A Professional History and Career….

BY

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I.1. RESEARCH AND SCHOLARSHIP

I.1.1. SUMMARY

The candidate's research contributions span Computer Architecture, Software Engineering, Technology Policy, and more recently, Browser Design. In the second area, the candidate until recently lead a very large group, and included work on Multi-Media authoring and navigation tools.

His research activity stretches back to work begun when at LMEricsson in Stockholm. This work, in computer architecture, did not lead to publication, being of a proprietary nature. Aspects of this work formed the basis of a Master's thesis at Monash University, and lead to the adoption of new instruction proposals in the Ericsson APZ 150 computer used in their telephone exchanges.

Subsequent work at LMEricsson's Glenroy Research Centre in the early 1970's lead to 14 Technical Reports being produced (see CV pages 11-12)

The candidate was responsible for the planning and execution of the first two surveys of the Australian Software Industry (1979 and 1981) (See Reed and Warman, 1981, and the ACS Submission to the IAC Inquiry of 1983). A significant amount of research has been conducted into international industry policy as applied to the Information Technology sector. This formed the basis of two major Submissions to Government Inquiries (IAC 1974 and 1983). Some of this work has been the subject of invited papers (See CV page 4-5). This industry Survey was re-attempted in 1995, but was not successful for a variety of reasons.

Since then, the candidate has played a major role in two surveys of email usage (see Dhen 1997 Hons project and Merret 2005 Hons project, CV pages 15-17), and a survey of national software testing practice (see Ng et al 2004 CV 15-17), and of multimedia development practice (Hannington and Reed, 2006)

The candidate has been the invited reporter on Software Engineering in Australia on three occasions first at the 1988 ICSE, subsequently at the First APSEC (DEC. 1994), and at the International Workshop of Software Engineering Education in 1998. This report was published in the Journal of the Information Processing Society of Japan (See CV page 4)

After joining La Trobe, work focused on the HyperCASE project which was under the AAITP (see below). Two PhD students have completed theses on concepts enunciated by the candidate as part of this project, and a large number of Honours projects ensued. Some 40 TR's were produced.

The candidate's standing as a researcher is indicated by the Amdahl Australian Intelligent Tool Program Research Contract (direct funding value $1.7M), plus invitations to participate in the Program Committee for ICSE during 1989,1990 and 1991. In this context, Jason Baragry's thesis warrants special mention. It deals with fundamental issues relating to the nature of software engineering from a philosophical point of view. The work was unusual, departing from the normal pattern of technical problem solving, and is an indication of the candidate's approach to research.

Recently, Ms Tafline Murnane[2], a PhD student working on software testing, has developed an original and fundamental approach to atomic description of black box testing. This could be of major importance.

In late 2002, the Candidate had the good fortune to spend a period at the Fraunhofer Institute for Experimental Software Engineering as a Visiting Scientist. This was a singular privilege.

The candidate's publication record has been limited by the proprietary nature of much of the work, and, by his policy of encouraging maximum independence amongst his research students, seeking to have them publish single author papers wherever possible. Despite this 25 refereed papers have been produced in "good" publication vehicles,

The candidate is a major initiator of research concepts and ideas, as can be seen from the following.

I.1.2. DETAILS OF RESEARCH ACTIVITY

I.1.2.1. COMPUTER ARCHITECTURE

Multi-processor interworking, (APZ150). During 1970 whilst working in Stockholm, a problem was identified in the APZ130 computer system used by Ericsson's for telephone exchanges. The problem related to scanning instructions which were not operating asynchronously with the cpu, leading to quite large wastage of instruction cycles in a system which was seriously cpu bound. Estimates put the losses at about 40%.

A detailed study was conducted, and solution was proposed which utilised the fact that a series of prioritised task levels were already used in scheduling. This meant that it was possible to drop the processor to a lower level when it was scanning, and interrupt back to the original level when a scan succeeded. The problem of a level being blocked by a semaphore was to be handled by allowing a further level drop to occur. This was adopted by Ericsson for the APZ150.

No publications resulted.

[2] Ms Murnane is jointly supervised with Dr. Richard Hall

Addressing Schemes on Digital Computers-The Short Address Problem.

About the same time, difficulties were experienced in extending the address space of the APZ130 (See Reed, 1970, CV page 4)

The ideas, albeit very undeveloped, which arose when considering this problem lead to a rather nice MSc thesis. The problems which had to be solved to extend an address space while maintaining complete compatibility with existing instruction sets were identified and categorised.

Two possible ways of solving the problem, one using virtual memory mapping table entries as a means of altering the interpretation of address spaces, were proposed. Some theoretical work was also done on the semantics of addressing schemes.

The thesis was passed without modification. One of the referees (Assoc. Prof. R. Doran of New Zealand) had been the Chief Computer Architect for Amdahl, a major US computer company.

The Isomorphism of Addressing Schemes

A by-product of the above work was the discovery that a number of isomorphic addressing schemes could be implemented easily using a single addressing scheme. The isomorphism between two (paged and segmented systems) was already known but that this also held for display-based addressing systems had not previously been noticed. A mechanism for implementing all of these simultaneously using a two layer virtual memory mapping system such as that used on a number of computers was proposed. The results were published in 1982 as a short paper at the First ASPLOS Symposium, a rather prestigious place.

