Parallel Patterns for Adaptive Heterogeneous Multicore Systems

The ParaPhrase project aims to produce a new structured design and implementation process for heterogeneous parallel architectures, where developers exploit a variety of parallel programming patterns to develop component-based applications. The ParaPhrase framework then allows to map the application to the available hardware resources, and which may then be dynamically re-mapped to meet application needs and hardware availability.

Key Features

• Sustainable parallel computing through enhanced programmability and lower power consumption.
• Cost reduction in programmability and implementation of parallel systems.
• Better resource utilisation of parallel heterogeneous CPU/GPU architectures.

HLRS will initially define test benchmarks and test frameworks. Together with other end users, like SCCH, best practices will be adopted for the particular use cases and applications of the end-user. We are also responsible for the analysis of scientific/mathematical applications and demonstrate the suitability of the ParaPhrase approach by creating a parallelized version of a highly demanding scientific/mathematical application. The ParaPhrase consortium consists of 6 academic and 3 industrial partners from 5 countries.

Academic Partners

1. University of St. Andrews, United Kingdom [Coordinator]
2. Robert Gordon University, United Kingdom
3. Universität Stuttgart (HLRS), Germany
4. Universita Degli Studi di Torino, Italy
5. Universita di Pisa, Italy
6. Queen’s University Belfast, United Kingdom

Industrial Partners

7. Mellanox Technologies, Israel
8. Erlang Solutions, United Kingdom
9. Software Competence Center Hagenberg, Austria

Contact: Dr. José Gracia
Höchstleistungsrechenzentrum Universität Stuttgart
Nobelstraße 19, 70569 Stuttgart, Germany
Phone: +49-711-685-87208
Fax: +49-711-685-65832
E-Mail: gracia@hlrs.de