

## Paul McIntosh

Melbourne  
Australia  
Mob: 0434 524 935  
paul dot mcintosh at internetscooter dot com

Australian Citizen  
Interests: Family, Vespa scooters, Technology, Web  
<http://www.internetscooter.com>

## Career Objective

Principle Engineer in Research and Development Systems and Software

My passion lies in the application of advanced computer automation to improve productivity and usability of software and systems in R&D environments. In this area I have a special interest in software/system visualisation and modelling, with a particular focus on complex real-time systems.

## Attributes

- 20+ Years Software/Hardware Experience in Australia (Sydney/Melbourne), New Zealand, United Kingdom and Belgium
- Experience across broad range of Engineering Disciplines – Research, Development Infrastructure Management, Embedded Development Tools Support, Systems/Software Integration, Software Design, Production + Test, Quality Assurance, Equipment Installation, Maintenance
- Experience across broad range of products – 3D, Defence, Telecommunications, Commercial, Product Development in both Software + Hardware disciplines
- Experience across broad range of platforms – 3D OpenSceneGraph, X3D, UML, IBM Rational, C#, C/C++, Java, Ada, Perl, Chill, Assembler, Distributed Systems, Web, Unix, Linux, Vax, Windows, Windows CE, VME, x86
- I enjoy my work

## Qualifications

- Computer Science PhD in submission (RMIT, completion June 2009)
- Masters of Science in Internetworking (UTS 2001)
- NZ Telecom Technicians Certificate + Supplementary Certificate (ATU 1990)

References available on request.

- **2008+ PhD Candidate/3D UML Software Modelling/RMIT Australia**
- **2004 Senior Tools Specialist/R&D/Xtralis Australia**
- **1999 Senior Engineer/Embedded Development Tools/IBM Rational Australia**
- **1997 Systems Engineer/Collins Class Submarine/Boeing Australia**
- **1995 Software Engineer/Telecommunications/Alcatel Australia**
- **1994 Test Engineer/Submarine Optical Systems/S.T.C. UK**
- **1992 Technical Officer/Telecommunications/New Zealand**
- **1991 Test Engineer/Submarine Optical Systems/S.T.C. UK**
- **1987 Technical Officer/Telecommunications/New Zealand**

## RMIT University

**Full-time Computer Science PhD Scholarship** Thesis: "*X3D-UML: User-Centred Design, Implementation and Evaluation of 3D UML Using X3D*". The thesis is currently in final write-up with submission due mid 2009. The PhD was initially started part-time in 2003 and I was awarded a scholarship in 2008 to complete full-time. The thesis presents an in-depth investigation into the practical use of 3D for UML software visualisation. This work presents the first comprehensive user centred study which examines the tasks users undertake currently, the issues that 3D addresses and a measure of benefit of the 3D solution compared to traditional approaches. This thesis also presents a mechanism for creating 3D software visualisations, a refined evaluation methodology and visualisation heuristics that together provide valuable resources for further research into this area.

Practical Skills gained/enhanced are as follows:

- Research Methods
- 3D development using C++ OpenSceneGraph + ActiveX
- 3D development using X3D and C#
- 3D development using augmented reality and animated 3D statecharts
- Application on 3D visualisation to real-time software modelling
- Integration of complex ideas
- User Interaction and Useability techniques
- Technical Writing
- Presenting at International Conferences
- Research Collaboration

Academic Results:

The following are the papers published to date as a result of this research

**X3D-UML: Enabling Advanced UML Visualisation Through X3D.** MCINTOSH, P., HAMILTON, M. & SCHYNDEL, R. V. 3D technologies for the World Wide Web - Proceedings of the tenth international conference on 3D Web technology. Bangor, United Kingdom, ACM Press. (WEB3D 2005)

**3D UML Heuristic Challenge.** MCINTOSH, P. & VON PILGRIM, J. 2nd Workshop on the Layout of (Software) Engineering Diagrams Herrsching am Ammersee, Germany, ECEASST. (LED 2008).

