Opportunistic and Production Support Report

Bo Jayatilaka

Fermilab

OSG Council Meeting

June 25, 2015
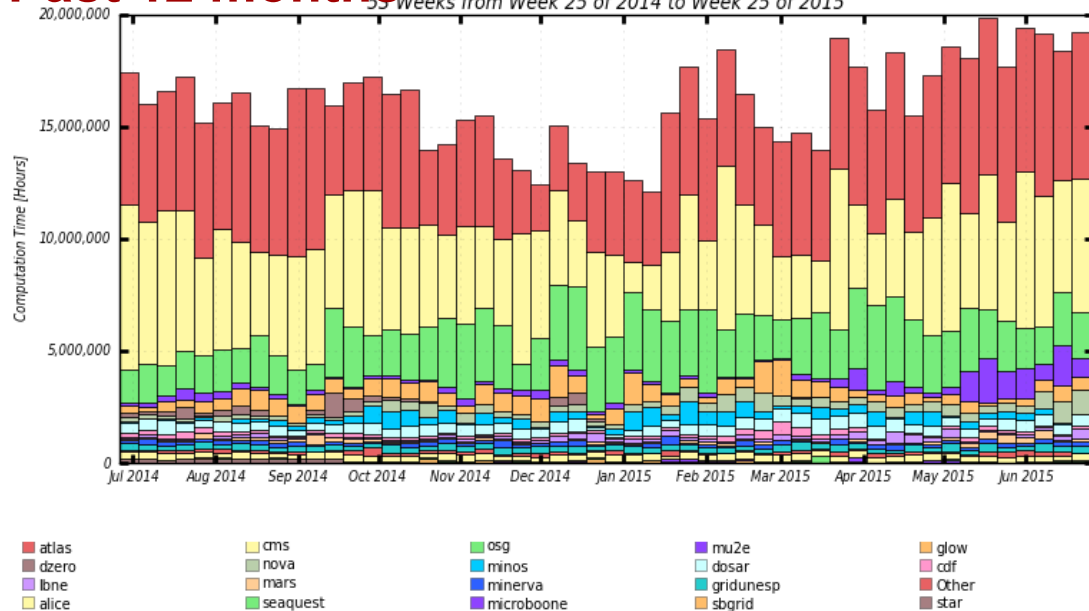
Overall OSG Production

Past 12 months

Computation Hours Per Week
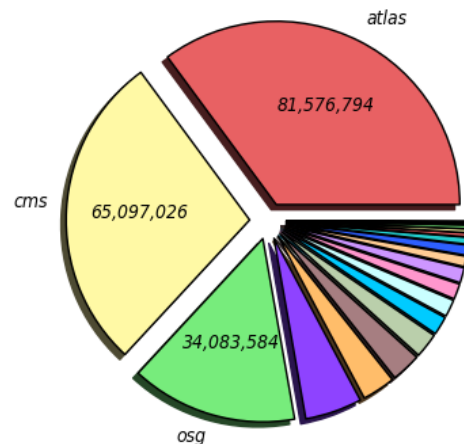53 Weeks from Week 25 of 2014 to Week 25 of 2015

Past 3 months

Wall Hours by VO (Sum: 232,400,721 Hours)
13 Weeks from Week 12 of 2015 to Week 25 of 2015

Maximum: 19,848,370 Hours, Minimum: 1,020,427 Hours, Average: 15,776,077 Hours, Current: 1,020,427 Hours

- **838M** hours in the past year
  - 232M in the past 3 months
  - 17% increase from previous period
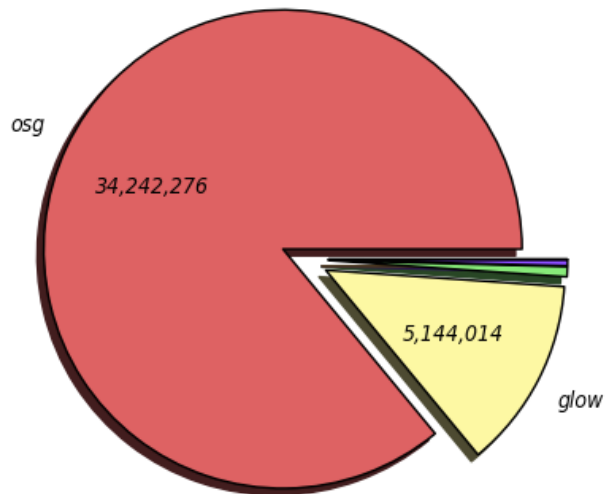   - LHC Run2 ramp-up (113M->147M hours for ATLAS+CMS)

