DataGrid Project Status

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Outline

- Introduction to the review
- Achievements of the project
- Project deliverables
- Project budget
- Summary
Introduction to the Review

 Review structure
  ■ Today (AM): 2003 Overview and current status
  ■ Today (PM): Application assessment, dissemination and quality, Application demos
  ■ Tomorrow (AM): Middleware development, security, summary and future exploitation

 Details are provided in the deliverables and periodic reports

 Need to follow the agenda firmly so please hold questions till the end of presentations
DataGrid Summary

- Leading vehicle for Grid Research and deployment over the last three years
  - Europe’s flagship Grid Project

- 2001
  - Established organisational structures
  - Gathered/analysed requirements and surveyed software toolkits
  - Assembled large scale grid testbed and defined middleware architecture

- 2002
  - Improved services provided to application groups
    (quality issues in software, creation of documentation, tutorial programme)

- 2003
  - Built on solid technical base to provide advanced functionality to application groups and Grid related projects around the world.

  The results will form the basis of EGEE
Themes of 3rd year of the project

- Complete the work as described in the technical annex
- Deliver and support the grid software for various national and international production grid programmes
- Define migration plan for future projects
- Elaborate exploitation plans
Relationship with LCG

◆ LCG is a grid deployment project
  ▪ Provides the computing infrastructure for the LHC experiments
  ▪ World-wide coverage
  ▪ Production requirements with strict deadlines

◆ LCG has worked closely with DataGrid over the last two years
  ▪ Has adopted software products from all DataGrid middleware WPs
  ▪ Has adopted many DataGrid procedures and templates
  ▪ Established joint testing-team with software certification and scalability tests
  ▪ Rapid feedback has helped improve the quality of DataGrid software
DataGrid Achievements in Brief

- Complete the work as described in the technical annex
  - Major enhancements for functionality and stability in all middleware areas
    - VOMS based security model integrated in job-submission chain
    - Replica Location Service (RLS) deployed
    - Re-factorization of WMS, edg-replica-catalog
    - Support for MPI, interactive, and checkpointable jobs
    - Unified access to storage (SE)
    - R-GMA replaced MDS as basis for the information system
    - New automated fabric tools developed
    - Many more (details in the individual WP presentations)
  - Successful deployment of middleware for use by applications
    - Sept. 03: third major release of EDG middleware made available
    - Important improvements included in final EDG version 2.1 deployed end Nov. 03
    - Testbed focused on geographic distribution (more than 20 sites), not on computing power (many sites moved CPUs to production Grids)
DataGrid Achievements II

- Applications assessed middleware on application testbed
  - Many scientific results achieved exploiting DataGrid testbed in all three application areas
  - New applications ported to Grid (WP10)
  - Earth Observation sites joined the testbed (WP9)
  - Grid environments (e.g. LCG) already in production use for HEP (WP8)

- Re-launched Application Working Group (AWG) has delivered important cross-application outputs
  - Re-launched March 2003 - Chaired by Vincent Breton (WP10)
  - Interactions with EU GridLab Project
  - Valuable recommendations and requirements
  - Excellent forum for discussions
DataGrid Achievements III

- Delivery and support the grid software for various national and international production grid programmes
  - Successful delivery of middleware to the LCG production infrastructure:
    - EDG software installed on more than 40 sites throughout the world. Next generation LCG-2 deployed January 2004
  - Datagrid Middleware being exploited by other projects and production facilities:
    - LCG, EU CrossGrid Project, EU Grace Project, Italian INFN grid/grid.it, Dutch Dutchgrid, UK eScience programme, DataTAG, etc.
    - openlab: Involvement of industrial partners in Grid-related activities
    - EDG middleware being ported to different platforms such as IA64 as part of the CERN openlab project. (Enterasys Networks, HP, IBM, Intel Corporation, Oracle)
    - WP4 Quattor computing management tool now deployed at the CERN computing centre (approx. 2000 nodes). Other sites have expressed interest
DataGrid Achievements IV

- Further important achievements
  - Europe-wide network activity
    - Upgrade of numerous National research and Education networks
    - National networks inter-connected with GEANT
    - Grid data transport at GBit/s speed anticipated confidently
    - Close collaboration maintained with DataTAG and DANTE
  - Active participation in international standards bodies
    - Providing contributions to different GGF Working and Research groups
  - Coordination and cooperation with related Grid Projects
    - DataTAG, CrossGrid, GRIDSTART, GRACE, GridLab, etc.
Further important achievements

- Open source software license established
  - Used throughout 2003 and submitted for approval as an OSI compliant license; model for CrossGrid and Globus license.

- Tutorials
  - “Education & Outreach Manager” assigned to coordinate and lead tutorial activities.
  - More than 600 people trained in over 25 events

- Two Project conferences organized
  - May 2003 in Barcelona, September 2003 in Heidelberg
DataGrid Third Year Deliverables

D1.6, D2.5, D3.5, D4.5, D5.5, D6.7: Components and documentation for the third project release
D1.7, D2.6, D3.6, D4.6, D5.6: Final Evaluation report
D6.8: Final evaluation of testbed operation
D7.4: Final report on network infrastructure and
D7.7: Final security report
D8.4: Report on the results of HEP application run #2 and final application report
D9.4: EO application platform interface demonstration and final report
D9.5: EO application processing testbed demonstration and final report
D10.4: Final report including report on the 2nd bio-testbed release
D11.6: Second annual conference and grid forum
D11.7: Final conference
D11.9: Contribution to international standards
D12.13-16: Third year quarterly reports
D12.19: Third year annual report

D6.6, D7.6, D8.3, D9.3 and D10.3 which had been rescheduled for the first quarter of the third year were also delivered
Project Major Issues

- Build on fast moving technology
  - GT2 -> GT3 (OGSI) -> GT4 (WSRF)
  - Decision at the beginning of year 3 to stay with GT2 and only prepare a few components for OGSI by building on plain web-services was a sensible choice

- Relations with other Grid projects, LCG in particular
  - True production use with LCG required the adoption of more strict procedures

- Globus and other tools support
  - Now based on VDT; together with LCG an excellent relationship and support structure could be established

- Persistency of project results
  - Exploitation of project results (in particular through EGEE)
  - More details will be given at the presentation at the end of the review
## Project Budget

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<td>115</td>
<td>75</td>
<td>40 53%</td>
</tr>
<tr>
<td>IBM</td>
<td>FC 38</td>
<td>36</td>
<td>2 5%</td>
<td>0</td>
<td></td>
<td></td>
<td>38</td>
<td>36</td>
<td>2 5%</td>
</tr>
<tr>
<td>Others (*)</td>
<td>433</td>
<td>610</td>
<td>-177 -29%</td>
<td>433</td>
<td>610</td>
<td>-177 -29%</td>
<td>5480</td>
<td>4546</td>
<td>934 21%</td>
</tr>
<tr>
<td>Total</td>
<td>2042</td>
<td>1903</td>
<td>139 7%</td>
<td>3438</td>
<td>2643</td>
<td>795 30%</td>
<td>5480</td>
<td>4546</td>
<td>934 21%</td>
</tr>
</tbody>
</table>

Table shows status at 31st December 2003
Summary

- Project completed within budget and on schedule
- All partners actively participated and made it to the end
- DataGrid has gone the extra mile to produce output beyond the original contracted programme of work
- Functionality and performance of software and testbed(s) completed according to the original plans
- The value of EDG technology has been confirmed through its adoption by many projects including LCG for one of the largest scientific enterprises to-date
- Follow-on project successfully proposed and being launched (EGEE)