

Report on first period of CoreGRID fellowship

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1. Research activities

During the first period of my CoreGRID fellowship (May 2005 to Jan. 2006), I worked at INRIA Sophia Antipolis as a member of the OASIS team headed by Denis Caromel. I collaborated closely with members of the team and visiting researchers and benefited greatly from the knowledge and experience of the team in the field of grid computing. My research work focused on three main directions. First, I investigated methods for reengineering distributed object-oriented applications to become adaptable component-based applications on the Grid. Second, I contributed to extending the ProActive/Fractal component model with new features; notably, first-class support for multicast communications. Third, I worked towards integrating ProActive/Fractal with the higher-order component (HOC) approach in collaboration with the University of Münster in Germany. My research work has resulted so far in contributions to a book chapter, two papers, and a technical report. My implementation of a component-based grid-enabled electromagnetic application using ProActive/Fractal will be the subject of a forthcoming paper.

2. Conferences and meetings attended

I have attended the following events:

- CoreGRID WP7 and WP3 meetings, Barcelona, June 13-17, 2005
- GRIDs@Work: Grid Plugtest 2nd edition, Sophia-Antipolis, France, October 10-14, 2005 (this included the CoreGRID workshops on “Grid Systems, Tools and Environments” and “Programming models and components for the Grid”)
- CoreGRID Workshop on “Integrated Research in Grid Computing”, Pisa, Italy, November 28-30, 2005

I presented the paper “*Towards Automatic Creation of Web Services for Grid Component Composition*” at the Pisa CoreGRID workshop (Nov. 28, 2005). I presented my work on “*Programmable and Modifiable Grid Applications*” at the 2nd ProActive User Group during the GRIDs@Work event (Oct. 10, 2005). I gave a seminar at INRIA titled “*Constructing modifiable middleware with component frameworks*” (May 17, 2005).

3. Papers

Caromel, D., Huet, F., Lanteri, S., Parlavantzas, N., "Distributed and Object-Oriented Computational Electromagnetics on the Grid", To Appear In *New Trends in Computational Electromagnetics* (editors: L. Tarricone, A. Esposito), Artech House Publishers

Dünnweber, J., Gorlatch, S., Baude, F., Legrand, L., Parlavantzas N., "Towards Automatic Creation of Web Services for Grid Component Composition", *CoreGRID Workshop on Grid Systems, Tools and Environments* (held in conjunction with Grids@work: 2nd GRID Plugtest), Sophia-Antipolis, France, 12 October 2005

Dünnweber, J., Gorlatch, S., Baude, F., Legrand, L., Parlavantzas N., "Towards Automatic Creation of Web Services for Grid Component Composition", *CoreGRID Integration Workshop 2005*, Pisa, Italy, November 2005 [This is an updated version of previous]

Badia, R.M., Beckmann, O., Bubak, M., Caromel, D., Getov, V., Henrio, L., Isaiadis, S., Lazarov, L., Malawski, M., Panagiotidi, S., Parlavantzas, N., Thiyagalingam, J., “Lightweight Grid Platform: Design Methodology”, *CoreGRID Technical Report*, number TR-0020, December 2005