

Software Stacks used by the Dayabay Experiment

Simon Patton, L.B.N.L.

Dayabay Experiment

- Neutrino Oscillation Experiment
 - Joint experiment with Chinese
 - Base just outside Hong Kong
- Ideal consumer for HSF 8 years ago
 - Small experiment
 - Few software professionals
- Ideal use case to see how HSF could have helped.

Collaboration Stack

- SVN - repository.
 - Developed our own release policy.
- Trac - Trouble Tickets.
 - Could have done with a 'best practices'.
- CMT - Code building.
- nose/Bitten - regression and integration testing.
- SeeVogh - audio/video meetings.
- Sympa - mailing lists

Analysis stack

- SLC 5x is the base
- **Gaudi (V20)** - Analysis and MC (**Geant4**) framework
 - Familiar to BES users, access to LBNL experts.
 - Added **Archive Event Store**.
 - For multiple asynchronous detectors.
 - Added ability to 'Tag' event to create Candidates.
 - **Time varying values** managed by **DBI** (Minos).
 - Replaced 'home grown' MC framework.

Analysis Stack (II)

- PSquared - Processes management
 - Developed from scratch.
 - Provides basic provenance.
 - Grid/PanDa did not work for us.
- Online Data Monitoring
 - Build on NERSC Newt interface.
- Offline data format ROOT.
 - Adapter created to enable raw DAQ format to be presented in ROOT.

Movement stack

- SPADE - Data Movement.
 - Originally from IceCube
 - Preempted attempt for home-grown scripts.
 - Developed to be Experiment independent.
 - In use for light-source data transfers.

How could HSF have helped?

- Bootstrap the initial software selections.
 - Catalog of available portable tools.
 - Documentation for those tools.
 - Easy initial deployment of a selected tool.
- Support for curating our software.
 - We have about 2 year left.
- Remember that one size does not fit all.