Andrew Watkins, BSc.

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A very experienced, creative and practical Software Designer, Architect and Development Leader. Focused on creating great teams, solid processes and delivering quality products.

> **Objective.** I am interested in CTO, Technical Director, Software Engineering Manager, Senior Software Engineer or Architect roles with small or medium sized companies. I am motivated by interesting work and technical challenges. I expect a high salary but return high productivity, motivation and innovation. I work best in companies with a clear vision and shallow management structure who are seeking to create new, practical and innovative products. I am especially interested in projects associated with long term sustainability, energy, food, water and environment.

Employment History

Systems Development Team Manager   September 2008 - Present

Information Systems, NIWA - National Institute of Water and Atmospheric Research (Auckland, New Zealand)

- Recruited and managed new greenfield Agile Systems Development team including Database, Java, PHP, UI specialists and Systems Analyst.

- Instituted Software Engineering and SDLC processes and protocols including revision control, issue tracking, auto test etc.

- Reviewed and documented extensive legacy systems and databases.

- Introduced open standards metadata catalog and data entry tools.

- Liaised with science groups to develop new projects and capture requirements, created estimates and project plans.

- Acted as chief software architect, designing NIWA Wide Service Oriented Architecture and Data management processes.

- Key projects include Station Information Management System, Metadata Catalog, Freshwater Bio-diversity Information System.

- **Architecture & Design:** Requirements Analysis, Data Modelling, Estimation & Planning, WebUI Design, Web Services Design

- **Team Leadership:** Recruitment, Training, Engineering Processes, Scrum Master, Project Management

- **Programming:** Java, PHP, Python, C++, C, HTML, CSS, Javascript, SQL

- **XML Technologies:** XML, XSD, XSLT, XQuery, XForms

- **Open Geospatial Standards:** WMS/WFS, CSW, OM

- **Programming Frameworks:** PHP Symfony, JBOSS, STRUTS, SEAM

- **OS:** Unix/linux

Development team lead   September 2008 - October 2009

Auckland Group, Vianet International (Auckland, New Zealand)

- Vianet was a small startup company with a Web 2.0 accommodation and travel booking application htpp://www.vianet.travel. and http://www.travelbug.co.nz/.

- I was recruited to Vianet in order to run a new development team based in Takapuna and to work on a GDS (Global Distribution system) to Mobile Gateway delivering search, quote and booking solutions through mobile channels to Navman GPS devices and other mobile platforms.

- This application was written in Python on Pylons and mainly used XML data exchange processes. Over the 6 month project, using Agile we progressed from a one page requirements document to a fully operational product. Although technically successful the application has not yet been published due to commercial issues.

- After a re-organisation in April I took on the role of software manager and run the team working on the vianet.travel application.

- **Programming:** Python, PHP, HTML, CSS, XML, XSD, SQL

- **OS:** Linux, OS X

- **Protocols:** OASIS, GDS XML

UI Group Architect   April 2005 - December 2007

Personal and Car Navigation, Navman NZ (Auckland, New Zealand)

- Navman are a leading designer and manufacturer of GPS navigation systems.

- I was Team leader and Architect for the User Interface group and Project Technical lead for the 2005/6 N series products.

- Working in C++ on WinCE I designed and implemented the Navpix (Geolocated photo) feature.

- I was responsible for key improvements in UI usability, internationalisation, flexibility and graphic design as well as the successful delivery of the new products.

- After Taiwanese company Mitac bought Navman in 2007 I worked with their system engineers and an external product design company on specifying and developing a new high usability user interface.

- I was responsible for a wide range of technical innovations at Navman, winning the innovation prize in Spring 2007 and gaining a number of patents.

- **Architecture & Design:** Requirements Analysis, Estimation & Planning, Embedded Systems, LCD UI Design

- **Programming:** C, C++, ARM Assembler, HTML, CSS, XML, XSD

- **OS:** Linux, OS X

- **Protocols:** OASIS, GDS XML

Freelance Software Engineer   August 2001 - April 2005

Newland Software ltd

- I was a freelance software designer and developer providing everything from consultancy and advice on specification and design, prototyping, to implementations and hard code. My focus was on mobile phone and pda device applications.