I.1.2.2. SOFTWARE ENGINEERING

The bulk of this work was conducted as PhD projects for which the candidate was the sole supervisor.

I.1.2.2.1 AAITP[3]

The Amdahl Australian Intelligent Tools Program represents the candidate's major research effort in Software Engineering. This program was originally funded at the level of $800,000 in direct funding from May 1989 to Dec 1993. It was subsequently extended for another three years (1994-1996) at an increased rate of $309,000 p.a., The total cash funding was in excess of $1.7M. Amdahl also made a substantial mainframe available at a nominal cost[4]. This was subsequentlly converted to two Sun Sparc 1000 servers (at an incremental cost)

[3] A complete description can be found in the AAITP brochure in Appendix VI.

[4] The notional value is about A$1.7M

The research program was a technology acquisition and transfer one, in which commercially exploitable technology was to be developed and transferred to Australian industry. As such, the original emphasis was on prototype development. Over the period May 1996 to November 1996, the emphasis has shifted to the development of "β" level tools capable of restricted release.

Our goal was the development of new tools for the early stage of software development, applying and integrating concepts and ideas whichwere either new, or, have remained undeveloped or unapplied.

The basic project goals were summarised in Cybulski and Reed 1992 (See CV page 4). This has been very widely cited.

Again little has been published, partly due to the proprietary nature of the work. However, all of the topics, with one exception, have been proposed totally independently by the candidate[5]!

As time progressed, the applicability of these to Amdahl's proprietary language ObjectStar became a major issue for investigation, and was the subject of a number of major reports and presentations.

At the time of writing, the project has been closed for several years. The tools described below were being integrated, as originally proposed, under a hypertext framework via a common repository and a message passing architecture. In addition, the tool-set has been integrated with other applications (e.g. Ghost-view), to extend the variety of documents which can be part of the HyperCASE.

HyperCASE, project, the integration of Hypertext and Computer Aided Software Engineering, was the broad frame work for the project.

Design Reasoning plays a major role in the projects investigations. software maintenance, and in re-engineering.

We have developed a Design Reasoning Tracker, which will aid in software maintenance, and in re-engineering.

We were also investigating the general role of Design Reasoning as it effects the software design process. This, unlike other engineering processes, is not Design Reasoning Explicit. In other words, there are few specific methods for choosing amongst alternatives at various stages of the design process.

[5] The HyperCASE concept is the result of collaboration with Mr. Cybulski, and the customizable editor concept is Mr. Cybulski's suggestion.

This work could lead to a fundamentally new understanding of the way in which software is and should be developed, and,was a thread influencing all of our work.

Automated Project Tracking, based upon the state of the documents being developed, and the pattern of tool-usage, is also being examined.

Methods of using Natural Language Processing, as part of the specification process, and elsewhere, were developed.

A Customizable Graphics Editor, capable of treating all graphical elements as a Hypertext "buttons", and allowing a designer to specify a new diagramming system was developed.

The Theoretical Foundations of Software Diagramming were being investigated with a view to proposing a new system of diagrammatically representing software systems[6].

Hypertext navigation. Work was undertaken on the problem of Hypertext navigation.

Pragmatic Approaches to Software Reuse. Several approaches were being taken to this problem.

The Semantics of Composite Software Development Diagram. This involves the use of diagram elements which contain other diagrams.

Work has been already completed on the following topics, and, in one case, will be continued.

Graphics Communications Protocols and Distributed systems. This has been the subject of a small scale experiment which has been applied directly to the system itself.

Configuration Management. A demonstration system which allows graphical representations of a software configuration under Hypertext (Apple's Hypercard was used) was developed.

[6] The problem is that these are not "complete" in the sense that (for example) a digital circuit diagram is.

I.1.2.2.2 THE VICTORIAN SOFTWARE ENGINEERING INSTITUTE[7]

The candidate worked on the creation of a "SEI" between 1991 and 1998. Originally, the proposals was for an extension to the Amdahl project. Later, a detailed proposal has been developed and put to the Victorian Government. Visits were made to major international centres, and some research conducted on the funding and practices. Non-exclusive agreements for collaboration, assuming the attempt to establish this succeeded, from the CMU-SEI (via its commercial arm), and the Quebec CRIM were concluded.

A major part of this work was a detailed review (including visits to) of the major Software Engineering Institutes around the world.

The proposal was for a $5M p.a. Institute, undertaking applied industrial strength research. A research agenda has been proposed, and a working party established. Considerable work was completed on budgeting and governance.

One interesting outcome of this effort was the concept of “Technico-Commercial Drivers”, commercial problems with direct commercial relevance, preferably solving a readily identifiable commercial problem. These can be used to derive research

The overriding objective was to provide technological underpinning for the Australian Software Industry.

Sheffield-Hallam University invited the candidate to give a seminar on this subject in Feb 2001. We note at that time, there was no major SEI in the UK.

I.1.2.2.3 OTHER SOFTWARE ENGINEERING RESEARCH.

AAITP was only part of the candidate's research in this area. Work is being conducted in the following areas:-

Software Process Modelling(the business of constructing software project plans).

