Welcome and Intro

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Themes

- Opportunistic Computing: Clouds and HPCs
- Funding HL-LHC software R&D
  - HEP-wide initiatives
  - Research funding
  - Making the case for upgrade funding for HL-LHC software

The case for HPC

- Ideal for steady, large scale workflows
  - Simulation production
- Cost-benefit analysis
  - Ballpark for Titan
    - >~ 30M hrs/yr   vs   ~3FTE setup effort
    - >~200K$/yr   vs   ~750K$
  - Need much better estimate (e.g. running costs)
    - Doug's talk

Issues with HPCs

- Multi-year planning vs yearly allocations
  - Also fragmentation of allocations
- Site-focused efforts vs ATLAS-wide tools
  - Pursuing both @ Titan and NERSC respectively
- Interference (constructive and destructive) with EventService, containers, object stores,…
- Trendy research subject, many parallel initiatives

Clouds

- Ideal for spiky demand (e.g. ICHEP)
  - Most studies so far simulation-centric
- Commercial costs continue to come down
  - amazon printing money with AWS, Microsoft and google want in
  - No clear funding model so far
    - Should we set aside 7.3% of hardware funding?
    - What if we burn through it in two weeks?
- Case for nationwide science cloud(s)?
  - How to make? OSG/HepCloud?
- Other issues mostly common with HPC

HEP-wide Funding Initiatives: OSG

Well-established, up for renewal next year

- Likely to be broken up in three smaller initiatives: HEP core services, HEPCloud, NP services
- Campus computing, resource sharing
- Has played a bigger role in CMS computing than ATLAS
- Currently collecting input from experiments. We asked for "less operations and more innovation"
  - Targeting T3 and HPC deployment and data management

– Current funding: significant
Future funding (guess): not growing

HEP-wide Funding Initiatives: CCE

Nascent program
- – Skeletal organization
  - • Cosmic frontier big role
- – Consider LHC as growth area
  - • Upcoming workshop
- – Very HPC oriented
  - • US ATLAS HPC work got some seed funding for shifter

- • Current funding: small
  Future funding (guess): growing

HEP-wide Funding Initiatives: S2I2

Seed funding to scope up Software Institute
- – Follow up to DIANA project
- Focused on HL-LHC
  - – Actively seeking community input through HSF and direct interaction with experiment
    - Wed session
  - – Software oriented
    - Multi-experiment
- Current funding: small
- Future funding (guess): substantial

Research Funding: ASCR and ACI

- Limited success so far, notable exception distributed computing
- How can we increase our success rate?
  - Find CS partners, **learn to speak their language**,
  - Most of our problems have a CS research angle, we need to learn to frame them as such
  - Think different: engineering doesn't interest ASCR
  - Think large-scale, projects aimed at HPC and Exascale have a significant edge.

Goals of this meeting

- Openly discuss what should be done, not necessarily what we are doing
- Identify areas of strength in need of new blood
- Identify and work towards removing duplicated effort, respecting scientific differences
- Promote collaboration among US ATLAS groups particularly in areas like Core Software or ML/Analytics where there is pressure from non-US groups
- Identify desiderata, volunteers for the S2I2 session of Wed