System Overview[1]

- > 370 PB data (1.5 PB every week)
- > 180 sites in 40 countries
- GRID, HPCs, Clouds, Volunteers[2]
- 12 GB/s global throughput
- 360k simultaneously running slots (up to 960k)
  - > 1.1M completed jobs per day (up to 2.7 M)

Operations

- Manage expectations (workflow priorities) - Global shares[3]
- Interaction with stakeholders (sites, analysis users, production managers)
- Accounting, monitoring and alarming
- System development and deployment

Optimizations driven by Operations

- Failure rate minimization
- Network utilization
- Disk and tape storage utilization
- Local batch resource utilization

Optimizations: I/O Intensity

- I/O intensity is defined as the input datasize normalized to the job walltime
- It is heavily used in combination with the input data location and data size to be moved in the job brokerage.
- A central limit on both input data size to be moved and I/O intensity is preventing high I/O intensity jobs to be brokered on sites without the input data on the local storage and / or low network connectivity.
- Variations of the I/O limit is heavily affecting the global network utilization

Optimizations: Panda Retrial Module

- Each job can be retried n number of times, where n is defined by the user
- Retrial module allows the operation team to limit or altogether forbid the retrial based on the failure of a given retry.
- Web UI