Opportunistic VOs

Hours Spent on Jobs By VO
90 Days from Week 12 of 2015 to Week 25 of 2015

Wall Hours by VO (Sum: 39,822,893 Hours)
13 Weeks from Week 12 of 2015 to Week 25 of 2015

Maximum: 785,437 Hours, Minimum: 79,721 Hours, Average: 442,476 Hours, Current: 422,001 Hours

- Past 3 months: 40M hours (osg, glow, hcc, sbgrid, gluex)
  - 50% increase from same period in 2014
  - 17% of all OSG hours

Intensity Frontier

Hours Spent on Jobs By VO
90 Days from Week 12 of 2015 to Week 25 of 2015
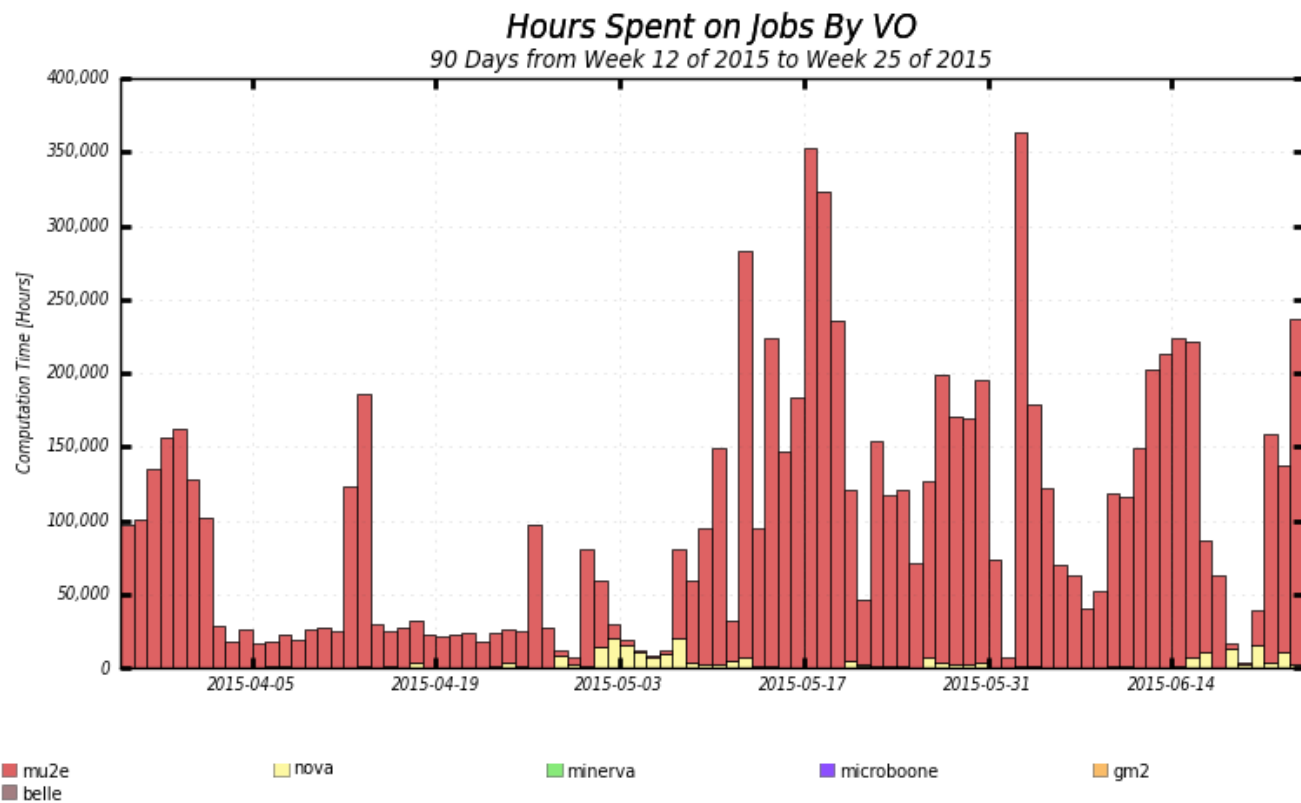
Maximum: 363,341 Hours, Minimum: 3,433 Hours, Average: 97,461 Hours, Current: 236,130 Hours
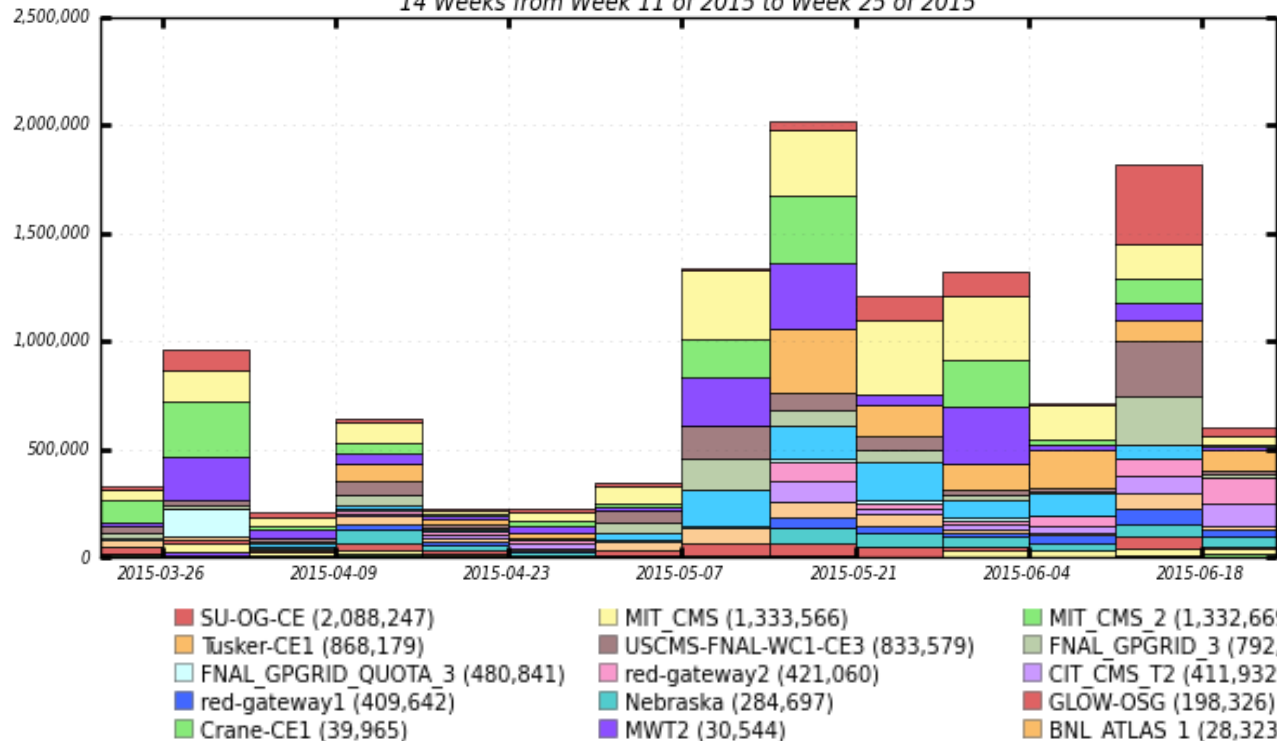
- Intensity frontier experiments on non-owned resources in past 3 months: 8.8M hours
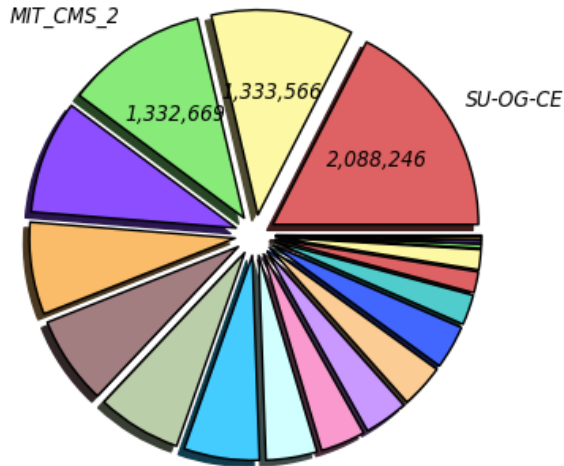 – Dominated by mu2e experiment at Fermilab

mu2e

Hours Spent on Jobs By Facility
14 Weeks from Week 11 of 2015 to Week 25 of 2015

Wall Hours by Facility (Sum: 11,947,550 Hours)
14 Weeks from Week 11 of 2015 to Week 25 of 2015