- I worked from my home office for companies in the UK and overseas.

- Clients included: France Telecom, Mobix Ltd, Orange plc, Bridger Group, Picsel Technologies, MobileSoft Inc.

- **Programming:** C++, Java J2ME, ARM Assembler, Image Processing, Audio Processing

- **OS:** Windows CE (Pocket PC, Smartphone), Symbian Series 60, UIQ

- **Protocols:** CANBUS, Bluetooth, GPRS, GSM, SMS

Chief Software Engineer   August 1999 - August 2001

Sendo Ltd

- Sendo was a start-up mobile phone handset company with operations in the UK, mainland Europe, Hong Kong and China.

- My role was to design and develop the software for Sendo's first mobile phone product and also to build the software group growing 1 to 20 staff in 6 months.

- Analysis and design of Test and Development Tool and Interface requirements.

- Setup of development environment including compilers and debug tools, Clearcase RCS.

- Construction of Active X control interface module plus HTML user interface pages.

- Liase with suppliers, Recruitment. Design system startup and initialisation process.

- Write low level drivers for radio, lcd, keyboard etc.

- After 2002 Architectural and System Design activities for the then new Microsoft Smartphone OS.

- Design and Implement Resource management system and API. (patent filed), MIDI compiler for melodies, XML resource definition format, Unicode MMI, Spec and Design Production and Configuration Flow, includes XML for resources and configuration, Design software production process,

- Virtual Machine design for games module: Graphics toolkit, wrote PC emulator, text layout, editors, menus, list management, window management,

- Encryption systems for secure data transfer and simlock management, PC tools, secure plug in for configuration system ATL C++ COM, with a VB6 front end

- Internationalisation spec and Design esp Chinese language, Unicode version of MMI.

- Tegic T9 predictive text input - editor and integration, Chinese languages - Simplified and Traditional, Stroke and Pinyin

- Chinese Character Bitmap compression algorithm.

- **Team Leadership:** Recruitment, Training, Engineering Processes, Managing Contractors

- **Programming:** C, C++, ARM Assembler, COM, ActiveX, XML, HTML

- **OS:** Nucleus+, WinCE Smartphone

- **Protocols:** GPRS, GSM, SMS

Technical Director   November 1998 - 2002

Ansae ltd (Warwickshire,)

- Ansae ltd was a startup venture by myself and an associate to design and develop Java and HTML based network computers for the Museum industry.

- The project won SMART award funding in Sept 1999 and had some early sucesses with various museums in the UK including the London Science museum.

- The systems are based on StrongARM, VxWorks and WinCE. with High level applications written in Java.

- **Programming:** Java J2ME, XML, HTML

- **OS:** Linux, VxWorks, WinCE

Education

Bachelor's degree in Combined Honours: Computer Science, Geology Chemistry   Summer 1984

The University of Aston in Birmingham

- Geology Science Prize

Master's degree in Mathematics

The Open University

After completing multiple level 1 and 2 modules I withdrew from this course when I relocated to New Zealand.

Skills Summary

- **Team Leadership/Management:** Team Building, Training & Mentoring, Engineering Processes, Managing Contractors

- **Architecture & Design:** Requirements Analysis, Data Modelling, Estimation & Planning, WebUI Design, Web Services Design

- **Software Engineering Processes:** Agile/Scrum Methodology, Test Driven Development, Issue Tracking , Collaborative Communications (Confuence Wiki), Auto Test/Build, Unit, Functional and UI Test

- **XML Technologies:** XML, XSD, XSLT, XQuery, XForms, eXist DB

- **Programming languages:** C++, C, Java, PHP, Python, Forth

- **Open Geospatial Standards:** WMS/WFS, CSW, OM

- **Programming Frameworks:** Symfony, Struts, Pylons

- **Operating systems programming:** Unix/linux, Symbian, Windows32, Windows Mobile

- **Advanced concept expertise:** real-time computing, embedded systems, design patterns, multi-threading, compilers, interpreters, object-oriented design, object-oriented programming

Associations

Online Organisations

- Founder, NZ CRI Developers Network, 2010

- Member, NZ Dataversity, 2010

- Member, Open Government Ninjas, 2010

Skills Details

Software Engineering Processes

- I am committed to continually improving the process of developing quality software.

