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ZUM '97: The Z Formal Specification Notation

10th International Conference of Z Users
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Proceedings

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Preface

This Z User Meeting (ZUM), was the tenth in the series originally started by Ib Sørensen in December 1986 at Oxford, under the auspices of the Oxford University Computing Laboratory. The first five meetings were all held in Oxford, initially at the Department of External Studies in Rewley House, and the last at one of the colleges, Lady Margaret Hall. There is no written record of the first meeting, but an informal proceedings was produced by Jonathan Bowen for the second and third meetings, still available on-line for those interested in the historical development of Z! In 1989 the first formal proceedings were edited by John Nicholls and published in the Spring-Verlag *Workshops in Computing* series. John helped develop and maintain the momentum of the Z User Meetings throughout their early years.

In 1991, the first ZUM outside Oxford was held at the University of York, another centre of research in formal methods including the Z notation. The following year, the first meeting outside the realms of academe was held at the offices of the UK government Department of Trade and Industry (DTI) in London. This was particularly apt since the results of a DTI-funded initiative on Z, the ZIP project, were presented, and all the invited speakers were from industry. The meeting also saw the formal launch of the Z User Group (ZUG), whose main function is to organize the Z User Meetings, and facilitate interaction between users of Z.

1994 saw the largest Z User Meeting ever with around 140 delegates, perhaps encouraged by the elegant surroundings of St. John's College, Cambridge and the change of timing from December to the summer. Subsequently ZUM has been held at approximately 18 month intervals, partly to avoid clashing with the Formal Methods Europe symposium which also runs to an 18 month cycle.

The first meeting outside the United Kingdom was held at Limerick in Ireland, with a change of name to the *International Conference of Z Users* and a change of series for the proceedings to the well-regarded *Lecture Notes in Computer Science*, again published by Springer-Verlag. The meeting recorded in this volume was held back in the UK, at the University of Reading, and we intend to hold ZUM alternatively inside and outside the UK in the future.

Our invited speakers for ZUM'97 were drawn from Italy, the UK, and the USA. Prof. Egon Börger of the University of Pisa is a recognized European expert on formal methods. Dr. Anthony Hall is well-known in Z circles as an industrial user of Z and other formal methods, working for Praxis plc, a company in Bath, UK, which applies formal methods widely, especially for the development of safety-critical systems. Dr. Constance Heitmeyer of the US Naval Research Laboratories comes from outside the Z community, but is widely respected for her work in the application of formal techniques to real-time systems.

Tool demonstrations were organized by Ali Abdallah (University of Reading,UK) throughout the main meeting. The conference also saw the launch of a new International Series in Formal Methods published by Academic Press. As is traditional with ZUM,

there were a number of associated activities both before and after the main meeting. Tutorials were held immediately beforehand, organized by Sam Valentine of the University of York. On the day after the conference, the third in a successful series of informal Educational Issues Sessions was held, again organized by their original initiator, Neville Dean of Anglia Polytechnic University.

ZUM'97 was supported by a number of companies and organizations. Praxis continue to give valuable support in the running of the Z mailing list, which lightens the administrative burden on the Z User Group considerably. This year, IBM United Kingdom Laboratories provided generous support for expenses of invited speakers, student bursaries, and the best paper prize. FACS, the Formal Aspects of Computer Science specialist group of the British Computer Society (BCS), continue to support ZUG by providing publicity. The University of Reading provided facilities for the conference; in particular, Roy Briggs has offered the use of the Museum of English Rural Life on the campus for a reception.

During the week after ZUM'97, the fifth EU ESPRIT **ProCoS-WG** Working Group Meeting on *Provably Correct Systems* was held at Reading, enabling group members to attend both events easily if they wished. **ProCoS-WG** (ESPRIT Working Group 8694) gave financial support to cover secretarial assistance for ZUM which helped greatly with the organization of this conference as well as previous meetings. Christina Simmons, the local organizing secretary in the Department of Computer Science at Reading, provided invaluable support in the administrative planning and smooth running of the conference. Joan Arnold, the **ProCoS-WG** secretary based at the Oxford University Computing Laboratory, was an experienced and appreciated helper at many of the Z User Meetings.

On-line information concerning the conference is held under the following URL:

`http://www.cs.reading.ac.uk/zum97/`

This will be kept up to date after the conference with any relevant information, and provides links to other on-line resource concerning the Z notation such as previous Z User Meetings, and also formal methods in general. We welcome delegates to the Tenth International Conference of Z Users, and look forward to developments for the next ten in the series after this milestone point.

Reading, Limerick and London — Jonathan Bowen (Conference Chair)
January 1997 — Mike Hinchey and David Till (Programme Co-Chairs)

Programme Committee

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Jim Woodcock, Oxford University, UK
John Wordsworth, IBM UK Laboratories, UK

External Referees

All submitted papers were reviewed by the programme committee and/or a number of external referees. We are very grateful to these people, and apologize in advance for any names omitted from this list:

Rob Arthan	Michael Butler	Stelvio Cimato
Roger Duke	Cecilia Mascolo	Paul Mukherjee
Larry Paulson	Gordon Rose	Margaret West

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IBM United Kingdom Laboratories
Praxis plc
ProCoS-WG ESPRIT Working Group
University of Reading

Tutorial Programme

Three tutorials were presented on the day prior to the main sessions (2nd April); they were:

How to Read the (draft) Z Standard
Stephen Brien, Andrew Martin, and Jim Woodcock

Larch: Theory and Practice
John Wordsworth

The Z/EVES System
Mark Saaltink

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