- SU-OG-CE (2,088,247)
- Tusker-CE1 (868,179)
- FNAL_GPGRID_QUOTA_3 (480,841)
- red-gateway1 (409,642)
- Crane-CE1 (39,965)
- MIT_CMS (1,333,566)
- USCMS-FNAL-WC1-CE3 (833,579)
- red-gateway2 (421,060)
- Nebraska (284,697)
- MWT2 (30,544)
- MIT_CMS_2 (1,332,669)
- FNAL_GPGRID_3 (792,453)
- CIT_CMS_T2 (411,932)
- GLOW-OSG (198,326)
- BNL_ATLAS_1 (28,323)
- CIT_CMS_T2B (1,069,964)
- FNAL_GPGRID_OPP_3 (708,984)
- FNAL_GPGRID_2 (411,014)
- MWT2_CE_UIUC (188,894)
- Other (14,672)

- Large production campaign between March and September

  – Utilized 11.9M hours so far, 9M opportunistic

- First large-scale usage of opportunistic OSG resources by IF experiment
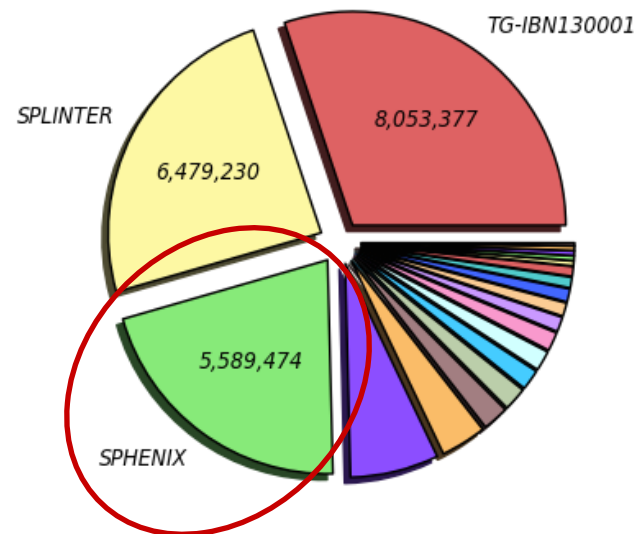
sPHENIX

Daily Hours By Project and Site
74 Days from Week 13 of 2015 to Week 23 of 2015

Wall Hours by VO (Sum: 26,686,433 Hours)
74 Days from Week 13 of 2015 to Week 23 of 2015
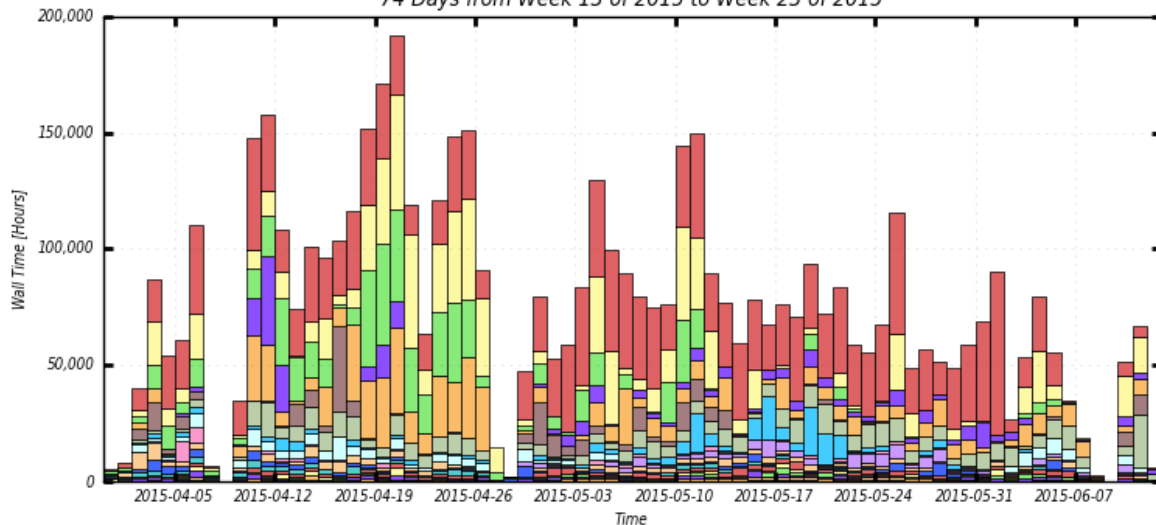
Maximum: 191,837 Hours, Minimum: 258.94 Hours, Average: 75,533 Hours, Current: 5,948 Hours

