



The South African Institute for Computer Scientists and
Information Technologists

**ANNUAL RESEARCH AND DEVELOPMENT
SYMPOSIUM**

23-24 NOVEMBER 1998

CAPE TOWN

Van Riebeeck hotel in Gordons Bay

Hosted by the University of Cape Town in association with the CSSA,
Potchefstroom University for CHE and
The University of Natal

PROCEEDINGS

EDITED BY
D. PETKOV AND L. VENTER

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PROCEEDINGS

**EDITED BY
D. PETKOV AND L. VENTER**

SYMPOSIUM THEME:

Development of a quality academic CS/IS infrastructure in South Africa

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FOREWORD

The South African Institute for Computer Scientists and Information Technologists (SAICSIT) promotes the cooperation of academics and industry in the area of research and development in Computer Science, Information Systems and Technology and Software Engineering. The culmination of its activities throughout the year is the annual research symposium. This book is a collection of papers presented at the 1998 such event taking place on the 23rd and 24th of November in Gordons Bay, Cape Town. The Conference is hosted by the Department of Information Systems, University of Cape Town in cooperation with the Department of Computer Science, Potchefstroom University for CHE and and Department of Computer Science and Information Systems of the University of Natal, Pietermaritzburg.

There are a total of 46 papers. The speakers represent practitioners and academics from all the major Universities and Technikons in the country. The number of industry based authors has increased compared to previous years.

We would like to express our gratitude to the referees and the paper contributors for their hard work on the papers included in this volume. The Organising and Programme Committees would like to thank the keynote speaker, Prof M.C.Jackson, Dean, University of Lincolnshire and Humberside, United Kingdom, President of the International Federation for Systems Research as well as the Computer Society of South Africa and The University of Cape Town for the cooperation as well as the management and staff of the Potchefstroom University for CHE and the University of Natal for their support and for making this event a success.

Giel Hattingh, Paul Licker, Lucas Venter and Don Petkov

Table of Contents	Page
Lynette Drevin: Activities of IFIP wg 11.8 (computer security education) & IT related ethics education in Southern Africa	1
Reinhardt A. Botha and Jan H.P. Eloff: exA Security Interpretation of the Workflow Reference Model	3
Willem Krige and Rossouw von Solms: Effective information security monitoring using data logs	9
Eileen Munyiri and Rossouw von Solms: Introducing Information Security: A Comprehensive Approach	12
Carl Papenfus and Reinhardt A. Botha: A shell-based approach to information security	15
Walter Smuts: A 6-Dimensional Security Classification for Information	20
Philip Machanick and Pierre Salverda: Implications of emerging DRAM technologies for the RAM page Memory hierarchy	27
Susan Brown: Practical Experience in Running a Virtual Class to Facilitate On-Campus Under Graduate Teaching	41
H.D. Masethe, T.A Dandadzi: Quality Academic Development of CS/IS Infrastructure in South Africa	49
Philip Machanick: The Skills Hierarchy and Curriculum	54
Theda Thomas: Handling diversity in Information Systems and Computer Science Students: A social Constructivist Perspective	63
Udo Averweg and G J Erwin: Critical success factors for implementation of Decision support systems	70
Magda Huisman: A conceptual model for the adoption and use of case technology	78
Paul S. Licker: A Framework for Information Systems and National Development Research	79
K. Niki Kunene and Don Petkov: On problem structuring in an Electronic Brainstorming (EBS) environment	89

Derek Smith: Characteristics of high-performing Information Systems Project Managers and Project Teams	90
Lucas Venter: INSTAP: Experiences in building a multimedia application	102
Scott Hazelhurst, Anton Fatti, and Andrew Henwood: Binary Decision Diagram Representations of Firewall and Router Access Lists	103
Andre Joubert and Annelie Jordaan: Hardware System interfacing with Delphi 3 to achieve quality academic integration between the fields of Computer Systems and Software Engineering	113
Borislav Roussev: Experience with Java in an Advanced Operating Systems Module	121
Conrad Mueller: A Static Programming Paradigm	122
Sipho Langa: Management Aspects of Client/Server Computing	130
T Nepal and T Andrew: An Integrated Research Programme in AI applied to Telecommunications at ML Sultan Technikon	135
Yuri Velinov: Electronic lectures for the mathematical subjects in Computer Science	136
Philip Machanick: Disk delay lines	142
D Petkov and O Petkova: One way to make better decisions related to IT Outsourcing	145
Jay van Zyl: Quality Learning, Learning Quality	153
Matthew O Adigun: A Case for Reuse Technology as a CS/IS Training Infrastructure	162
Andy Bytheway and Grant Hearn: Academic CS/IS Infrastructure in South Africa: An exploratory stakeholder perspective	171
Chantel van Niekerk: The Academic Institution and Software Vendor Partnership	172
Christopher Chalmers: Quality aspects of the development of a rule-based architecture	173
Rudi Harmse: Managing large programming classes using computer mediated communication and cognitive modelling techniques	174

Michael Muller: How to gain Quality when developing a Repository Driven User Interface	184
Elsabe Cloete and Lucas Venter: Reducing Fractal Encoding Complexities	193
Jean Bilbrough and Ian Sanders: Partial Edge Visibility in Linear Time	200
Philip Machanick: Design of a scalable Video on Demand architecture	211
Freddie Janssen: Quality considerations of Real Time access to Multidimensional Matrices	218
Machiel Kruger and Giel Hattingh: A Partitioning Scheme for Solving the Exact k -item 0-1 Knapsack Problem	229
Ian Sanders: Non-orthogonal Ray Guarding	230
Fanie Terblanche and Giel Hattingh: Response surface analysis as a technique for the visualization of linear models and data	236
Olga Petkova and Dewald Roode: A pluralist systemic framework for the evaluation of factors affecting software development productivity	243
Peter Warren and Marcel Viljoen: Design patterns for user interfaces	252
Andre de Waal and Giel Hattingh: Refuting conjectures in first order theories	261
Edna Randiki: Error analysis in Selected Medical Devices and Information Systems	262

A CONCEPTUAL MODEL FOR THE ADOPTION AND USE OF CASE TECHNOLOGY

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Abstract

The software crisis has been well documented. Software is being delivered late, over budget and full of residual faults.

In an attempt to solve these problems, CASE technology has been developed. CASE technology provides computer-aided support for every phase in the software development process. The developers of CASE technology claim that these tools will increase software development effectiveness, in terms of the quality of the developed systems, and the productivity of the developers. This claim is confirmed by most empirical studies in the literature which indicate a positive rather than negative impact of CASE technology on the software development process.

In light of the above, it is surprising that the actual use of CASE technology has been much less than one would expect. It is reported by Kemerer that one year after introduction, 70% of the CASE technology are never used, 25% are used by only one group and 5% are widely used but not to capacity. Many other studies emphasise this trend. CASE technology is very costly, and this non use phenomenon causes organisations to suffer large financial losses.

Thus although CASE technology can improve the software development process, it is not used by the software development community. A conceptual model was developed to address this contradiction. The model is based on research in information system implementation, the innovation diffusion theory, organisational theory, and the economics of technology standards. CASE technology is viewed as a contingent innovation, meaning that a primary adopter (i.e. IT manager) has to make a decision to adopt CASE technology, and then a group of secondary adopters (i.e. system developers) has to adopt and use the CASE technology. Because CASE technology is viewed as a contingent innovation, the meso level of innovation theories is applied, rather than the micro or macro levels.

Prior research on CASE technology adoption, has mainly been descriptive. This model offers a theoretical orientation and attempts to explain factors affecting adoption and use of CASE technology.