CURRICULUM VITAE - MARTIN COLE
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Personal Brief

I am an Embedded Software Developer with over 25 years of experience. This has comprised mainly of work within the telecommunications industry. This includes Tait Electronics for ten years (a Mobile Radio equipment manufacturer) six years with 4RF Ltd (SCADA radio manufacturer). I have also worked in the Consumer Products, Power Management, Automotive and (presently) Fire Systems industries (as outlined below).

Working in all stages of software development and on many platforms (both large and small), I have experience in C and Assembly language equally. I have worked on a range of processors and Operating Systems. The processors include NXP, Renesas, Motorola HC11, Atmel, ST and TI DSPs. The operating systems I have used range in size from proprietary NEC Exchange OS down to a small 'ECos' also Micrium MicroC-OS as well as my own proprietary design.

I am very keen on Object Oriented methods and prefer to use them in my designs. I was trained in this at Tait Electronics by a team of Java developers keen to port these techniques to the C code-base platform we used in our radio software development. Hence the ideas of Use Case Analysis, Domain Analysis, Object states, Portability and Data Encapsulation are familiar to me. Although, however, I am aware of the trade-offs required when footprint and performance are concerned so I use these techniques as and when they are appropriate.

I also have Team Leadership and Project Management experience. I am happy to use this and enjoy working in collaborative relationships with other Engineers.

Education

1986 to 1989: **Victoria University and Canterbury University (New Zealand)**
Electrical Engineering Degree (Communications Systems)

1995 to 1999: **Massey University (New Zealand)**
Post Graduate Diploma in Business and Administration (Management)

Career Progression

September 2018 to Present

Johnson Controls Ltd

Principal Software Engineer

I am working in the Fire Systems team Building Services division of Johnson Controls.

I am currently working on a ground-up platform for a fire extinguishing product. This included architecture and design by me for twelve months followed by technical leadership of several Software Engineers and Interns to continue this development. I developed my own bare-metal scheduler We work using SCRUM and Agile techniques and I have undergone training as a Scrum Master.

During this time, I have developed skills in C# in order to provide GUI test interfaces to my product.

I also work closely with Hardware engineers and Technicians.

I am currently waiting for a patent approval for an invention that Johnson Controls has kindly let me spend time developing and putting forward to our IP team.

Development Platform

C#, C, Assembler
M68HC11, ARM7
LPCXpresso54608
LPCXpresso54606

Development Environment

MKS, IAR , CrossWorks
MCUXpresso
SCRUM

April 2018 to September 2018

Airspan Networks Ltd

Senior Software Engineer

Airspan Networks is a telecommunications company that produces pico-cell repeaters that are used in filling coverage gaps in LTE and 5G cellular networks. My role was to assist with the SNMP configuration management software of these portable cell-sites.

Development Platform

C, C++
Embedded Linux

Development Environment

GIT, Perforce
JIRA (no SCRUM)

October 2016 to April 2018

Pertronic Industries Ltd

Senior Software Engineer

Pertronic Industries is a Fire Alarm Systems manufacturer based in Wellington, NZ. I worked in a team of six Software Developers enhancing and maintaining networked fire-alarm systems software. The networks comprise multiple nodes sending PPP data via Protobuf messages to control and monitor up to many thousands of sensors and panels.

Their development process also utilises Agile methodologies. Our team comprises predominantly Senior Developers using highly collaborative methods of Design, Development and Test.

Development Platform

C, C++, python
Embedded Linux
ARM7, ATMega processors

Development Environment

GIT, CMake, Ubuntu, bash, pytest, pycharm,
JIRA, Crucible, Fish-Eye, Jenkins
GDB, ATMEL Studio, visual studio code
SCRUM, Agile

February 2016 to September 2016

ThaiGerTec Co. Ltd

Project Manager

ThaiGerTec is a Software Testing House based in Bangkok. I managed a team of Software Designers working on the development of a BUS monitoring tool. The tool is to be used by BMW and ThaiGerTec to replace their existing externally sourced tool. It is capable of monitoring and logging vehicle communications messages in both CAN-BUS and Flex-Ray protocols. The team consists of four members.

My project was the Design and Development of a Scripting Language which runs internally to the Monitoring Software. This language comprises of a Syntax Checker, and Compiler to parse C-like instructions which can perform automated tests and calculations during run-time. My responsibilities include Software Architecture development, Project Planning and Management.

Development Platform

C#, MVVM
Windows OS
Embedded Linux + Xenomai, Beagle-Bone

Development Environment

Visual Studio
Tortoise SVN
SCRUM, Orange Scrum

March 2015 to October 2015

Verifone NZ Ltd

Embedded Software Contractor

Development of EFTPOS terminal software

I was part of a team working on the development of EFTPOS terminal software. The role was to assist with the migration of terminals from the ANZ banking network to the new Verifone network. Tasks include transaction messaging and processing, data handling and storage, batch processing and communications fail-over processing.

