Message from the Chairs

Welcome to the fifth International Symposium on Software Engineering for Parallel and Distributed Systems, held in Limerick, Ireland. It is a collocated event with the ICSE, the International Conference on Software Engineering. This publication is based on the proceedings of the Symposium.

The aim of this event is to provide a forum for researchers and practitioners concerned with distributed and parallel systems to address software development issues arising from these systems. This year there has been a deliberate focus on distributed systems development, reflecting the growth in the deployment and importance of large scale distributed applications.

In its five-year history, PDSE has been concerned with addressing the issues that face software developers working with parallel and distributed systems. Many software applications require the use of explicit concurrent programming techniques in order to meet their specification. Concurrency and distribution are needed to exploit the processing power of multiprocessor systems in order to achieve high performance, to provide fault-tolerance and reliability in safety-critical and real-time systems, and to deal with physically distributed computing resources. Some application areas include distributed information systems, client/server systems, multimedia systems, CSCW, high-performance computing, simulation, real-time and process control systems, embedded systems, and manufacturing systems. Managing parallelism and distribution for applications in the above areas is a complex activity, demanding appropriate engineering methodologies and proper support tools.

Much of the early work on the development of parallel and distributed software has emphasized the later stages of the process: language issues, algorithms, machine dependent aspects, e.g. mapping, routing, load balancing, have been well explored. But engineers of these software systems are also faced with other problems, including:

- identification of problem-domain and solution-domain distribution,
- dealing with concurrency in the specification and design phases,
• validation and testing of parallel and distributed applications,
• performance prediction and evaluation, and
• dealing with systems heterogeneity.

Software engineers must deal with these issues in addition to tackling the more commonly identified problems, which occur in all software projects.

Recent developments in the field of middleware platforms, such as CORBA, have lifted the level of abstraction for designers and implementers, and also provide the potential for building component based systems using a range of distributed object technologies. These allow long established software engineering concepts such as encapsulation, information hiding, separation of concerns and re-use to be realized in the distributed environment. However middleware technology is complex and experience of developing large-scale middleware based systems is still in the early days. Many of the papers in this year’s symposium reflect the importance of this topic and throw light on the capabilities of the technology and the methods used to employ it.

Over thirty papers were submitted and fourteen were presented as full papers. A further six are included as short papers, presenting work in progress. The papers come from 10 different countries, representing the worldwide interest in this topic. As might be expected, European, North American and Japanese contributions were forthcoming but it was particularly pleasing to be able to include papers from India, South America and Africa, indicating the global interest in this area. All papers were subject to a vigorous refereeing process and we thank all our referees for the time and skill they put into this.

Our thanks go to the Steering and Program Committee members: the PDSE series of events has been fortunate in having an active and committed committee of international experts, who organize the program and guide the event. As befits the topic area, PDSE reviewing is run on distributed lines, with program committee members taking individual responsibility for the refereeing process of their allocated papers.

With best wishes Paddy Nixon and Innes Ritchie