Knowledge Acquisition Based Approach to Software Project Planning. A new method of producing software project plans has been identified, and its properties specified. Further work is necessary to develop a fully useable method. The approach may allow major difficulties in planning to be circumvented. A TR was been produced on this subject in 1991. (CV page).

[7] Being an archivst, the candidate has many of his proposals, papers and presentations going back more tha 20 years. The idea of a software engineering research centre seems to have been raised as far back as the early 1980's. Certainly, it was formally proposed in 1987.

This is currently an Hons thesis topic. We have found quite a lot of evidence supporting the use of the taxonomy proposed, and it is being used elsewhere by my students (without duress!!)

Studies of Actual Software Development Practice. Research into actual software development practice is currently being considered. This will be aimed at documenting the methodologies actually used by successful Australia software companies. A taxonomy for describing Software Process Phases[8] has been developed, and used in student studies.

Modular Programming. A design philosophy suitable for small-scale development has been evolved. This maximises the opportunity for software re-use in new projects. It was based upon established work, but, was novel in that it combines two approaches and gives a useable prescription for its use. It has been taught as "Analysis-Synthesis" since 1980.

Mutation Testing. The possibility of optimising the number of mutants which need to be generated by eliminating those which can be proved not to alter outcomes. This work has been conducted under supervision by Ms. Murnane (see Hons list in CV page 12).

Tailorable Data Access Control Environments. The development of specially tailored user interface environments which restrict the nature of data access. These environments would be tailored by a system adminstrator. Further involved including these interfaces within a network fire-wall so that access to a distributed environment can be controlled, and the integration of an audit trail. This work has been undertaken as Hons projects. (See Harbottle 1995 Hons, Tran 1996 Hons and Nicolau 1998 Hons in CV page 16)

Impact of Language on Test Coverage. While at the UMD, candidate assisted Ms. Wu and Prof. Basili with some work on the impact of programming languages on test coverage measures. My part in this was as a minor author. (CV page 7).

The Relationship Between Software Development and Software Engineering. This work examines the nature and origins of engineering discipline and methods in a number of disciplines, and uses this to map a process for improving software development. This was the subject of Jason Baragry's PhD.

An honours project was also completed by Nguyen in 2004 examining the evolution of automotive air-fuel mixture systems.

[8] The initial work was undertaken by Jopley Oiyeng and David Cleary.

TAME. My work with Prof Basili and Dr. Rombach was on the Tools for A measurement Environment (TAME) project in 1986. This was directed by Prof. Basili. My role was assist in finalising the architecture, and to advise on protection strategies. The work on architecture validation led directly to many of the concepts which were embodied in the AAITP.

A number of internal working papers were produced (CV page 13)., but, there were no formal publications. The originality of some of the work can be judged by the fact that we still find ourselves in a relatively unexplored field.

The work on retrofitting protection systems (access control system) was of significance.

Prof. Basili can comment more directly on the value of my contribution during my six months at UMD.

Slicers for Fourth-Generation Languages. Two slicers have been built, as Honours projects. One for the ObjectStar language, and one for the Australian Fourth Generation Language Lansa.

Component Based Development Processes. Work with Middlesex University has focused on using SPICE as a basis , and was the subject of an ESPRIT contract.

Isomorphisms in design.

A concept being explored is the existence of isomorphisms between and across applications and application domains. Others (Suttclifee and Maiden are major contributors here) have pioneered this, however, we have been attempting to extend the concepts. In principle, it is possible that the number of problems (i.e. systems specifications) with unique solutions is limited, and that individual systems/designs/partial designs may be useable across a wide range of systems. This goes beyond patterns. This has been the subject of an Hons project (Bishop 2005).

Dynamically Varying Functionality.

Modern component based systems provide for dynamic linking of components, so versions of components with varying functionality may be linked into an existing system. We are exploring the semantics of this, and have identified several classes of solution and interpretation that are of interest.

Evolvable Software and Product-line issues and requirements.

The IESE people (Prof. Klaus Schmidt in particular) have expressed interest in being able to identify the potential evolvability of a requirements statement. This also related to product line issues. Some research in this area has been formulated. This has been in part the subject of an Hons project (Lou 2005).

Improvement to GQM and Its pervasiveness.

GQM as currently formulated is difficult to apply. We have explored approaches based upon taxonomic descriptions of projects that we think will improve its repeatability. This has been in part the subject of an Hons project (Purdy 2005).

Testing.

This work is joint with Dr. R. Hall, and Ms. Murnane's PhD. Murnane has developed an Atomic description of Black Box (BB)Testing which permits the description of most BB testing techniques using a common framework. This has been extended to include a tailoring approach based upon GQM, and Murnane is developing a tool support it. It uses the KABASPP knowledge layers as a basis. This may provide a basis for unraveling the pathological tester problem.

Multi-Media Processes. A comparison is being made between software development processes and those used by multi-media projects. This may lead to a better understanding of both activity. A survey has been conducted (see Hannington and Reed 2006, CV page 8). A survey of MM developers has been conducted, with interesting (and published) results.