**X3D-UML: 3D UML State Machine Diagrams.\*** MCINTOSH, P., HAMILTON, M. & SCHYNDEL, R. Proceedings of the 11th international conference on Model Driven Engineering Languages and Systems. Toulouse, France, Springer-Verlag (MODELS 2008)

**Eclipse GEF3D: Bringing 3D to Existing 2D Editors.** VON PILGRIM, J., DUSKE, K. & MCINTOSH, P. Journal of Information Visualisation. (Volume + Issue pending) (2009)

\*This paper was also awarded best paper at the annual RMIT student conference

## Xtralis Pty Ltd

**Senior Tools Specialist** managing the Melbourne product development tools infrastructure. A sole position, providing internal consulting services to Xtralis in order to achieve maximum business benefits from the deployment of Development Tools. The role also included a major project of migrating the complete infrastructure to a new building, new servers and new domain. Xtralis (ex Vision Fire and Security) is a global leader in very early warning smoke detection, fire protection system monitoring and control, with the Melbourne site having 200 staff, with 40 developers.

### High Level Tasks:

- Fitting tools and associated processes to business needs
- "Hard coding" business processes
- Liaising with business stakeholders internal and external (such as contract renegotiations)
- Managing Support interactions with vendors (such as IBM)
- Assistance with Adelaide Product Development site (ADPRO)
- Troubleshooting
- Staff Training

### Medium Level Tasks:

- IBM Rational ClearCase Administration (Configuration Management)
- IBM Rational ClearQuest Administration (Process Management)
- IBM Rational Test Administration (Testing Infrastructure Management)
- IBM Rational RequisitePro Administration (Requirements Management)
- IBM Rational RoseRT UML, Mathworks Matlab Administration (Development Tool Management)
- License Server Administration (High availability of licenses for all products)
- Managing the Standard Operating Environment of client machines
- Managing Integrations (Compilers, MS Office, Databases, inter-tool)
- Intranet Administration
- Process Documentation
- Tools Research and Advice (i.e. investigating alternatives)

### Low Level Tasks:

- Development of tool integrations (C#, Perl, Visual Basic, Shell, Php, ClearCase triggers, batch)
- Troubleshooting network issues
- Database Administration (Oracle 8i, 10G2, Sybase, DB2, Access)
- Server Administration (Solaris, Redhat Linux, Windows Server, VMware ESX Server)
- Licensing collection and statistics
- User account management

**Senior Test Engineer** (1 year initial role) designing and executing functional and system level integration tests within the Test Engineering Group in support of developing Very Early Smoke Detection systems. The role included working with Matlab to help develop a model based testing strategy.

### Projects:

- VesdaNet System Test: System testing of new fire protection (VLF) network interface card
- Open HLI: System testing of High Level Interface (to VesdaNet) card updates
- Display: System testing of display updates
- VLx: System/Product Test Lead on new VESDA product range
- Data Gathering: Research project into product field performance
- Relay Card: System/Product Test on new (VLF) relay interface.

## IBM Rational Software

**Senior Technical Support Engineer** supporting Rational Software's Embedded Development Tools. The tools being Apex/TestMate (Ada Programming Environment for X-Windows), Rose RealTime (UML C/C++/Java Development tool for Embedded Systems) and Test RealTime (C/C++/Java/Ada Runtime Analysis + Component Testing).

The role involved providing specialist technical expertise to software developers (both external and internal to Rational) developing real-time systems using Rational's embedded development products. The tools provided full SDLC support for large teams on a large variety of projects (such as the Jindalee Over the Horizon Radar Network project). In this role I provided solutions to developers' issues with the tools, collaborated with Rational's Development houses in North America/Europe to resolve defects, and created technical articles for publication on the web. The role also involved internal training and presenting Rational solutions at Embedded Conferences and Rational User Groups.

Basic skills gained/enhanced are as follows:

- Technical problem solving in all areas of software development
- System Admin– Unix (True64, Solaris, HP) + Windows (NT, 2000, XP) + Linux
- C/C++, Ada 83/95 and Java Programming
- Unified Modelling Language and Object Oriented Analysis + Design
- Rational Unified Process
- Integrated Tools – ClearCase, Summit CMVC, Testing Tools, Visual Studio, Visual eMbedded Tools, Rational Quality Architect, Rational Purify/Quantify
- Target Operating Systems – Dec Alpha, Rational Exec, Windows, Windows CE, QNX, Linux
- Technical research skills
- Communications, International Team Work and Customer relations skills

During my time at Rational I completed a Masters of Science in Internetworking part-time at UTS, applying it to my work where possible. My final year project involved applying Rational Rose RealTime to the development of Windows CE Infrared applications for the Pocket PC. This project has lead to contract work developing a PocketPC Windows CE MFC/Wireless robotic control application for a US company (under a NDA).

