



ATLAS and the HEP Software Foundation

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HSF Workshop: ATLAS

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- ❑ ATLAS intends to take advantage of the HSF as a forum for identifying and fostering potential collaborative projects and presenting a coherent view of HEP computing to the wider world.
- ❑ ATLAS is particularly interested in collaborating on development of software in areas where it seems that through collaboration the products achieve would have better performance, be more effective in terms of cost and/or effort required and/or be better supported.
- ❑ ATLAS relies on existing common products such as G4, ROOT, LCG externals in general, generators and sees value in the HSF aiming at supporting those projects.

- ◆ ATLAS (or ATLAS members) effort contributing to software used beyond ATLAS:
 - ❑ Geant4
 - ❑ Sherpa generator
 - ❑ TMVA
 - ❑ RooFit, RooStat
 - ❑ pyROOT
 - ❑ Hammercloud
 - ❑ PanDA
 - ❑ Rucio
 - ❑ ...

- ◆ Examples of ATLAS use of software developed by other experiments:
 - Gaudi
 - Gaudi HIVE (likely)

◆ Examples of ATLAS use of HEP-supported software:

- Generators
- ROOT
- Geant4
- CVMFS
- (HEP-supported) Cmake
- Grid Middleware

Comments (apologies if they are obvious)

- ◆ In general ATLAS members are funded to work on ATLAS:
 - Working with other experiments to develop and support software that ATLAS needs is great, (and the HSF can help make such activities happen)
 - ATLAS providing support to other experiments in return for thanks is likely good for HEP but is not explicitly funded

- ◆ Two very different areas of HEP software:
 - Pattern recognition and track reconstruction
 - Common implementations are relevant to experiments being planned
 - Mathematical framework from literature is rather standardized across experiments
 - Pattern recognition implementations tend to be detector specific to maximize physics performance
(but underlying algorithm strategies are often very similar)
 - Distributed computing
 - The needs of many experiments are very similar
 - Middleware implementations differ for historical reason and to better serve specific function requirements
 - In the past HEP has benefitted from diverse approaches (but there is room for more convergence, based on what we have learned)

- ◆ Hot topic within ATLAS software development as we face the challenges of Run 3, Run 4 ...
- ◆ We need to give ATLAS physicists highly saleable software expertise
- ◆ Looks like a common activity to us!