dadoun
Victoria	50	100	1	dCache	EGI	A. Agarwal
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	50	100	1	DPM	EGI	S. Pardi, A. Doria
Bari	80	130	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
Milano	50	100	2	StoRM	EGI	N. Neri, L. Vaccarossa, D. Rebatto
OSC	?	?	?	?	OSG	R. Andreassen, D. Johnson
Polish Grid	?	?	?	?	EGI	J. Chwastowski
Total	2710	9616	239			

Data Distribution and Access

- CNAF has currently a central and unique role in SuperB computing effort.
  - But we need to exploit efficiently all resources available to SuperB

- Production job transfers the output where it is requested to be and at CNAF.
  - Production system includes now the "target site" selection feature per simulation request
  - CNAF will still have a full copy of the data.

- Mass data transfer management via FTS
  - CNAF – IN2P3 bidirectional channel has been configured
  - First transfer tested successfully

- GANGA has been chosen as a tool permitting Grid resources exploitation by analysis jobs.
  - CNAF centralized GANGA installation and configuration is ready
  - The development of a specific SuperB plugin has started.

Software and Data Validation Before Production

- **Software preparation/validation:**
  - A sensible amount of time before production, production software needs to go into feature freeze. only critical bug fixes can be accepted
  - Memory leaks should be assessed, and either fixed or recognized as tolerable.
  - Estimate the expected CPU time per job, and the total disk space needed.

- **Release validation:**
  - Productions should be run on releases (+patches)
  - After a release is built, the software validation needs to be repeated on it.
  - Release deployment: if distributed resources are used, some level of release validation needs to available on remote sites as well.

- **Pre-production: a (possibly small) fraction of the total events needs to be produced before launching the production.**
  - Requesters should identify pre-production size and few key plots to be checked

Supported OS

- Stop SL4 support on May 31, 2011.

- Keep supporting SL5, both 32 and 64 bits.

- Start support of SL6, 64 bits.

- Software build also on Mac-OSX, but it is not packaged and released.
  - Some technicalities to be solved, miss manpower to do it. Any Mac lover wants to volunteer ?

Releases

- Start having regular release builds.

- Test release every two months.

- Production release every six months, built on top of previous test release + bug fixes.

- FastSim & FullSim releases will be staggered by one month.

Computing Administrative Support

- There is a mailing list to request administrative support: superb-comp-admin @lists.infn.it
  - To be used for lost password, difficulties in accessing collaborative tools, etc.
  - You don't need to subscribe to it.

- Every SuperB member has a LDAP account
  - Needed to access web site, Alfresco, the Wiki and the SVN software repository.
  - If you experience troubles in accessing any of the above tools, send an e-mail to that list and we'll fix your problem (typically by resetting your LDAP password)

Collaborative Tools

- The team: M. Corvo (Pd), A. Gianoli (Fe), S. Longo(Pd), R. Stroili (Pd)

- A suite of tools:
  - Web site: http://web.infn.it/sbuser/
  - Alfresco Document Manager: http://sbdocserver.pd.infn.it:5210/alfresco
  - Wiki: http://mailman.fe.infn.it/superbwiki/index.php/Main_Page
  - Mailing lists: https://lists.infn.it/sympa/lists/csn1/SuperB
  - Indico: http://agenda.infn.it/categoryDisplay.py?categId=36

- Integration of these tools has to be improved.
- A proposal: a SuperB web portal based on Liferay

Liferay Web Portal

- Liferay is an enterprise portal platform, available both with LGPL or commercial license.

- Rich content management features supported natively .

- Several collaboration tools available out of the box: blog, discussion forum and wiki

- Supports hierarchical partition of content/services (through organizations, locations, etc.)

- Supports user rights management through groups, roles, assignment of users to organizations or communities

- Content delivery to users can also be based on membership to community, organization, etc.

SuperB Web Portal

- Prototype up and running at CNAF: http://lr.cnaf.infn.it:8080/liferay-portal

- It contains:
    - A group calendar
    - An example of external application embedding through iFrame (SuperB Wiki)
    - An example of Liferay Wiki
    - A discussion forum with a category for each SuperB division
    - An Alfresco DM web interface embedded with SSO
    - A «copy» of the collaboration website (http://web.infn.it/sbuser)

- CAS is setup to validate users through sbldap (with binding)
    - Alfresco and Liferay use CAS for authentication (SSO)
    - Alfresco and Liferay use sbldap to synchronize local users and groups

- Access is already granted for all SuperB users
    - Portal configured with roles for any SuperB division (Accelerator, Detector, etc.. but also Project Board,…)

Development of the Computing Model

- Until the Computing TDR:
  - Work on R&D projects.
  - First design of the computing model.

- First two years after the Computing TDR:
  - A preliminary version of a fully-functional system is built and validated via dedicated data challenges.
  - Finalize the computing model.
  - The collaboration can start using it for detector and physics simulation studies.

