Welcome to the Twenty First International Conference on Software Engineering.

Continuing the tradition of the twenty previous instances of the conference, ICSE 99 aims to bring together software engineering practitioners and researchers to present and discuss the most promising approaches for meeting the software challenges of the next century.

Software pervades the growing web of computers and communications systems, providing increasingly diverse services for personal, commercial, financial, public, and entertainment purposes. Providing timely, cost-effective, high-quality software for these services requires the best possible technology and practice that the software engineering community can provide. In addition, there has been a significant shift in the needs, expectations and sophistication of our users. Users, rather than software engineers, should be empowered to configure, compose, and exploit software systems to suit their changing needs. We, the software engineers, need to rise to the challenge of making this possible. Many of the techniques and technologies that we have developed and adopted over the last few years — Web-based user interfaces, software architectures, component composition, object interaction — are important steps leading towards this goal, but there remains much to be done.

What ICSE 99 has to offer.

Our aim is to ensure that ICSE remains a leading forum for the exchange of ideas on software engineering, a place where researchers and practitioners have the opportunity to present, discuss and learn. To this end, ICSE 99 provides a wide variety of linked forums for informal demonstration, presentation and discussion, as well as a structured program of formal presentations.

The main ICSE 99 conference provides a structured environment for the presentation of refereed technical papers, case studies, formal research demonstrations, and panels. It also includes invited industrial presentations, state of the art reports, and leading keynote speakers.

Informal presentations are supported by a set of associated special-topic workshops, tutorials, commercial exhibits, posters, informal demonstrations, and a doctoral workshop. In addition, this year two associated symposia are being held before and after ICSE 99: the Harlan Mills’ Legacy Colloquium focusing on successful transition of research results into practice, and the 1999 Symposium on Software Reuse (SSR’99).

Some Special Features.

For ICSE 99, we are proud to feature an outstanding set of invited speakers. Dr. William Wulf, President of the U. S. National Academy of Engineering, addresses some of the software engineering aspects of national policy and strategy issues. Dr. Alan Kay, Vice President and Disney Fellow, Walt Disney Imaginingering, illuminates some exciting and challenging new application areas enabled by software technology. Dr. Butler Lampson, Architect at Microsoft Corporation, provides his perspectives on the most influential computer and software technologies for the 21st Century, with particular emphasis on large-scale software componentry. Dr. Lampson’s talk is followed by a panel session of complementary perspectives from Dr. Stephen Cross (Carnegie Mellon University Software Engineering Institute), Dr. Anita Jones (University of Virginia), Dr. David Parnas (McMaster University, Canada) and Walker Royce (Rational Corporation).

In addition, to encourage cross-fertilization between researchers and practitioners, we have enhanced the Industrial Presentations program, introduced a new track focusing on Case Studies in Software Engineering, and reinstated the successful Formal Research Demonstrations track introduced at ICSE 97.

ICSE 99 includes seven sessions on industry experiences from leading practitioners in critical software engineering areas, including software reuse, process maturity, rapid application...
development, COTS integration, software and systems architectures, and critical applications involving financial integrity and human safety.

The new Case Studies Track exhibits significant examples of systems design and implementation that can be used by the software engineering community for study and insight. The track includes examples of both successful design as well as those with shortcomings. We believe that, as in all engineering disciplines, we have much to learn from the experience of others in developing complex software systems. The focus for this year’s case studies is Software Architecture.

The Formal Research Demonstrations Program provides an opportunity for researchers to exhibit and discuss implementations of novel concepts and systems, allowing conference participants to view these research systems in action.

Together, the Industrial Presentations, Case Studies, and Formal Research Demonstrations, serve to provide software engineering practitioners with techniques and insights for dealing with emerging software technology.

The Technical and Case Study Papers.

We are happy to report that we received a record number of papers submitted to the technical program: 260 technical research papers and 34 case study papers. Each submission was reviewed by at least three reviewers. The result is what we believe to be a superb technical program featuring 49 technical research papers and 7 case study papers.

The Proceedings.

We have followed the lead of previous ICSE conferences in providing a comprehensive proceedings, covering all aspects of the conference. We believe that this provides both a representative record of the variety of conference activities and a good reference for the technical work presented.

Acknowledgements.

We would like to thank the many volunteer committee members and for their expertise and their many hours of dedicated work. Without their help and commitment, it would have been impossible for us to organize ICSE 99. We also thank the local Los Angeles ACM and student volunteers for helping out in the running of the program.

We also greatly appreciate the support of ICSE’s traditional sponsors, ACM SIGSOFT and the IEEE Technical Council on Software Engineering. Finally, we would like to thank the following industrial sponsors for their support of ICSE 99’s objectives to bridge software engineering research and practice:

**Gold Sponsors:** Bellcore (an SAIC company), EDS, and TRW, Inc.

**Silver Sponsor:** Northrop Grumman

We hope that we have managed to provide a conference that offers something for everyone, raising issues that are interesting and challenging, offering technologies and techniques that are promising, in an atmosphere that is conducive to vigorous interaction and discussion.

We hope that you enjoy ICSE 99.

Barry Boehm
General Chair

David Garlan
Program Co-Chair

Jeff Kramer
Program Co-Chair