Seminars. The candidate is reluctant to give to much attention to seminars that have been given. However, one, entitled "PROBLEMS AND FUTURES IN SOFTWARE ENGINEERING. Or towards an engineering discipline (An Iconoclastic view) originally sub-titled…"WHAT TO DO IN THE ABSENCE OF AN ENGINEERING DISCIPLINE" is worthy of mention. An early version was first given in 1991 at an ACS Special Interest group meeting during ASWEC. It has subseqently been given in revised forms, to[9]…

[9] The list is not complete.

The Albury-Wodonga Chapter of the ACS (Sep. 1991)

The Peninsula Campus of Monash University (Nov 1993?)

The Caufield Campus of Monash University (Dec. 1993)

The Lawrence Livermore National Laborartory's Software Technology Centre (Jan 1994)

James Cook University (July 1994)

University of Newcastle (Sep. 1994)

La Trobe University

IBM's Toronto Research Laboratories(Mar 1995)

The SEL at the University of Maryland, College park (Mar. 1995)

University of Victoria (British Columbia, Mar. 1995)

Invited Address for the International Applications of Prolog Symposium, in Tokyo in October of 1996.

Canadian Government Feb 1997

McMaster University, Ontario, June 1997, invitation from David Parnas

I.1.2.3 OTHER RESEARCH

Office Automation. A series of prototypes were produced over the period 1981 to 1990. These were not high-level research, but, have allowed various ideas to be validated. They have been implemented as part of the Software Engineering Project team work at both RMIT and La Trobe.

Major concepts tested include automatic (commandless) text formatting techniques, in which document formatting cues are picked up from the text lay-out in much the same way that a secretary would. This can be used to handle standard paragraphing and sub-paragraphing without special function keys or commands[10]. This work was covered in part by a joint publication with students in 1985 (CV page 7).

Data Access Control. Investigations have been conducted into the feasibility of generating tailored user interfaces which permitted only specified data accesses. The approach has been to build an unbreakable layer which become the users interface, and checks commands, which are only passed on if they are valid. The data access allowed can be specified by an administrator.

Network Data Access Control. The above mechanism has been attempted within a fire-wall, and across non-homogenous platforms. This is significantly more difficult that the simpler case, above. These are described in the list of Honours subjects in Appendix VII, and have produced three Hons. theses.

Browser Technology. The issue here is simply to improve precision in the IR sense, and to improve navigation. Consideration can also be given to applying the AAITP Detract technology to this problem. See Appendix VII

A Second Project involved the development of position independent indexes for web-sites, so that material could be readily located even when it had been moved within the site[11]

Web-Site Usability Metrics. This was the subject of an honours topic which lead to the development of a novel approach to web-site assessment.

[10] First proposed, and incorporated in demonstrations in 1981. Currently, now independantly developed in Word 7.

[11] We note that SUT site uses a index…

I.1.2.4. INDUSTRY POLICY RESEARCH

The candidate has been the major author for a number of important submissions to government. The preparation of these submissions required substantial research in to industry structure and overseas industry policy, as well as the development of policy proposals for use in the Australian context.

In addition, the candidate has directed student research projects on Industry policy and structure as part of the RMIT Master of Business-Information Technology program in Singapore and Australia.

Recognition of this work lead to a Fellowship[12] of the Australian Computer Society in 1983, and a Keynote speaking invitation at the TRIADA Conference in October of 1991[13]. Recognition has also come in the form of two invitations to address ANZAAS on industry policy (1982 and 1989), and an invitation to address the 1992 UNESCO Workshop (see CV page 5).

During a recent trip to Japan (for the First APSEC), the candidate had an opportunity to meet with officials of MITI and of the Information Technology Promotion Agency. In addition, an invitation was accepted to present a paper at the Workshop on Software Engineering in Asia at the International Conference on Software Engineering at Seattle in April of 1995. This dealt with SE research strategies appropriate for the Pacific Rim.

During 1998, a plan for a National Information Technology Research Organisation equivalent to ten divisions of CSIRO was developed for the Australian Computer Society and put forward during that year's the Federal elections. ACS became increasingly involved in policy formulation at the national level of Government. A substantial part of the ACS proposals at that time were formulated by the candidate.

In 2004, ACS formed a National Board to develop Economic Policy. What had begun as a tolerated but highly visible activity by one person has become a main-stream ACS activity.

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[12] It should be noted that at the time this award was made, there were about 80 Fellows in a membership of about 10,000, and that Fellowship of ACS was as difficult to get as that of IEEE, and, far more difficult to obtain than for IE(Aust). The grade was given only for "an outstanding contribution to the field…". The citation is included in Appendix V.

[13] Other Keynote speakers included:-
Joan Bebb, Chief Engineer, Systems Engineering and Development Division, TRW
Dr. Jean-Marie Cordiu, Director, ESPRIT
Prof. A. Nico Habermann, Dean, School of Computer Science, Carnegie Mellon University,
Prof. J. Hext, MacQuarie University
Frank McGarry, Head Systems Development Branch, NASA/Goddard Space Flight Center
General Ronald Yates, Commander, US Air Force Systems Command

I.3. LINKS WITH INDUSTRY AND THE IT COMMUNITY
I.3.1. PROFESSIONAL ACTIVITIES
I.3.1.1. INTRODUCTION

The candidate has a long history of service to the Australian Computer Society, and, through it, to the Technical and Academic community. This includes pioneering the representation of the Australian Software Industry to the Australian Government, and, pioneering the Industry's formal international trade activity by organising the first Industry Trade Mission in 198I.