- Remaining time before the start of the data taking:
  - Further extensive test and development cycles to bring the system to its full scale.
  - Acquisition and deployment of dedicated computing resources.
  - Consolidation and validation of the distributed computing infrastructure.

BaBar evolution
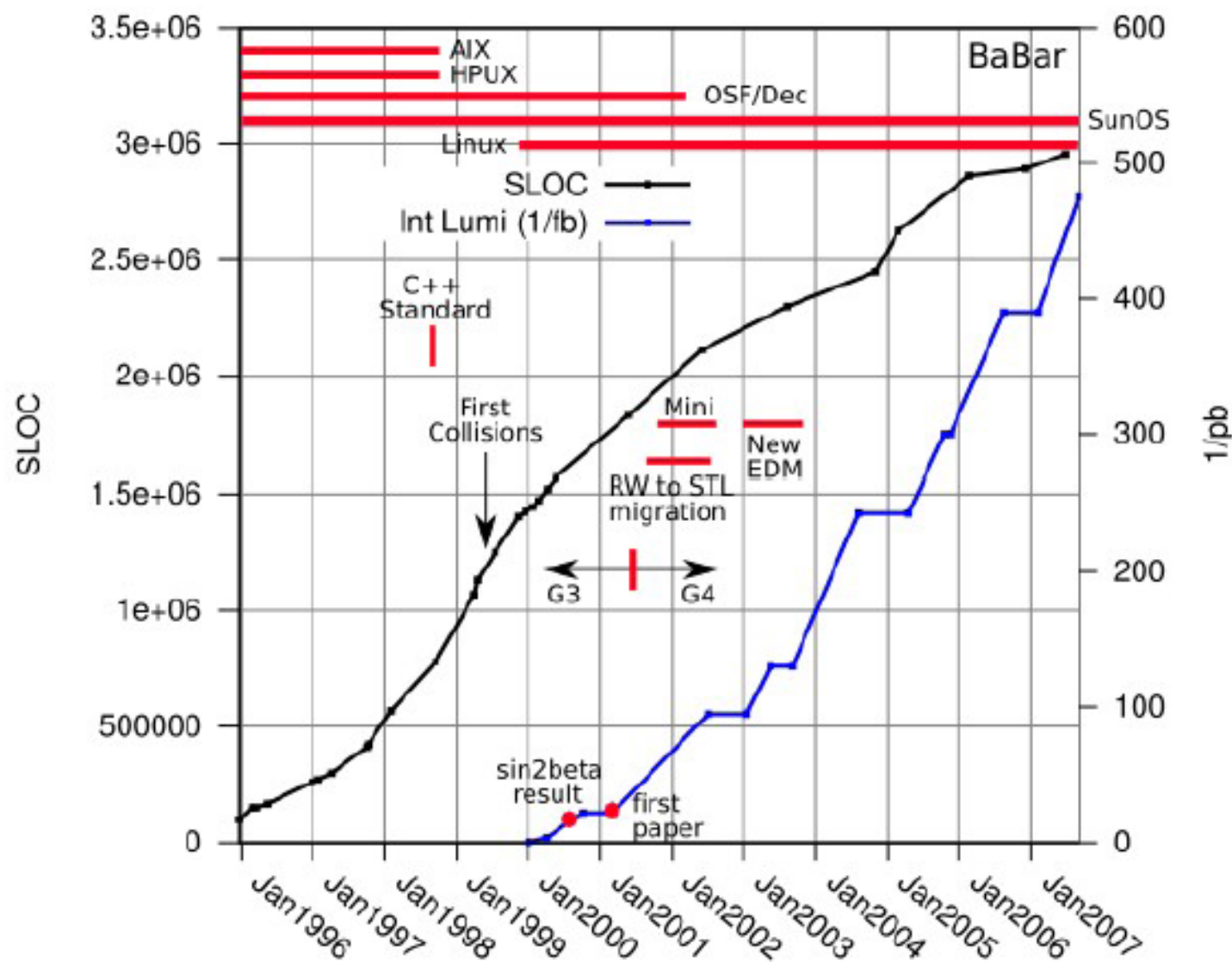
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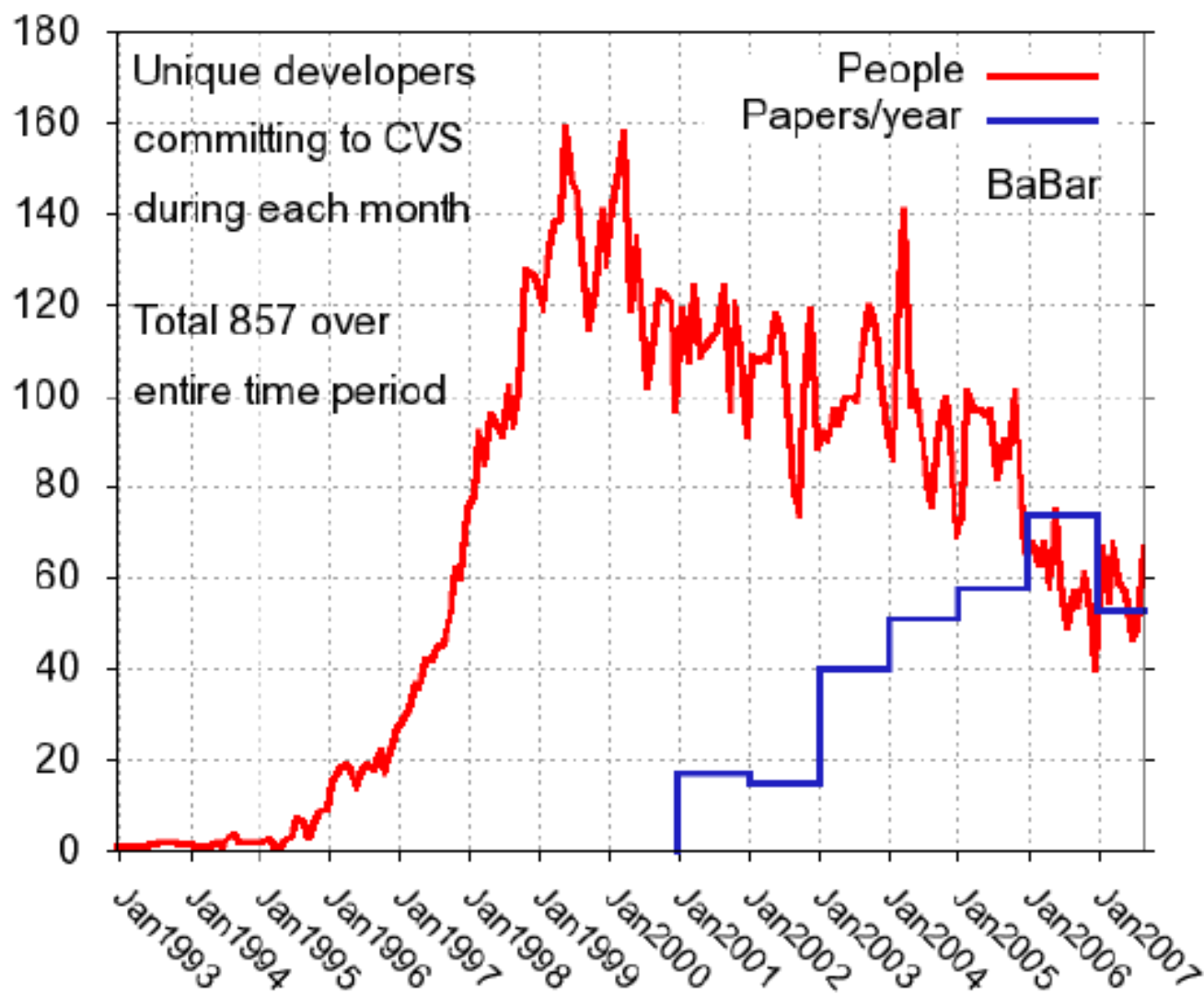
R&D Projects

