Particle Physics Data Grid Collaboratory Pilot

Project Performance Metrics

DRAFT

PPDG Executive Team,

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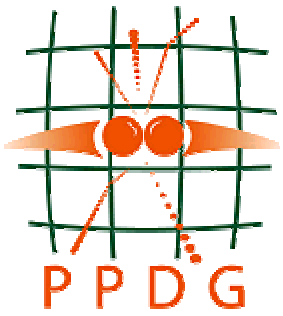

1. PPDG Metrics

In accordance with the Year 3 Plan, the Particle Physics Data Grid collaboratory pilot is starting a process of performance metric definition and tracking. In the first instance these will be simple metrics targeted to measure how well we are meeting the overall goals of the project: to provide benefit to the experiments' distributed production data processing systems, and through this to the scientific output of the experiments; and to extend and harden the common grid middleware and technologies to benefit not only the experiment stakeholders of PPDG, but other communities deploying and using Grid systems.

1.1 Performance Metrics

Some performance metrics are given in terms of the % of the possible successes or deliverables that are actually met. For example, how many of the Year 3 milestones were delivered on time. This is a measure of the efficiency of our planning. Milestones can be missed for many reasons – including earthquakes, babies, etc. Many of these metrics are based on the success in defining and meeting metrics in the Grid2003 project.

Table 1. PPDG Performance Metrics

Metric	Goal	Comment
Jobs_Successfully_Executed_Per_Month		Number of jobs executed through a Globus gatekeeper (per experiment?)[1]
Data_Transferred_Per_Month		How much experiment data is moved using Grid technologies per month (GASS, gridftp, SRM, SRB) (Per experiment? [2]
Number_of_Users_Per_Month	**6 x 10?**	Number of people running processing or data transfer jobs using Grids (estimated by the Team Leads)
Average_Time_to_Critical_Bug_Fixes	**1month**	*As defined by the Experiment team leads. Clearly this requires adequate bug tracking within the system*
Percentage_of_Bugs_Fixed_Per_Month	**50%**	Percentage of bugs fixed in the common middleware technologies per month. (How do we include a metric of the importance of the bugs here?)
Milestone_Efficiency	**70%**	How good is our planning. Is the PPDG milestone delivery on time?
Production_Release	**70%**	Is the PPDG milestone delivery in use in the Experiment/Computer Science Production Software stack?
User_Satisfaction	**1 to 5**	How good is the team/project at supporting their component? How good are the team/project at enhancing

		the component? How responsive are they? [3]

[1] Jobs Successfully Executed Per Month: This will be an order of magnitude and assumes an accounting system (such as MonaLisa) that can track the ownership of the jobs. Initially this will be determined by the application submitters. The metric is not the number of jobs submitted. In the initial stages test jobs will contribute to this metric. It will be one of the requirements of the accounting project to allow significant test runs to be separated from production jobs. This will require information from the applications and virtual organization management.

For year 3 this metric will be provided by the Experiment team leads. This should give us some information on requirements and principals for the future accounting work.

[2] Data Transferred per Month. This is an order of magnitude metric. Initially this information will be provided by the experiment team leads. Instrumentation in GridFTP/globus-url-copy can be used to determine the authenticating certificate on whose behalf the data transfer was executed. In general test transfers will be included in this metric, but as the accounting becomes more capable it is expected that test transfers will be distinguishable from those for production. Various problems in transmission can cause the actual data transferred to be significantly larger than the useful data transferred. (e.g. because data needed to be re-transferred many times). For year 3 no differentiation between test and useful transfers will be made.

[3] Use satisfaction is a soft metric and will be determines through interviews across the teams.

1.2 Metric Tracking

When should we measure and how should we track our metrics? For each quarterly report? Annually?

Much of the data on which desired metrics are based (e.g., jobs executed, data transferred) are not yet measured or logged in a reliable manner by the current Grid systems, and can only be estimated or inferred from other data. Much more sophisticated & reliable accounting software & processes are necessary before these sorts of "hard" metrics can be accurate or meaningful.

The more subjective metrics (e.g., experiment/user satisfaction with a project/group's output & responsiveness) are important in the meantime, and will continue to be useful even after we have harder metrics. In addition, some "hard" metrics ultimately may not reflect the success or failure of the work they are intended to measure, and should be reported along with some subjective analysis.

It is useful to have tools to track and report on metrics. Again the Grid2003 project developed initial metric measuring and display capabilities that can be explored as the basis for PPDG metric tracking. Here we outline some possibilities we will be exploring:

Table 2. Metric Measurements

Metric	Comment
Jobs_Executed_Per_Month	Supplied by the Team Leads
Data_Transferred_Per_Month	Supplied by the Team Leads
Number_of_Users_Per_Month	Interview with Team Leads
Average_Time_to_Bug_Fixes	Review in a CS meeting
Bugs_Per_Month	Review in a CS meeting
Milestone_Efficiency	Review of Milestones in a Steering meeting
Production_Release	Interview with Experiment Team Leads and release managers