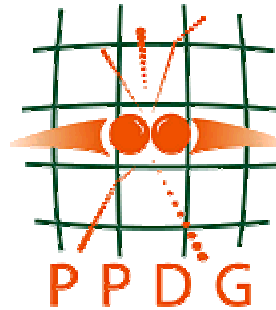


Particle Physics Data Grid Collaboratory Pilot

**Process for Integration and Testing of
Middleware into the Experiments' Software
Stack – A Deployment Strategy**

PPDG-41

PPDG Executive Team,
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1. Overview

The end-to-end and system-wide focus of PPDG leads to the adoption of a software-testing and acceptance process integrated with the experiments' practices. The required development and testing of components are performed in a Development or Testbed Grid environment, integration of new services with the existing environment and with the facilities are performed on an Integration or Certification Grid environment, and lastly, the new functionalities are moved into the Production Grid. This requires strategies for updating the production environment, of quality control and certification, and for partitioning the environment in a flexible way.

The common middleware technologies are subject to a process of validation and regression as part of the Virtual Data Toolkit (VDT) release procedures. VDT releases have well-identified version numbers, release notes and support mechanisms. Given the wide acceptance by the HENP community of the VDT, the PPDG collaboratory will align, to the extent possible, middleware deployments and timelines with the testing and release procedures of the VDT. PPDG experiments contribute to additional testing of VDT by integrating pre-release and development versions into their test beds for end-to-end validation and system tests.

2. Development Testbeds

Each experiment deploys development systems for developing and testing software component functionality and interoperability. As new middleware becomes available through the VDT and from other technology providers these are tested through direct contact between the software providers and the application team.

3. Integration and Certification Testing

Each experiment and grid system deploys a system for certification and integration testing of the end-to-end and system services at scale. These systems are essential for ensuring that the resulting software can be deployed on the stable 24x7 supported production systems relied on by the wider collaborations for delivering scientific output.

The VDT testers group is one mechanism for such testing at a small scale. Demonstrator grids such as Grid2003 are other mechanisms for "at scale" certification and increasing the confidence in a new coherent grid infrastructure.

4. Migration to Production

Once an integrated set of components is certified it can be moved in a planned and managed way into production use for the experiment data handling and analysis.