- After the Ferrara Computing Workshop in 2010, a document listing the R&D projects relevant for us was written.
  - It will be our starting point.
  - We'll revise it and upload it to Alfresco.

- Started to have bi-weekly meetings on R&D activities.
  - Every meeting focus on a subset of projects.

- R&D projects are an opportunity to attract computing experts to SuperB.
  - Try to exploits synergies with other experiments.

R&D Areas (1)

- Area 1: General Computing Requirements
  - Torino, SLAC, CNAF, Napoli

- Area 2: Software development tools
  - Padova, Napoli

- Area 2 BIS: framework architecture

- Area 3: Impact of new CPU architectures
  - Cincinnati, Padova, CNAF, Napoli

- Area 4: Persistence, data handling models and databases
  - Pisa, Ferrara, Bari

R&D Areas (2)

- Area 5: Distributed computing
  - Bari, Ferrara, Napoli, Pisa

- Area 6: User tools and interfaces
  - Roma2, Ferrara

- Area 7: Performance and efficiency of a large data store
  - Napoli, Bari, Ferrara, Pisa

- Missing: Generators, Simulation

- Proposed: monitoring (Napoli), networking?

Computing Workshop, Ferrara July 4-7 2011

- Web Site: www.fe.infn.it/superb11

- Goal of the Workshop: identify and prioritize the R&D activities necessary for designing the SuperB computing model.
    - Define next steps and milestones.

- Plenary and parallel sessions with expert presentations and brainstorming.
    - Identify action items and people willing to contribute

- Register and contact conveners to contribute.

Next Steps

- Keep supporting TDR activities:
  - Limited developments driven by user request and tools clean-up.
  - Productions upon request.

- Web Portal:
  - Improve content (need a webmaster & input from the community).

- Design of the SuperB computing model.
  - Start/keep working on the various R&D projects.
  - Come to the computing workshop: Ferrara, July 4-7.

- Need to attract more manpower in the computing.
  - There is plenty of interesting things to do.
  - New entries are much welcome to contact me for working opportunities.