- Studies for upgraded PHENIX detector at BNL (~5 trillion collisions)
- ~10 week computing campaign (M. Purschke)
  - 5.6M hours
 - Able to ramp up rapidly - #3 project on OSG in that time

Non-LHC experiment university sites

- Syracuse(SU-OG-CE) and Washington (Hyake-CE) recently added as OSG sites

  – Both are general campus clusters providing excess capacity to OSG

  – Neither have "owner" VOs

- Syracuse consistently amongst top opportunistic providers (#1 last month)

  – 7.6M hours in past three months

- Several others underway

  – Clemson (opportunistic CE, already on OSG Connect)

  – FIU (opportunistic CE)

  – Georgia Tech (LIGO)

Syracuse
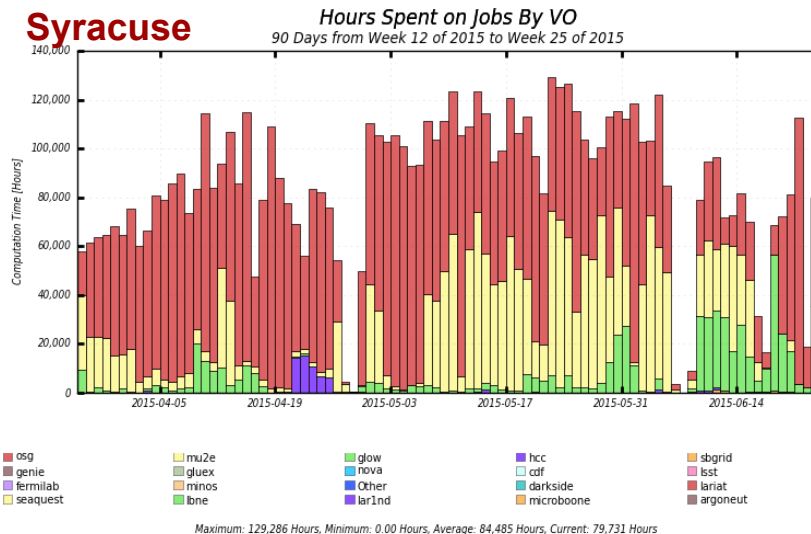
Washington
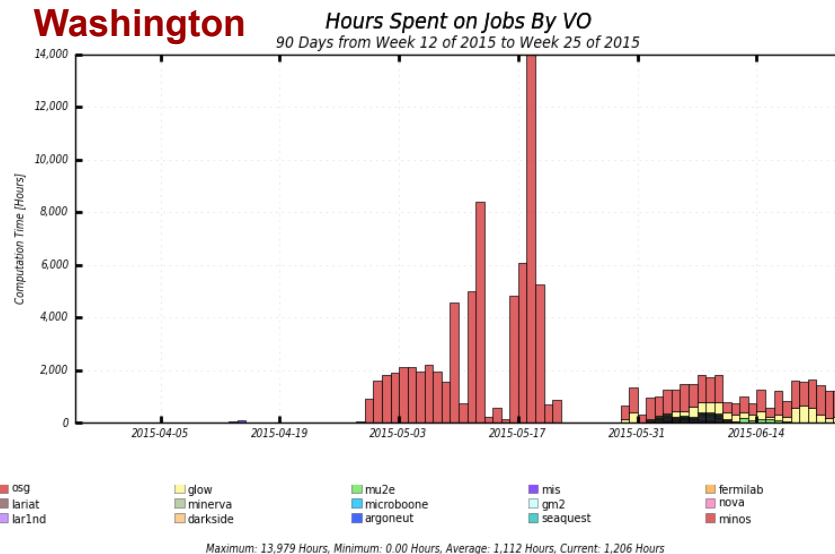
VO "Integration"