Service to the ACS has included serving as Branch Chairman to the Victorian Branch(1990), and as the sole Technical Board Director[14] (1989-1992). His contribution continues at a Senior level, as Director of the Computer Systems and Software Engineering Board. The candidate's involvement goes back to 1966.

Service to the community generally has included preparing and presenting the Bid for the 1992 ICSE14, in 1989, and liaising with the US and Australian organisations backing the conference, being one of the three initiators of the Asian Pacific Software Engineering Conference and the founder of the Software Engineering Research Consultative Council.

As the Chair of TCSE, the candidate was responsible for the overwhelming majority of all Software Engineering conferences conducted by the IEEE-CS, some 28 in all.

I.3.1.2. ACS
I.3.1.2.1. DETAILS

Engineering Computer Users Group. This was formed in 1966, and was a special interest group of the Victorian Computer Society. It met, and discussed issues relating to Engineering applications of computers, and continued until mid 1967.

Australian Computer Society Software Industry Committee. The candidate was appointed to this position in 1974. Discussion of the work undertaken here necessarily covers material presented in relation to the contribution to Industry. This appointment was held until 1988. Highlights of this activity are listed below:-

Regular Meetings. The ACS/SIC met regularly, in Melbourne, about six times per year, from the period June 1974 to July 1986. Meetings included presentations from a wide variety of Government Departments.

[14] The Society has recently appointed two additional Directors, for Computer Science and Information Systems, in 199I.

Submissions to Government. The two major submissions (IAC 1974 and 1983) have been mentioned several times, however, the ASC-SIC, made more than five major submissions, (the list in CV, page 13 is by no means complete), and a number of minor ones during the period to 1986. In all cases, the candidate was either the sole or major author, personally undertaking most of the research necessary for the submission (the 1983 submission was coordinated by Ms. Julie James).

The 1974 Submission ran to about 120 pages, and, the 1983 to two volumes. These are major works, including quite detailed policy options for industry development.

A submission was also made to 1982 IAC Inquiry on Industry Policy.

Representation of ACS at National Workshops, Panels and Committees. The candidate personally represented the Society at the a wide range of such activities. Again, the list on page 13 of the CV is not quite complete, but contains 12 such activities.

These provide an indication of the scope and range of the candidates expertise. The Committee is asked to note the invitation to be a Panellist during the 1984 Symposium on Legal Protection of Software (CV page 10).

Delegations to Government Ministers. The Candidate personally lead a number of these, and, made the first contacts between both ACS and Government at a National Level, and, the Industry (This will be elaborated further.) Meetings were arranged with (beginning in 1977), Senator Webster, Mr. Fife, Mr. Newman, Mr. David Thomson, Mr. Dawkins, Mr. Barry Jones, Senator Button, Mr. West, and others.

The meeting at Monash University, in 1977, where Senator Webster, the then Minister for Science, addressed a luncheon of representatives of the Software Industry, was, as far as is known, the first formal occasion of its kind.

ACS Briefings of Government. The Candidate initiated and organized ACS Briefings of Government and opposition. The first of these was, it is believed in 1978, when Federal Government parliamentarians were briefed.

In 1981, the ACS briefed the Federal Opposition, and in 1982, Senior Public Servants from Tasmania[15].

[15] This is expanded in Section I.4.1.1

A key briefing occurred with Senior Officers of the Department of Science just prior to 1983 Federal election.

International. The candidate represented the ACS (and the Industry) at the National Conference of the Japan Software Industry Association in 1982 and 1983. *On the second occasion, he Chaired the International Sessions, and, was the invited guest of JISA.*

Industry Surveys. The Candidate organized and conducted the first two surveys of the Software Industry, in 1979 and in 1981. The first of these was summarised in an article in 1981 (CV page 11), and the second used in the IAC Submission of 1983.

Another software industry survey was attempted in 1994-5 with support from DIST.

Seminars and Conferences. The ACS/SIC organized two seminars called "Soft-where, Soft-why, Soft-how", in 1977 and 1978. These were organised by an SIC member, and the Candidate presented papers at both (see CV page 9). These were subsequently summarised and presented, by invitation, at the Queensland Branch Conference in 1977.

The Export of Software was the title of a seminar organized in 1985 by ACS/SIC (and planned by the candidate), under contract to the then Victorian Government DITR. This was attended by 75 Industry executives, and ran for two days at Ballarat (July 23-25, 1985).
(See Industry section for more details). This lead to DITR funding the Software Marketing Organisation [16] initiative in 1986.

A National Organisation, the ACS-Software Industry Association, was formed by the Candidate in 1985. Trips were made to each Capital, and Branches were established in all States. This well be discussed in the section on Industry.

The Software and Services Industry Federation was established in 1987, under pressure and with an offer of funding from DITR. $300,000 was offered. This will be discussed further in the section on Industry (I.7.I.2). The ACS-SIA merged in to SSIFA, which eventually merged with AIIA.

[16] This involved injecting some A$15M in to the software industry. This was carried forward against the advice of the Candidate.

