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 infrastraucture 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 Lincolshire 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

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QUALITY ASPECTS OF THE DEVELOPMENT OF A RULE-BASED ARCHITECTURE

Christopher Chalmers

Abstract

This paper provides an insight into how the various quality requirements defined for a specific tool are met in its development cycle. Focus is on a specific subset of the rule-based architecture project, which covers the Rubico Rules Engine and inter-application communications. The rule-based architecture is discussed briefly.

The focus is on the Rubico Open Interface (ROI), a technology designed specifically for the purpose of inter-technology communications on various levels. Various Application Programming Interface (API) levels have been defined for ROI and will be elucidated during the paper.

An overview of the need for system migration and evolution, with specific regard to technology independence will be presented. Specific examples are discussed later in the paper. Distributed computing will be considered, including traditional client-server views, Object Request Broker (ORB) architectures and web architectures. A discussion of current global developments in this arena, such as CORBA (Common Object Request Broker Architecture) and COM (Common/Component Object Model) will also be presented.

Terminology and acronyms specific to the project will be discussed.

The quality objectives to be discussed are : interoperability, compliance, fault tolerance, availability, changeability, stability, testability, adaptability, co-existence, replaceability. These will be described in more detail in relation to the rule-based architecture project development and requirements.

These objectives will be reviewed with regard to the steps taken for development, and how the tool itself complies with each requirement at this phase in its life-cycle. Future developments and enhancements will also be reviewed with regard to the quality objectives.

Problems encountered while developing the product will be presented, as well as the need for continued education in the field of development with regard to current development in the field and principles in general.