Overview of US ATLAS Analysis Support Activities

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Analysis Support

- Analysis Support is one of three components of the Physics Support effort within US ATLAS
  - along with Application Software and Software Support
  - this was a recent (Oct.) change to the organizational structure
  - previously Analysis Support had been under Software and Computing
  - motivated by desire to make it more clear to funding agencies how resources are divided between core and analysis-centric efforts

Analysis Support

- Consists of three main activities
  - Technical Support Group
    - this one is of most interest for this workshop
  - Analysis Support Panel
    - Consists of US ATLAS fellows and appointed collaborators
    - Plans and carries out US ATLAS local meetings (in cooperation with ASCs)
    - Speakers committee is a subcommittee of the ASP
  - Analysis Support Centers (at ANL, BNL, LBNL)
    - each focuses on specific analysis/hardware topics
    - host physics jamborees and software tutorials

Analysis Support

- Personnel (all within TSG)
  - Doug Benjamin (0.45 FTE): Tier 3 support
  - Nils Krumnack (1.0 FTE): Analysis tool development
  - Louise Heelan (0.50 FTE): Documentation and tutorials
  - Shuwei Ye (0.50 FTE): Analysis tools & examples/Tier 3 support/ROOT,proof,xrootd
  - Fred Luehring (0.38 FTE): Testing of Tier3 extensions
    - Fred's support will be picked up by Indiana University effective May 1

Short term goals

- Here “short term” means in preparation for the 2014 data challenge
- Presented in no particular order
- In many cases, goals can only be achieved with help from T1/T2 facilities and ATLAS distributed computing

Goal: Tool development

- TSG members are key players in the task force developing analysis tools for the new data model
  - AMSG task force 3
- EventLoop (designed by Nils) seems to be a good match for the required functionality
  - analysis examples based on EventLoop are being developed
- While ATLAS will not endorse any particular tool, it seems we have something that will benefit many analyzers

Goal: Training

- New analysis model will change the way analyzers work
- Need to develop thorough tutorials
  - for experienced analyzers as well as newcomers
  - perhaps including a full example workflow
  - development of dual-use tools in combined performance groups should also be documented
- Renew push for tutorials to be held at one or more of the ASCs
  - to allow maximal participation from US analyzers
  - combination of experts-in-residence and video?
  - role for US ATLAS fellows here?

Goal: Assessing distributed computing

- Develop and document standard physics analysis examples to be used in benchmarking distributed computing
  - should be realistic, including all the steps commonly needed for physics analyses
  - should take full advantage of latest analysis software tools
    - based on NTUP_COMMON for now
    - migrating to xAOD (and associated tools) as soon as possible

Goal: Assessing the ASCs

- Time to critically assess the ASC concept
  - what is working well?
  - what needs to be improved?
  - what are analyzers missing out on if they don't take advantage of the ASCs?
  - what is the role of the ASCs in 2014-15?
    - likely fewer people will be involved in analyses then
    - more people involved in commissioning and reconstruction software
- This probably implies that a new survey is needed

Goal: Assess PROOF

- If PROOF the right technology to allow simple parallelization of analysis jobs on Tier 3s?
  - if so, what tools need to be updated, and how?
- Is PROOF on Demand a better match?
  - how well does PROOF on demand understand how to route jobs to get to local data?

Goal: Builds

- RootCore was developed by the TSG
  - a way to build analysis jobs without the overhead/poor performance of CMT
- ATLAS now moving away from CMT to HWAF
  - need to understand implications for US analyzers and for Analysis Support
  - will HWAF be ready on time?
  - is there still a role for RootCore?
  - what about CMT2?

Goals: Data pre-placement

- Can Analysis Support work with facilities to be more proactive in placing data in the US cloud?
  - i.e. can we predict what samples are likely to be needed, so that users will less frequently need to wait for DaTRI transfers?

Longer-term goals

- Looking a bit further ahead, one large task will be managing the evolution of the Tier3's
  - won't say too much here as there will be a lot of discussion of this during the workshop
- Just emphasizing a couple of points
  - access to job outputs from Tier3 is currently a bottleneck
    - FAX (or equivalent) is very important to US analysis productivity
  - users have high standards
    - any remote computing solution that is less reliable than local Tier 3's is likely to face resistance