Victorian Branch Activity. The Candidate served on the Victorian Branch executive from 1977 until 1979, and from 1988-

As program coordinator, in 1978, the Candidate organized monthly meetings,

Being Elected Vice-Chairman, on his return in 1988, the Candidate ran unsuccessfully for Chairman in 1989, and was elected to that position in 1990.

As Chairman, the Candidate was responsible for smooth running of the Society's largest and most energetic Branch.

Since the position of Governor (now Director) of the Society's Technical Board had been taken up in January of 1990, and suitable candidates were available for Branch Chairman, reelection was not sought in 1991.

The Society's links with the State Government were re-asserted at a formal level.

The Candidate was from time to time responsible for liaison with the State Government.

Technical Board. In 1990 Technical Board was the largest Board of the Society. It had some 13 National Committees and Special Interest Groups (SIGs) reporting to it, played a major role in Standards activity, was responsible for coordinating with some 36 State SIGs. It was responsible for Industry Policy and for Technology Transfer. The Candidate was appointed as Governor (now Director) commencing in January 1990.

The Candidate over-saw the transformation of the Board from simply being a reporting mechanism to major tool of the Society. This was achieved by a cautious policy of appointments, establishment of new Committees and SIGs, and appointing Deputy Directors and Members Without Portfolio. Including State SIG coordinators, the Board now has 28 members.

The Computer Systems and Software Engineering Board. The Technical Board was split in to three boards (Computer Science, Information Systems, and Computer and Software Engineering) during 199I. The candidate retained responsibility for Industry Policy. The candidate was the only one of the three Directors to seek re-appointment in 1994.

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Major achievements are:-

Safety Critical Systems, the appointment of national Committee on Safety Critical Systems which has become a National SIG,

ICSE14, the successful conduct of that major conference,

Forming the Board in to a working policy unit within the ACS,

A submission to the PSA Inquiry into Software Pricing(by Dr. Zeleznikow, with the Director's assistance).

Initiatives providing input to the Society's Certification drive,

The Software Quality Association.

Formation of the Software Process Improvement Network (Initiated by Dr. L. Zucconi of CSIRO)

Formation of the Software Engineering Research Consultative Council

Formation of the Software Engineering Education Consultative Council

Applied Language Processing National Technical Committee has been formed.

Requirements Engineering National Technical Committee has been formed.

Software Architecture National Technical Committee has been formed.

I.3.1.3. SUMMARY

The above, while lengthy, is by no means complete. The candidate has attended every ACS national Council Meeting since November 1974, except for about six. (There have been some 58 Meetings). Much of the standing that ACS had, both publicly and with government during the period 1974 to 1992 was due to the Candidate's activity. The Society received regular exposure through the press and radio, and through occasional "Notes on the News" broadcasts.

A particular high-light was the invitation to comment on the 1983 Federal budget as Saturday Guest of the ABC in 1983.

I.3.2. IEEE-CS

The Candidate has served on the Board of Governors for two terms[17] (1997-2000,2001-2003), and as the Chair of the Technical Council for Software Engineering for two terms. In this latter capacity, he served on the Harlan D. Mills Award Committee for three years.

[17] IEEE-CS rules do not permit more than two consecutive terms to be served.

He has served on the Standards, Chapter, Membership and Technical Activity Boards. He was Vice-Chair for Body of Knowledge Projects at TAB. He has also built a reputation for integrity, plain speaking, political acumen and negotiating skill. A reference from the senior elected office bearers can be provided if needed.

He has been able to influence IEEE-CS policy on a variety of issues, and could claim to have been responsible for that body's reactivation of its public policy activities.

He also represented TCSE on the over-sight body for the Software Engineering Body of Knowledge project, SWEBOK.

I.4. INDUSTRY AND ADVICE TO GOVERNMENT

I.4.1. PIONEER OF INDUSTRY REPRESENTATION

The claim is made that the Candidate has been a pioneer in the area of Software Industry Representation and Promotion in Australia. Some of the activities which justify that claim are covered in the section on ACS service. What follows are details of items not covered therein.

I.4.1.1. INDUSTRY POLICY

The submissions to the IAC of 1974 constituted the first attempt by the Software Industry to influence the formation of Government policy. The submission included material on what was then the early stages of Japanese Information Technology Policy.

It also contained a series of proposals for a domestic industry policy which addressed the role of Computer Science Deduction and Government purchasing.

The Australian Industrial Research and Development Incentives Board policies, in 1975, did not allow grants to be software development. A campaign was run which eventually saw the Act amended to allow support for software in special circumstances.

During this period, meetings with the then Minister, David Thomson, were frequent, leading to his opening the Software Showcase in Sydney (about 1981).

Purchasing Policy[18] was a major issue for the Software Industry. Representations were made continuously over an extended period of time, both in face-to-face meetings and in formal submissions. It is difficult, in such matters, to know how much credit should be claimed for developments. However, the adoption of the National Procurement

[18] There were many changes in policy over the period being discussed. Many reflected our views, although they did not always seem traceable to our proposals. Some were reactions to our successful pressure, leading to reversals.

and Development Scheme reflected issues and suggestions raised by ACS-SIC, even though it was derived from a South Australian suggestion.

