Trigger, Online and **Offline** Computing Workshop

Graeme Stewart and Wesley Smith

2014-08-19

Today's Session

14:10   **Hardware Developments and Trends** *20'*
     Speaker: Dr. Peter Elmer (Princeton University (US))

14:30   **Software and Tools for Concurrency** *25'*
     Speaker: Vincenzo Innocente (CERN)

14:55   **Experiment Offline Computing Plans** *1h0'*

         ALICE   *15'*
         Speaker: Latchezar Betev (CERN)

         ATLAS   *15'*
         Speaker: Rolf Seuster (TRIUMF (CA))

         CMS   *15'*
         Speaker: Dr. Maria Girone (CERN)

         LHCb   *15'*
         Speaker: Dr. Marco Cattaneo (CERN)

15:55   **Coffee** *30'*

16:25   **Charged Particle Tracking** *20'*
     Speaker: Markus Elsing (CERN)
     Material: Slides

16:45   **Software Strategies for GPUs and Accelerators** *20'*
     Speaker: David Michael Rohr (Johann-Wolfgang-Goethe Univ. (DE))

17:05   **WLCG and Evolution of Resource Provision** *20'*
     Speaker: Ian Bird (CERN)

17:25   **HEP Software Foundation Progress** *20'*
     Speaker: Dr. Pere Mato Vila (CERN)

- Hardware
- Software
- Plans
- Thorny Issues
- Community
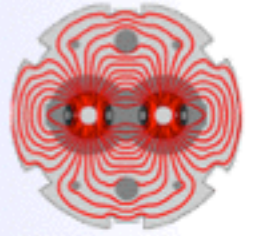
HL-LHC : high pile-up and high read-out rate

→ large increase of processing needs

♦ With flat resource (in euros), and even with Moore's law holding true (likely, provided we maintain/improve efficient use of processors), this is not enough (by 1/2 to one order of magnitude)

→ large software improvement needed

♦ Future evolution of processors: many cores with less memory per core, more sophisticated processors instructions (micro-parallelism), possibility of specialised cores→

- Optimisation of software to use high level processors instructions, especially in identified hot spots (expert task)
- Parallel framework to distribute algorithms to cores, in a semi-transparent way to regular physicist software developer

LHC experiments code base more than 15 millions of line of code, written by more than 3000 people → a whole community to engage, starting essentially now, new blood to inject

♦ We are sharing already effort and software. We can do much more: concurrency forum http://concurrency.web.cern.ch

Output

- Input for the computing talks at the Aix-les-Bains workshop

  - Set of recommendations and conclusions for the community

  - Updates from last year

  - Areas where we need to pay special attention

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Thanks!

- Preparatory Group:
  - ALICE: Latchezar Betev, Mikolaj Krzewicki, Pierre Vande Vyvre,
  - ATLAS: Graeme Stewart, Benedetto Gorini, Nikos Konstantinidis, Imma Riu, Stefano Veneziano
  - CMS: Wesley Smith, Maria Girone, David Lange, Frans Meijers
  - LHCb: Peter Clarke, Vava Gligorov, Niko Neufeld
- Today's speakers:
  - Peter, Vincenzo, Rolf, Matteo, Markus, David, Ian, Pere