- At Vianet and NIWA I ran the development teams using Agile/Scrum methodology. Scrum involves iterative, test based development with regular releases and whole team commitment to the process and tasks. This allowed us to deliver new features in a timely fashion with high software quality and repeatability. At NIWA we refined the process to allow the team to deal with a wide and varied range of ongoing projects and legacy systems.

- At NIWA I introduced a full range of software engineering processes including, revision control, issue tracking, wiki based documentation, unit and functional testing, automated continuous test and build, test driven development, virtualised dev, test and production deployment servers along with a re-centering of development on user driven requirements and analysis.

- At Sendo I recruited and managed a large team up to 40 Developers during the high growth start up phase of the company.

User Interface Design

- I have proven skills in Systems Architecture and User Interaction design. I prefer a layered approach to systems design using pure CSS and HTML whenever possible and separating styling, content and behavior.

- I have a good understanding of human factors, usability issues and technical constraints, and continue my personal education in this area.

- At Navman I was responsible for major improvements in both the visible face and usability of the GPS GUI and also the underlying architecture, versatility and internationalisation.

- At NIWA I was responsible introducing a common style guide and css stylesheets for online applications. Using CSS2, AJAX and JQuery we improved the ease of use and functionality of major systems.

- Although not a professional graphic designer I have a strong aesthetic sense and comfortable skills in Adobe Photoshop and Illustrator.

Test

- I have worked with Test Driven Development processes since 2000.

- I seek to introduce full coverage unit and functional testing, automated test and build etc. whereever I work and have developed methods to test mobile devices, distributed networked systems, xml messaging etc.

- Familiar with JUnit, PHPUnit, Fixtures, Unit Function and Web UI tests. Selenium

C,C++, Java, Object Oriented Programming: Expert

- I have used C++ since 1987 and have used Object Oriented Programming and Design techniques to specify and develop a wide variety of class libraries, components and complete applications. I have used both Microsoft and GNU compilers for both Windows desktop applications and embedded Windows CE development and have given small and large group training courses in C++.

- I have used C since 1985 and have continued to use pure C in various embedded system developments where C++ was unavailable or inappropriate. This included GSM cellphone handsets, a medical data logger, and low level libraries for linux and image processing.

- I have been using Java since 1996. At Renishaw I ported an Active X control used to draw specific machine accuracy polar plots into Java so that the web application can be used across a variety of platforms. For Ansae (1999) I worked on HTML and Java based (J2ME) handheld information devices and control units for the museum industry. I wrote a cookbook describing the use of Java for Ansae Puppeteer products. At NIWA the team used J2EE/Struts/JBOSS extensively for middleware in major biodiversity and other online systems as well as SEAM/JFS in newer systems.

- Familiar with J2EE, J2ME CLDC/MIDP, Personal Java, JNI, RMI, Java Servlets, JBOSS, Tomcat.

Database, Metadata and Geospatial

- Familiar with SQL RDBMS (Oracle, MySQL, PostgreSQL/PostGIS). NIWA now favours PostgreSQL for new projects.

- Can design and implement data models, script queries and interface to frameworks through ORM such as Doctrine, Hibernate.

- Familiar with main Open Geospatial Consortium (OGC) protocols, GML, WFS, WMS, CSW, OM. Used extensively in the design of new NIWA SOA.

- Familiar with IS019115, ISO 19139, ANZLIC, MCP, Dublin Core and other metadata formats.

- Implemented the Geonetwork Metadata package (BlueNetMEST) within NIWA and extended the profile for NIWA requirements.

Real Time and Embedded Systems

- Much of my experience is with embedded and real time systems.