- Actually new VO: LZ (LUX-ZEPLIN)
  - Proposed dark matter detection experiment (liquid Xe)
  - Group at Wisconsin with CMS computing experience
  - VO approved- plan on operating out of GLOW frontend initially
- "New" VO: LIGO
  - Covered in FKW's talk
- VO new to opportunistic grid: DES
  - Run previously FNAL-centric analysis workflows on wider OSG
  - Take advantage of existing FNAL IF computing infrastructure
- Unexpected addition to opportunistic grid: ATLAS
  - ATLAS successfully ran jobs at a dozen non-ATLAS OSG sites
- **Continue to bring VOs and other user communities to opportunistic resources where practical**
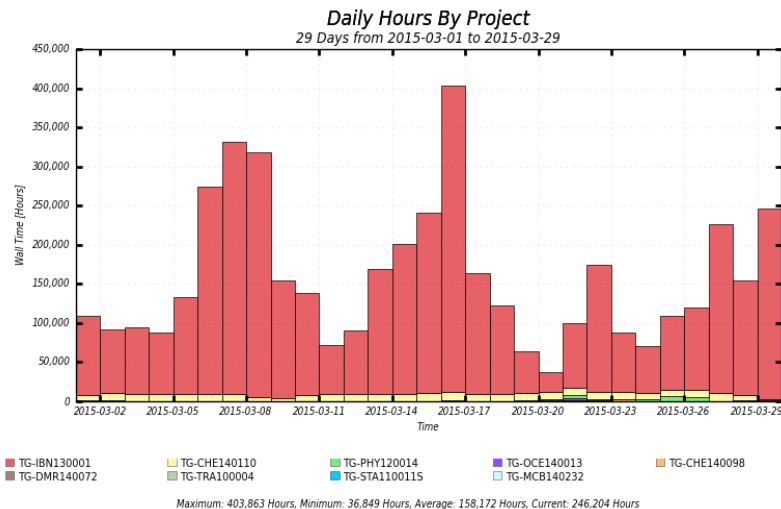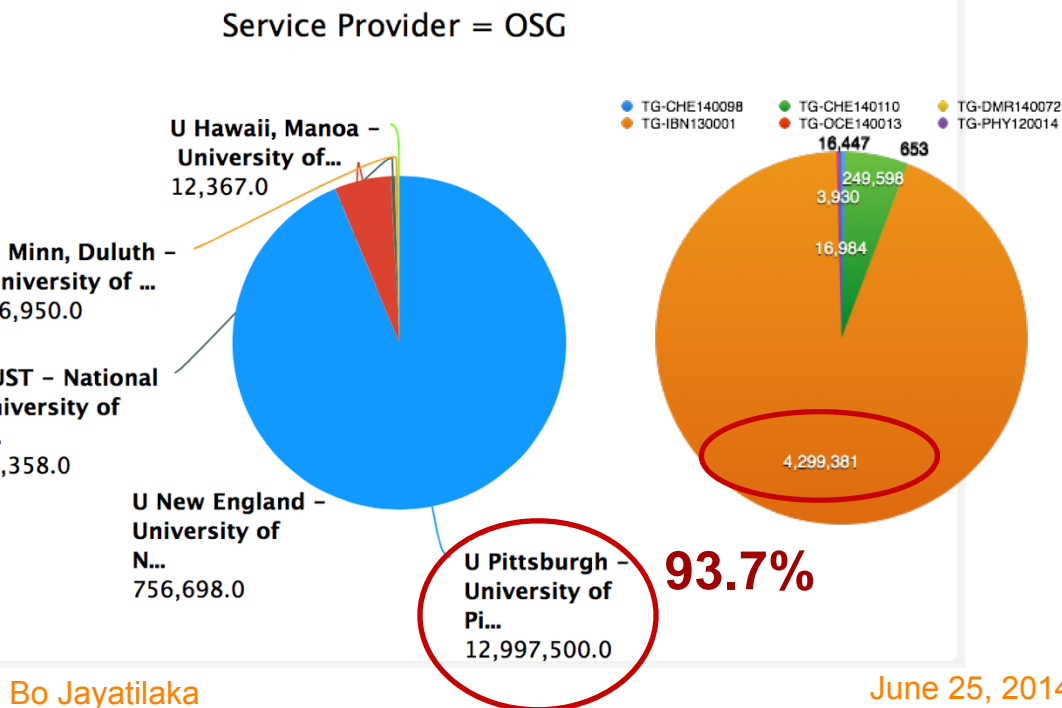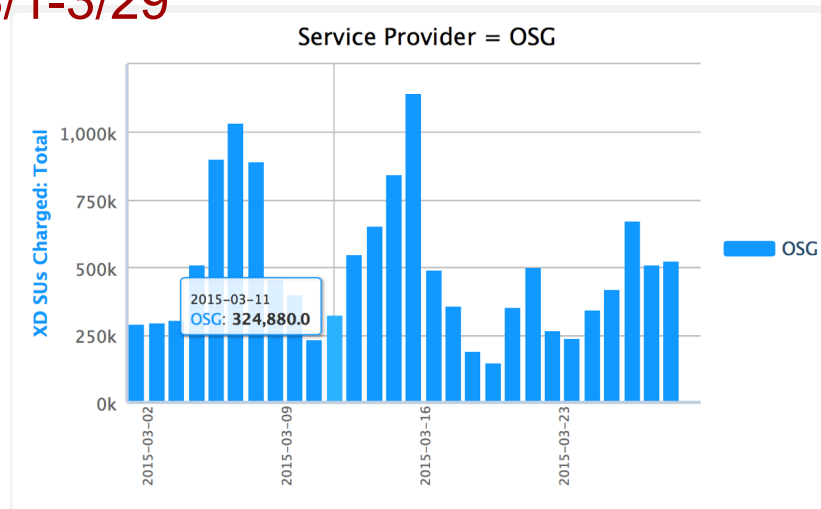
Council AI 151: XDMoD variation