## Boeing Australia Ltd (with Security Clearance)

**Systems Engineer** in the System Integration Team for the Collins Class Submarine Contract. This position involved working within the Integration Team to document, isolate, analyse and, where necessary, provide fixes for faults arising from integration of control systems within the submarine. The scope of the position also included planning and execution of high level system integration tasks.

The above translates to hands on experience in problem solving and rectification in most aspects of the Collins Class Combat System and development environment. This includes CSC's Tactical Data Handling System, Thomson Marconi Sonar and extensive experience with the Combat System's connection with the UNIX/Sun network test environment.

Basic skills gained/enhanced are as follows:

- Ada Programming - VADS
- UNIX/Sun Network – administration, programming, scripting, fault finding (sniffer)
- VME architecture - DY4 744/740 Ethernet Card especially, Vmetro
- All aspects of system from low level hardware, through to software and top-level design specifications.
- Planning, review and execution of test plans.

## Alcatel Australia Limited

**Software Engineer**, Switching Systems Division - The position that involved undergoing training in System 12 distributed processor telephone exchanges and then using the gained knowledge in wide variety of situations.

**Integration Test Facilities Team (Liverpool, Sydney):** Testing and trouble shooting of new exchange software with relation to new facilities. This involved taking the initial software package, released by the design department, and engineering it work to the customers (Telstra) specifications.

**Facility Design Team (Antwerp, Belgium):** Working in the design team developing software related to enhanced telephone facilities. Involved production of specification documents, design reviews and coding in CHILL (both new code and redelivery of assembler patched modules).

**Customer Support (Liverpool, Sydney):** Involved field support for software currently used in Telstra's System 12 exchanges.

## S.T.C. Submarine Systems, Greenwich, UK.

**Contract Test Engineer (1 Year)** - Testing and commissioning of NL16/OAL LIE (Line Interface Equipment) and NL16 Submarine Repeaters. Testing and commissioning was carried out at all stages of production from hybrid subassembly stage through to completed system (CANTAT-3, Rioja) and using a wide variety of test equipment and methods from manual to automated.

### **NZIOOC, Telecom New Zealand**

**Contract Technical Officer** in the Telecom - New Zealand International Operations Centre, monitoring and improving the quality of C5, C6 and C7 international telecommunications links through the use of various automatic and manual test equipment.

Equipment used is as follows:

- ATME (NEC and AT&T Sentry), Telstra Telephone Call Quality Monitor, INET Signalling Analyser, NEC Service Test Console, NEC Service Observation Console, Data Line Analysers, PCM Analysers - Marconi, Elmi, WG PA20, BTI Digital Circuit Occupancy Analysers. NEAX 61E Gateway exchanges, ECI DTX 240 DCME's, OKI LRE, Digital Cross-connect Switch, STC VMUX, Telabs and Telesystems Echo Cancellers, SUN Network Management System

### **S.T.C. Submarine Systems, Greenwich, UK.**

**Contract Test Engineer (8 months)**, testing and commissioning the NL5 592 Mhz "submarine" laser optical repeaters at all stages of production. The repeaters were commissioned for undersea fibre-optic telecommunications links with a minimum life of 25 years.

### **Telecom Auckland Ltd, N.Z.**

**Telecom Technician Trainee**, which involved on the job training and completion of Auckland Technical Institute block courses in Telecommunications. I have worked in 3 main areas.

**Exchange Maintenance:** Maintaining local Step by Step, Crossbar and NEAX61E exchanges.

**Exchange Installation:** I was involved in all aspects of NEAX61E installation from rack mounting through power/data cabling to final commissioning.

**Transmission Installation:** Complete installation of transmission stations from seismic frame construction through to commissioning of STC VMUX and Fuji FOTS equipment.