

Activities of the Computing Resources Scrutiny Group

Domènec Espriu
Chairman CRSG
Universitat de Barcelona



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The purpose of the CRSG is to inform the decisions of the Computing Resources Review Board (C-RRB) for the LHC experiments..

Every year the CRSG should scrutinize

- The resource accounting figures for the preceding year
- The use the experiments made of these resources
- The overall request for resources for every experiment for the following year and forecasts for the subsequent two years
- The CRSG shall also examine the match between the refereed requests and the pledges from the Institutions.
- The CRSG shall make recommendations concerning apparent under-funding.

According to the WLCG MoU, CERN's Director of Research and Computing, in coordination with the funding agencies represented in the C-RRB, appoints the CRSG members. It was agreed in 2007 that there should be one member from each participating country hosting a Tier 1.

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Current members:

T. Cass (CERN)	D. Groep (The Netherlands)
D. Espriu (Spain, <i>Chairman</i>)	G. Lamanna (France)
J. Flynn (UK)	D. Lucchesi (Italy)
M. Gasthuber (Germany)	T. Schalk (USA)
B. Vinter (Nordic Grid)	H. Meinhard (CERN/IT, Scientific Secretary)

The Canadian representative is awaiting replacement.

Taiwan never appointed a representative.

As more countries may have a Tier 1 in the short term (Russia, S. Korea,...) the composition of the CRSG could be enlarged - quite welcome as the number of referees is small to fulfil our mandate.

The mechanism for appointing or reappointing members is not efficient enough.

Active membership implies a substantial amount of work (particularly so in the early years, but understanding the new requirements after the 2013-14 shutdown will require renewed efforts)

I would like to express my gratitude to all present and past CRSG members for their dedication and availability.

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The CRSG started their activities on 10 December 2007 with an inaugural meeting chaired by the CSO (now DRC) where experiments presented their computing plans.

In early 2008 the chairman was appointed and the CRSG approved a work plan and calendar for 2008, and priorities. The CRSG decided to concentrate on the 2009 resource request, and considered 2008 as a test exercise for the understanding of the computing models.

Referees were appointed (2-3 per experiment) avoiding conflicts of interests.

The CRSG acquired the required critical understanding of the respective computing models.

Prepared templates to get accurate information from the experimental collaborations.

Developed their own spreadsheets to verify the experiment's calculations.

Had to take into account the effect of the continuously varying commissioning schedule.

In November 2008 the CRSG submitted its first report to the C-RRB with its scrutiny on the resources requested for 2008 (to validate the methods) and 2009. This was the first time that such an independent and detailed scrutiny of the computing needs was carried out.

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- The starting point of the yearly scrutiny is the information presented by the experiments ahead of the spring C-RRB meeting and any guidance that the C-RRB cares to give. We request the experiments to provide us with their requests by March 1st (September 1st for the October C-RRB). These deadlines were rarely respected in the past but the situation is better now.
- After examining the documents the CRSG enters into a dialogue with each experiment seeking to understand to what extent the computing resource requests are well motivated. Tentative recommendations are presented in the C-RRB spring meeting and final recommendations are approved in the autumn C-RRB, to be implemented by April 1st of the following year.
- The actual methodology changes slightly from experiment to experiment, but uniformity in the scrutiny is an absolute priority. It is based on the objective inputs derived from the CM's and their successive modifications.
- The CRSG prepares before each C-RRB a paper that summarizes past usage, paying attention to the efficiencies, the used/pledged ratios, and the percentage of fulfillment of pledges, and the recommendations for the following year(s). These reports are publicly available (C-RRB indico web page), as well as the usage summaries prepared by the experiments (espace.cern.ch/crsg).
- The experiments know these reports ahead of the C-RRB. We regret that, specially in the past, the time for them to object to our recommendations was short. We very much welcome their comments and observations but insist in the independence of our scrutiny.

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In carrying out the scrutiny the scope of the CRSG is largely limited to the implementation of the respective computing models whose TDRs date back to 2005. The review of the computing models themselves has been in the hands of the LHCC. However there is gray zone where the competences of the LHCC and the CRSG overlap.

When the CRSG felt it was not competent to judge the validity or convenience of changes, particularly on the physics side, we brought them to the attention of the LHCC.

The natural evolution of the experiments computing needs after dealing with the vast amounts of real data and a better understanding have motivated a number of changes, sometimes representing limitations in the original model or assumptions.

Some aspects of the current implementation of the computing models bear little resemblance to the original expectations in the CM's

It may be advisable at this point for the experiments to update their CM's, taking stock of the accumulated experience, in view of the new challenges posed by the running conditions foreseen after the 2015 LHC re-start and the unavoidable limitations posed by the expected budget profile.

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The CRSG has three clear priorities:

- 1.- To ensure that the experiments have enough computing resources to take, store and analyse in a reasonable time the data delivered to them by the LHC
- 2.- To ensure the medium and long term sustainability of the WLCG.
- 3.- To achieve 1 and 2 at the lowest possible cost for the funding agencies and in the most efficient way possible.

How will the available budget profile evolve in the coming years?

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Experiments...

- are welcome to use their bandwidths to write events at larger than nominal rates, if endorsed by the LHCC, but this should not constitute the basis for modifying the budget profile; increased rates are justified by an increased efficiency.
- are asked to actively pursue the policy of reducing the size of their raw events, and other derived formats that should be used as much as possible.
- should implement a very strict policy of removing unused or little used data from disk.
- implement as much as possible dynamic data placement policies.
- should constantly improve their reprocessing and analysis efficiency.
- should keep their computing models and needs under constant revision.
- are recommend to make an equilibrated use of the distributed resources in the GRID.
- are expected to understand how their physics reach might be affected by requested computing resources not materializing.

JUN09 requests, CERN prices (kEUR)

Grand tot	2009	2010
ALICE	11028	19763
ATLAS	25518	36876
CMS	14481	25673
LHCb	4106	5429
TOTAL	55133	87741
OFFERED	68695	87854
2007 request shifted by 1 year	42646	58885

JUN09 requests, CERN prices (kCHF)

Grand tot	2009	2010
ALICE	16542	29644
ATLAS	38277	55314
CMS	21722	38510
LHCb	6159	8144
TOTAL	82699	131612
OFFERED	103042	131781
2007 request shifted by 1 year	63968	88327

1EUR=1.5CHF

JUN09 requests, INFN prices (kEUR)

Grand tot	2009	2010
ALICE	14028	24663
ATLAS	33247	45522
CMS	17173	29151
LHCb	4940	6275
TOTAL	69388	105612
OFFERED	86721	105987
2007 request shifted by 1 year	54321	71130

0%	0%
-29%	-23%
-7%	-10%
0%	0%
-18%	-13%

Difference wrt APR09

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