The Systems Integration panels established in the late 1980's, for the procurement of large software projects in the Federal government, directly followed arguments put to senior officers of DAS and DITAC, and pubic pressure from ACS. There is no question that we had substantial influence on this issue.

Participation in the Victorian Government's Computer Industry Advisory Group(1981). The Candidate became a member of this body, and made a significant submission on behalf of the ACS-SIC. This lead to the Candidate being involved at the State level in a wide range of consultations following the change of government.

The Franklin Dam and Industry Development. The briefing session for the Tasmanian Government has already been mentioned.

The argument was put that the $500M project represented a commitment to Tasmania's future, and, should be diverted to a meaningful project, such as the establishment of a Computer Industry in Tasmania. This was picked up by both the Wilderness Society **AND Barry Jones,** who made a great play of this during the election campaign. (We were subsequently told that the proposal had been "run" by Jones as the new Minister, for Science, but, had been withdrawn prior to submission to Cabinet.)

ACS/SIC Trade Mission (1982). As has already been mentioned, the Candidate organized and lead the software industries first Trade Mission to Singapore and Japan in October 198I.
The Japanese Software Industry Association asked the Australian Trade Commission(ATC) in Tokyo to arrange for an Australian delegate, and they asked the ACS. Their request for a single delegate was met with a Trade Mission of eight individuals representing four companies. The Mission went to Singapore and then to Tokyo. It was almost entirely privately funded, and received handsome organisational support from the ATC.

It can be said with confidence that this ensured that the Department of Trade and several State Governments recognised the industry, and subsequently, supported follow-up activity, including a Trade Show at the 1984 World Computer Services Conference in Tokyo. The development of ASOCIO, a regional trade association, was fore-shadowed during that trip, and will be dealt with later.

This may very well have been one of the Candidate's most significant achievements.

JISA Conference in 1983. The Candidate was invited to chair the International session of the Japanese Software Industry Association. This was a fully funded invitation.

World Computing Services Conference(1984). The candidate attended this Conference on behalf of the ACS, participating in negotiations on ASOCIO, and between the Australian and Japanese industries.

ACS-SIA. As has already been mentioned, the Candidate personally established the ACS-Software Industry Association in 1985. A series of presentations were made in all States. Explicit government support for the formation of ACS-SIA was obtained, with the help of local ACS Branches, in South Australia and W.A.

By mid-1986, the ACS-SIA had 130 members and properly constituted Branches in most states. It held the first[19] ever national executive meeting for an indigenous industry association in Canberra in June of 1986.

Other States. The Candidate, as National Chairman, was involved in consultations with Government agencies in NSW, VIC, SA, QLD and WA. The organisation's and his personal standing were such that he was invited to speak at the Queensland Government's equivalent seminar to the Victorian Software Export Seminar (see Section I.6.1.I.1). This was held on the Gold Coast in December of 1985.

The period 1987 to 1998 has seen a shift in the Candidate's role. Involvement in Government bodies has continued, but, chairmanship of industry bodies has passed to other hands.

Nevertheless, the candidate has continued to be been involved, on several occasions, often being invited at a personal level. (See CV page 20).

Information Industry Round Table. The candidate represented the ACS-SIC independently on the Information Industries Round-table. This body, formed by Ashley Goldsworthy in 1988 (I think), became a peak body, generating policy options for Government and Industry. The final demise of the ACS-SIC at the end of 1988, led to the representative position being abolished. **However, the Candidate received an individual invitation to participate further, from 1990 through to 1991.**

It is possible to state that more than 30% of a major policy document generated by the IIR came directly from the ACS-Technical Board policy proposals developed by the Candidate

[19] Other organisations did not, at that time, have branches in other states.

National Protocol Support Centre (NPSC). The Candidate represented the ACS-SIA on the working parties forming this body. The original proposal was opposed, on the grounds that it failed to recognise the difficulties faced by small companies. NPSC went ahead as planned, failed to reach its objectives, and was wound-up.

Information Industry Education and Training Foundation. The candidate was invited, as the ACS/SIA Chairman, to be part of the working party forming this body in 1988. When ACS-SIA merged with ASHA to form the SSIFA, the Candidate was appointed SSIFA's representative. Eventually (1990), SSIFA merged with the Australian Information Industries Association, and lost its right to independent representation. Just prior to this, the Candidate resigned, because of the Foundations failure to undertake genuinely useful activity.

Offsets Policy and the Partnership for Development(PDP)[20]**.** The Candidate played a major role in the evolution of the current policies for regulating the participation of transnationals in the Australian market through Offsets. Representations which began in 1978, and lead to the Candidate being asked to visit Boeing in Seattle in 1982[21] to influence their behaviour, given their $600M deficit in offsets. This process of interaction with Government eventually lead to major changes in the guidelines. These, however, were pre-empted by the Partnership for Development Program, which allowed the transnationals significantly more freedom in meeting obligations[22].

OTHER BODIES... The above is not a complete list. However, it is indicative of the level of activity both initiated and conducted by the Candidate.

SSIFA. As already noted, SSIFA (The Software and Services Industry Federation of Australia) was formed as a result of pressure from the Victorian government, who wanted a strong voice for the Software Industry. The Australian Software Houses Association was to be ACS-SIA's partner, and $300,000 was offered for a three year period.