Development Platform

C++
Proprietary OS

Development Environment

Visual Studio
Tortoise SVN
SCRUM, Agile

April 2008 to January 2015

4RF Communications Ltd

Senior Embedded Software Designer

Development/Optimisation of Aloha OTA Communications Protocol for SCADA RF Equipment

I worked as part of a team on the development of a SCADA radio designed to work with the Utilities Industry. My responsibility is the development and optimisation of a high-speed MAC protocol. I was involved mentoring and training others in this capacity.

Development Platform

Coldfire Processor, uC OS

Development Environment

Free Scale Code Warrior
Tortoise SVN

Nov 2007 to November 2008

Arc innovations Ltd

Senior Embedded Software Designer

Integration of Data logger to Automatic Metering Device

I ported data-logging firmware to an integrated Meter Recording platform. I wrote a driver layer that interfaces to a GE SM110 IEC meter using an ANSI C12.18 standard protocol. The purpose of the driver was to collect and manipulate analogue meter recording data to be used in billing applications.

Development Platform

ATMEL Mega256 (256k ROM, 8k RAM)
GE SM110 IEC meters

Development Environment

AVR Studio
IAR compiler
Visual SourceSafe
SCRUM, Agile

June 2005 to Nov 2007

Fisher and Paykel Ltd

Senior Embedded Software Designer

Development of Advanced Oven Cavity Controller and Graphical Display

I was in charge of a 'ground up' development of Oven Cavity Controller and LCD GUI software platforms.

Development Platform

Renesas M16C Processors (512k & 32k ROM)
Micrium GUI library and bitmap/font conversion tools
ST7 Lite processor (8k ROM) for motor control
Purpose written task Scheduler and system timers

Development Environment

HEW IDE
Subversion Version Control using Tortoise SVN.
KD30 (FoUSB , Flash over USB) and E8 debuggers

Oct 2003 to June 2005

Tait Electronics Ltd

Senior Embedded Software Designer

Development of Fourth Generation Trunked Mobile Radio.

I worked on porting a next-generation Trunked Mobile radio code base (written in assembler) from a Motorola MC68HC11 Platform to a Sparc Leon processor using C.

Development Platform

Sparc Leon Processor
Ecos Operating System
TIC5402 DSP

Development Environment

Linux based IDE using gdb, ddd and dsumon
GNU C Compiler and using splint
XML used for Database Design and System Interfaces
Rational Rose UML for OOD
Rational ClearQuest Issue Management System

Jan 2002 to Oct 2003

Tait Electronics Ltd

Senior Embedded Software Designer

Development of Fourth Generation Conventional Mobile Radio.

I worked on the development of a 'Next-Generation Generation' Conventional Mobile radio. This was a ground up hardware and software development designed to completely replace the old Third Generation range of Conventional Mobiles.

This involved re-designing the software modules for the Motorola HC11 processor in order to control a new digital and RF platform. The designs were done using Rational Rose and implemented in C on a TIC5402 DSP

Development Platform

TIC5402 DSP

Development Environment

IDE Windows based using 'Code Composer', Synth development boards and jtag emulation
Version Control used was CVS (and tkcvs)
Rational Rose UML for OOD
Rational ClearQuest for Issue Management

Jan 2000 to Jan 2002

Tait Electronics Ltd

Software Team Leader

Small Project Development and Enhancements of Tait Mobile Radio Software

I was the Software Team Leader of a group Developers. Together we maintained and enhanced the full range of Tait Software products.

My role involved planning, negotiating resources, coordinating, and controlling the range of small projects and bug-fixes dictated to us by the Manufacturing Department and our Customer Support Department.

This proved to be a natural progression from the work I performed in the preceding years as Customer Support Software developer.

Jan 1995 to Jan 2000

Tait Electronics Ltd

Embedded Software Designer

Small Project Development and Enhancements of Tait Mobile Radio Software

I worked on the maintenance of the Tait mobile radio software range. This encompassed bug fixing, as well as small market-specific enhancements. My role was largely customer-focused. Hence a lot of time was spent in communication, requirements capture, on-site commissioning and follow-up support of changes made. (Such customers included Chinese Gong An, UK Band III, Australian Conventional Networks, Transtel SA)

Development Platform

MC68HC11 microprocessor

Development Environment

IDE Windows based, 2500AD Assembler and Compiler
Nohau ICE
Orion HC11 emulators
Version Control CVS
Proprietary issue management tools
Various protocol analysers (Marconi, Rohde and Shwarz, HP)

Jan 1991 to Jan 1995

TSSC Ltd

Embedded Software Designer

Call Connection Software and Network Applications Development

I worked as Software Designer developing applications for Telecom NZ NEX61E exchanges. Projects included subscriber billing software modifications as well as call processing and interconnect software modifications for the Telecom G4 project.

Development Platform

NEAX61E Multi-processor switch

Development Environment

IDE was Unix based

Proprietary simulation tools

In-house Test Exchanges

Version Control used was Historian