- I can work closely and effectively with hardware designers, design and implement operating systems, device drivers, networking, debug support, user interfaces and control applications.

- I can manage and control the full software development life cycle for new consumer electronic devices. I understand issues of production, marketing, security and usability.

- Devices include: Navman Navigators, Sendo GSM Mobile phones, The Sendo/Microsoft Z100 Smartphone. The Ansae Puppeteer, Oakfield's Medical Data logger and Stack's motor-sport dashboard and data logging system.

- I also have extensive experience in Plant control including a full landfill gas power station. Water pumping stations and a nuclear materials testing rig.

Web Standards and Protocols

- I have been writing pure HTML since 1995 and HTML + Client side Javascript since 1997.

- At Renishaw plc I was responsible for introducing web technologies both as a Rapid Application Development (RAD) tool and also as the user interface for an intranet based distributed application. This project involved considerable use of XML as a server side data transfer mechanism.

- At Sendo I introduced XML as the data transfer mechanism between the order processing system and the handset configuration system and designed an XML system for managing and compiling MMI resources such as bitmaps, languages and melodies. I was also responsible for the design and implementation of the Intranet web site. This included a universal front end for handset test and diagnostics. At Sendo I implemented an Over The Air (OTA) diagnostic information system using XML and SOAP.

- At NIWA I introduced the use of XML Databases (eXist and Geonetwork), Designed XML schema documents, and wrote XSLT stylesheets for rendering and conversion. For the Historic Weather Event Catalog I introduced the use of Xquery and for other projects investigated Xforms. All new systems at NIWA are Restful, Standards Compliant and make use of open standards such as OGC:WFS/WMS/WCS etc.

- At Vianet I designed a Web Services Architecture that provided a gateway between a global accommodation booking service and mobile devices. I also designed XML APIs for web services and published XML Schema Documents to describe the interactions both for message exchanges and WADL ReST based requests.

Python

- At Vianet I used Python on Pylons to create a web services gateway linking a travel Global Distribution system XML API to Mobile GPS devices.

PHP

- At Vianet I used PHP on Symfony for the primary accommodation booking application - now Trade Me

- At NIWA we use PHP/Symfony extensively for lightweight or WebUI oriented projects. Support Python in some legacy projects and for modelling.

Windows CE

- I have been developing applications for Microsoft windows since Windows 3.0.

- I have experience in porting Windows CE onto new devices using Platform Builder as well as developing several complete user applications.

- For Mobix I developed cross platform applications for Pocket PC, Smartphone and Symbian devices.

- I was involved with the Microsoft Smartphone project since its inception and have developed drivers and applications for the Sendo Z100 and the Orange SPV. This includes an Instant Messaging/ Social Networking application for Orange.

Symbian

- I started working with Symbian in 2003

- I produced for Mobix applications for both the Series 60 devices e.g. Nokia 7650, 3650 etc. Also for UIQ devices e.g. Sony/Ericsson P800.

.NET, COM, ATL and ActiveX

- I am very familiar with these Microsoft component technologies and have designed and implemented a wide variety of COM objects including an automated test interface for the GSM handset, an encryption object, data capture and visualisation objects. These components include both ATL and MFC ActiveX technologies and have been used by both HTML, C++ and Visual Basic Clients. However for modern online systems I prefer not to use vendor locked technologies.

Forth

- I started using Forth in 1984 and worked for 10 years on embedded Forth systems for traffic monitoring, hydro data loggers and autosport instruments and dataloggers

- At Sendo I introduced Forth as an ultra lightweight alternative to using a Java Virtual Machine to host downloadable games on the handset.

- Although no longer common my early experience with Forth has given me a close understanding of other VM technologies such as the Java Virtual Machine (JVM) and Microsoft's Common Language Runtime (CLR)

Assembler

- ARM7, ARM9, StrongARM, 68HC11, x86, 68k and others. I am familiar with these devices both from a processor level debugger view and also to write time critical assembler sections.

Other Skills

- I hold a current NZ first aid certificate and driving license.

Last updated: March 26, 2011