ACS-SIA was well beyond the point where it could be managed by a volunteer, and, desperately needed a professional executive officer. With some reluctance, the SSIFA merger was accepted.

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[20] These two policies require some explanation. Offsets require a foreign company selling to Government to spend 30% of the contract value on some approved local activity. PDP requires fixed percentages of turnover in Australia to be spent on R & D and to be due to exports before being eligible for government contracts.

[21] Looking back on this, it was a case of "lambs to the slaughter…".

[22] Not before the Candidate negotiated the AAITP contract under the modified Offsets program.

The Candidate was Joint-President for the first year, and then Vice-President for the next two years, before resigning in 1990.

SSIFA, as already remarked, honoured the Candidate with Honorary Life Membership in 1989.

ASOCIO. As has already been mentioned, the Candidate became involved in negotiations to form a regional trade association during the trade mission of 198I. This was proposed by the Japanese, and had the backing of MITI.

Negotiations continued in 1983, and, were finalised during the World Computing Services Conference in 1984. The candidate played a major role in these negotiations, and in the process of obtaining Government support.

CSIRO D.I.T. During 1983, the Candidate was invited to join one of a series of working parties reviewing the CSIRO's contribution to the Information Industries. This may have come, in part, as a result of ACS/SIC criticism of CSIRO. The result of the working parties was the Division Of Information Technology.

One of the more pleasant experiences to befall the candidate was that of serving on the selection panel for the first round of appointments.

Computer World PC Test Centre-Green Room. The Candidate proposed the establishment of a PC Test Centre at RMIT"s AMIC. This was to be funded by PC World, a sister publication to Computer World. The selection of employees was also supervised.

Steering Committee for the Software Engineering Institute, DIST (March 1995). The candidate was invited on to this committee, which has been formed to plan the formation of a national Software Engineering Institute.

Indigenous Information Industries Group. The Candidate has been elected to the Interim Board of the above group in 1995, which is being formed to represent the 7000 odd companies in this industry sector. This organization, sadly, did not survive.

Proposal for the Development of a Semi-Conductor industry.A proposal (in a private capacity) during 1995, was put to a state government on this issues, and lead to the development of a consultancy to address this and other issues.

The National Information Technology Research Organistion. This was adopted as ACS policy for the 1996 elections, and dealt with the failure of CSIRO to expand in this area. It was for a body with a national Budget of A$300mp.a.

I.4.3. CONSULTING EDITORSHIPS-COMPUTER WORLD AND COMPUTER WEEK.

The Candidate wrote a column from Australian Computer World between July 1978 and May 1995. This was transferred to Computer Week in June of 1995. The column, known as "Essential Reed", first appeared weekly, then fortnightly, and then monthly, and now fortnightly. It was widely read, and dealt with a wide range of technical, political, policy and general issues relating to the Information Industry.

Others must judge the extent of its influence, however, it has been cited occasionally in refereed Conference papers.

Computer World Fellows Board. From 1986 until 1993, , the Candidate was Chairman of the Computer World Fellows Board. This is one of the most prestigious awards available in the Information Technology Industries sector. Generally, only three awards were made every year.

The awards are made to outstanding contributors who have generally, not been recognised by other awards. Recipients include Ashley Goldsworthy, Alan Power, Barry Jones and Richard Miller. The Candidate was made a Honorary Fellow in 1987, for personal service to Computer World and the Industry.

Consulting Editorships. These post was held from the formation of Computer World in July of 1978 to May 1995. The candidate was invited to join Computer Week as Consulting Editor in June of 1995, and continued in this role until May 1998.

Convenor Judging Panel, 1995 AITA awards. The Candidate was asked to undertake this task at short notice. The Australian Information Technology Awards were one of the most prestigous made in the industry, and were a joint venture between the ACS and APN.

I.4.4. CONSULTING AND COMMERCIAL INVOLVEMENT

The candidate has been involved in a modest amount of consulting, however, this has been limited by other commitments. It is listed here by way of support for other claims, and, because a significant part of this has related to Industry matters.

A complete listing can be found on page 22 of the CV.

Consulting Editorships(see I.2.I.3 above)

Investigation of Investment opportunity. Evaluation of a computer architecture developed by a company which was the subject of a take-over bid, for G. Farley and Assoc.

Expert Witness on Copyright Case (1986).

Investigation of Japanese Software Market. DITR 1984

Investigation of Japanese Software Market(1986). This work was carried out over a two-week period in Japan, for Austrade. A report was produced after a survey of a number of Japanese software houses.

Victorian Software Export Program(1989-1990). Advised the Government on grant applications for export promotion. Involved detailed investigation and assessment of companies and products.

Amdahl Huron Assessment. Negotiation and overall management of an assessment of a commercial software product for Amdahl. The detailed work was performed by the AAITP team.

Director, QSR Ltd. The candidate was one of La Trobe's directors on the Board of QSR, the "spin-off" company formed to exploit the software product "Nudist", developed by Tom and Lyn Richards. This appointment was terminated when QSR's management bought La Trobe out, since two of the LTU directors were considered recalcitrant.

Expert Witness, Telstra vs Read Only Memory and others (retained by Mallesons on Telstra's behalf) copyright case. This lead to an out of court settlement to Telstra's satisfaction.