- Variations in XDMoD track variations in gratia for same projects' accounting

- Over entire month, fraction of SU total for each project equalled fraction of wall hours in Gratia

3/1-3/29

Service Provider = OSG

2015-03-11
OSG: 324,880.0

Service Provider = OSG

- TG-CHE140098
- TG-IBN130001
- TG-CHE140110
- TG-OCE140013
- TG-DMR140072
- TG-PHY120014

16,447   653
249,598
3,930
16,984

U Hawaii, Manoa – University of…
12,367.0

Minn, Duluth – University of …
6,950.0

UST – National University of
,358.0

U New England – University of N…
756,698.0

4,299,381

U Pittsburgh – University of Pi…
12,997,500.0

93.7%

Daily Hours By Project
29 Days from 2015-03-01 to 2015-03-29

- TG-IBN130001
- TG-CHE140110
- TG-PHY120014
- TG-OCE140013
- TG-CHE140098
- TG-DMR140072
- TG-TRA100004
- TG-STA110011S
- TG-MCB140232

Maximum: 403,863 Hours, Minimum: 36,849 Hours, Average: 158,172 Hours, Current: 246,204 Hours

Other Council action items

- 141: Demand/supply/infrastructure limited nature of opportunistic pool

  - Aim to show ability to run 50K simultaneous jobs in OSG VO pool

  - Team assembled to study frontend configuration (learning from lessons of CMS @200K)

  - Preliminary indication is that pool is **supply limited** (at least in recent weeks)

- 145: Understand constraints of GLOW submissions

  - Recently concurrent glideins for GLOW have peaked at ~4k

  - Initial indication from admin is that these periods are demand-limited

  - Exercise for OSG VO configuration to be repeated with GLOW VO frontend

Conclusions

- Overall production on the OSG increasing
  - Consistently approaching **20M hours/week**
- Opportunistic computing on the OSG remains strong
  - LHC Run2 brings expected slowing in growth
  - Nearly **50M** hours in past three months alone
  - Plenty of valleys in LHC computing to take advantage of
- Opportunistic ecosphere continues to be backbone of OSG services to campus researchers (see RWG's talk)
- Plenty to offer "mid-sized" stakeholders
  - mu2e success shows potential of opportunistic OSG to IF community
- And the big guys too
  - ATLAS continues to test opportunistically at non-ATLAS sites
  - CMS can get in this game too!