

# Topic 1: Support Tools and Environments

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Topic Committee

Despite an impressive body of research, parallel and distributed computing remains a complex task prone to subtle software issues that can affect both the correctness and the performance of the computation. It is interesting to note that this topic has always been listed as Topic 1 in the EuroPar conference series for some time now – emphasising its importance and focus in the parallel and distributed systems community. The increasing demand to distribute computing over large-scale parallel and distributed platforms, such as grids and large clusters, often combined with the use of hardware accelerators, overlaps with an increasing pressure to make computing more dependable. To address these challenges, the parallel and distributed computing community continuously requires better tools and environments to design, program, debug, test, tune, and monitor programs that must execute over parallel and distributed systems. This topic aims to bring together tool designers, developers and users to share their concerns, ideas, solutions, and products covering a wide range of platforms, including homogeneous and heterogeneous multi-core architectures. Contributions with solid theoretical foundations and experimental validations on production-level parallel and distributed systems were particularly valued. This year we encouraged submissions proposing intelligent monitoring and diagnosis tools and environments which can exploit behavioral knowledge to detect programming bugs or performance bottlenecks and help ensure correct and efficient parallel program execution.

Each paper was reviewed by at least three reviewers and we selected 4 papers for the conference. It was interesting to see papers focusing on emerging themes such as multi-core and GPUs, pattern-oriented parallel computing, deployment over Android platform, Cloud interoperability and the use of autonomic computing techniques along with papers that covered more established themes such as program profiling, performance analysis, debugging, workflow management and application tuning. The four selected papers cover program visualisation to support semi-automated parallelisation, a programming model and run time environment to support application development/deployment over multiple Cloud environments, detection of hand-crafted collective operations in MPI programs (rather than the use of functions already provided in the MPI standard) and a language extension (based on the use of a type system) for supporting programming over accelerator architectures. The four selected papers cover a combination of theoretical underpinnings and practical development and deployment.

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