

CALL FOR PAPERS -- **Deadline Extended**

HPC-GECO/CompFrame 2007
21-22 October 2007
Montreal, Canada



a Joint Workshop on
HPC Grid Programming Environments and Components
and
Component and Framework Technology in High-Performance
and Scientific Computing



sponsored by ACM SIGPLAN and CoreGRID held in conjunction
with ooPSLA 2007

<http://www.di.unipi.it/~hpc-geco/> or <http://www.compframe.org/>

Abstract Submission Deadline: ~~1 June 2007~~ **8 June 2007**
Paper Submission Deadline: ~~8 June 2007~~ **15 June 2007**

BACKGROUND

Component-based approaches to software development are beginning to emerge in high-performance parallel and distributed computing. HPC environments pose special challenges that require special consideration on the part of both the designers and users of component architectures. Grid-based HPC environments, which may aggregate hundreds of high-performance parallel computers and millions of workstations, pose an even more daunting challenge to the deployment of HPC applications.

The design methodology used and its supporting environment influence the qualities of the design process: programmability, scalability and manageable complexity of applications; speed of the software development cycle; fulfillment of requirements of high performance, fault tolerance; the ability to support dynamically adaptive behavior.

THEME OF THE WORKSHOP

HPC-GECO/CompFrame 2007 is the second joint event from the HPC-GECO and CompFrame workshop series. This two day workshop focuses on the role of component and framework technologies in high-performance and scientific computing, and on high-level, component-based and innovative programming tools and environments to efficiently develop high performance applications and exploit them both on individual massively parallel systems and on the Grid.

High-level programming techniques allow programmers to confront with the issues of application design and management of the computing platform avoiding most of the implementation details. Component-based approaches offer many potential advantages, but are not widely used in HPC and in Grid Computing.

HPC-GECO/CompFrame is open to original, unpublished research works both of theoretical and experimental nature, on the mechanics and architecture of high-level and component environments,

on comparisons of current approaches and results, on user experiences, prototypes and application case studies from two closely related research lines:

- Grid-enabled and HPC Component Frameworks
- High-level approaches (e.g. object-oriented languages, libraries of skeletons and design patterns) for parallel and distributed computation.

Within this topic we emphasize the scalability and effectiveness of the methods (programmability, portability, interoperability, reuse of software) and the consequences for the implemented applications (requirements of performance, adaptivity, fault tolerance etc.).

TOPICS

Submissions are welcome of original works, which are not already published or under review, dealing with high-level and component-based approaches to HPC and Grid Computing. The list of relevant topics includes, but is not limited to:

- Component models and frameworks
- Component-based Grid Platforms
- Programming environments and paradigms
- Analysis and comparison of existing programming approaches
- Integration of different distributed/Grid/HPC programming frameworks
- Tools and Environments for Coupling of Parallel Application codes
- Application-level and support-level management of performance, QoS, faults, dynamicity, architecture heterogeneity
- Application-level QoS contract description and enforcement
- Advanced middleware systems as a device to efficiently exploit Grid resources (e.g. high-bandwidth, innovative networks) in high-level programming environments
- Case studies and experiments of large and geographic scale high-level HPC applications, large-scale data/analysis
- Applicability of software engineering techniques for restructuring and integration
- High-level approaches for emerging HPC architectures, including clusters of reconfigurable computing units and multicore processors
- Approaches to development, deployment, repositories, debugging, and testing for components in HPC environments
- Extending component definitions beyond interface syntax

WORKSHOP ORGANIZATION

HPC-GECO/CompFrame is a two-day workshop. The workshop will feature invited talks and time slots for technical discussion, in order to foster technical interaction of researchers and integration of different perspectives in this research community. Workshop results will be a broad survey of the research on high-level programming for HPC and the Grid, with emphasis on component approaches. HPC-GECO/CompFrame will offer a broad perspective of the actual evolution of high-level HPC and Grid programming in the world, also providing interaction between researchers on programming models and environments, and the community developing HPC application with hard structural requirements (e.g. Interdisciplinary, inter-organizational, combining high performance and fault tolerance requirements).

SUBMISSIONS AND WORKSHOP PROCEEDINGS

All papers, which will be reviewed by the program committee, must not have been already

published or be under evaluation for publication in other conferences or journals. Workshop proceedings will be published through the ACM on CD-ROM and in the ACM Digital Library. The committee also plans to invite selected papers from the workshop to be extended and published as part of a journal special issue.

For review planning purposes, we request advance submission of abstracts only by email, including:

- Paper title
- Names and affiliations of all authors
- A brief abstract of the planned paper submission

These should be submitted via email to cf07-abstracts@compframe.org by the paper's point of contact, and should be in **plain text** in the **body** of the message (no attachments please).

Final paper submissions are accepted only electronically, in PDF format. Submitted full papers must conform to ACM style and should not exceed 10 pages. Information for authors and reference style files are available at <http://www.acm.org/sigs/pubs/proceed/template.html>.

KEY DATES

Abstracts due: ~~Friday 1 June 2007~~ **Friday 8 June 2007**
Full paper due: ~~Friday 8 June 2007~~ **Friday 15 June 2007**
Acceptance notification: Friday 13 July 2007
Camera-ready paper due: Thursday 9 August 2007
Workshop dates: Sunday-Monday 21-22 October 2007

WORKSHOP LINKS

Workshop home pages: <http://www.compframe.org/>
<http://www.di.unipi.it/~hpc-geco/>
Abstract submission: cf07-abstracts@compframe.org
Paper submission: Will be provided on abstract submission
ooPSLA main page & workshop registration: <http://www.oopsla.org/oopsla2007/>

COMMITTEES

General Co-Chairs:

- David E. Bernholdt, Oak Ridge National Laboratory, USA
- Vladimir S. Getov, University of Westminster/CoreGRID, UK

Organizing Committee:

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- Aad van der Steen, Utrecht University, The Netherlands
- Alan Sussman, University of Maryland, USA
- Nanbor Wang, Tech-X Corporation, USA

Program Committee: *to be announced*