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## 405 Seventeen Mile Rocks, Seventeen Mile Rocks, QLD 4073

# Highlights

Extremely capable and enthusiastic software engineer with an extensive background delivering advanced software solutions. Particular expertise developing rigorous embedded and autonomous systems. Harnesses best practice engineering processes and methodologies throughout the full software development lifecycle in both agile and formal-driven environments.

I have acquired considerable experience across the software development spectrum, in both permanent and contracting roles and team and independent environments. I am highly proficient in traditional object-oriented analysis and design methods as well as modern, functionally oriented techniques. I have acquired a rich vertical knowledge in multiple domains, particularly enterprise mining systems, aerospace and fleet management. My flexibility, motivation and relentless thirst for knowledge enables me to confidently approach new tasks and domains with success.

I continuously seek to excel the client’s expectations, improve my abilities as a professional engineer and build stronger relationships with stakeholders and peers. I thrive operating in stimulating and communicative environments where my colleagues and I can grow, mentor each other and develop innovative, world-class products together.

I simply adore embracing novel technologies and methodologies and have a genuine passion for creating and sharing software with the world professionally and personally.

# Proficiencies

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| Professional | Experience (years) |  | Personal |
| C++/STL/Boost | 5 |  | Clojure, ClojureScript |
| Linux | 4 |  | Common Lisp |
| Embedded Systems | 5 |  | Haskell |
| Object-oriented design and analysis | 5 |  | Java |
| Software Testing (Unit, integration, system) | 4 |  | OpenCL |
| Scripting (Bash, Ruby, Python, Lua, DSL) | 4 |  | Python |
| Parallel computing | 3 |  | Web applications |
| Network programming | 2 |  | iPhone/iPad |
| Databases (PostgreSQL, MySQL, SQLite, SQL Server) | 4 |  | 3d graphics |
| Editors/IDE (Emacs, VIM, VS, Xcode, Qt Creator) | 5 |  | Robotics |
| Configuration Management (GIT, SVN, Perforce) | 5 |  | Interaction Design |
| Change Management (JIRA, Rational Change) | 5 |  |  |
| Requirements analysis and specification | 3 |  |  |
| Continuous Integration (TeamCity, CruiseControl) | 3 |  |  |
| Build automation (CMake, autotools) | 3 |  |  |
| Knowledge Management (Confluence, MediaWiki) | 2 |  |  |
| Qt | 1 |  |  |
| Windows | 4 |  |  |
| C# | 3 |  |  |
| Mac OS X | 2 |  |  |
| Objective-C | 2 |  |  |
| UML | 3 |  |  |
| Graphics (OpenGL, Direct X) | 2 |  |  |

# Employment History

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| April 2010 – November 2011 | Leica Geosystems <mining.leica-geosystems.com> |  | Permanent |

C++, Boost, Linux, Apple, Objective-C, Ruby, JIRA, SVN, GIT, Enterprise, Embedded, SQL, Confluence

Full-time software engineering role within Leica Geosystems Mining - onboard division.

## Responsibilities

I was recruited into a team of 12 engineers, product managers and QA, where we collaborated with the Jigsaw Tucson-group on the Jigsaw and Leica High-Precision (HP) product range. The Jigsaw Fleet Management System (FMS) is a tier-1 enterprise suite of on and off-board systems for managing, optimized-scheduling and reporting of (primarily) truck-shovel operations in open and underground mines. The Leica HP products added crucial high-precision functionality to shovel, drill and dozer operations.

I was first tasked with enhancing the HP software. The recently developed HP product was specified in UML and developed using a TDD process into a traditional C++ application and loosely integrated with the Jigsaw FMS. I was well placed given my expertise and experience writing mission-critical C++ applications for autonomous systems. My 2010 HP work focused on adding and improving various sensor interfaces, including the Locata Positioning System and improving core HP infrastructure. The project used STL, Boost and ACE extensively and CppUnit and Google Test for unit/integration testing and a combination of Python, shell scripts and TeamCity for tooling.

I worked on Jigsaw for the remainder of 2010 - mid 2011. The tasks were diverse, ranging between feature enhancements, additional equipment interfaces and an excess of stability and performance improvements. The Jigsaw platform was unique in its architecture and construction. Consisting of a distributed system written in Obj-C, C and Ruby, it used the same, highly-configurable software on and off-board. Synchronization was maintained through a proprietary replication service exposed through an Obj-C ActiveRecord abstraction over PostgreSQL, SQLite and SQL Server. Jigsaw was cross-platform across Linux, Apple OS X and Windows. I was also involved in the early stages preparing a new hardware platform for porting Jigsaw and its dependencies.

All on-board software was developed using SCRUM with fortnightly sprints during 2010. Tasks were drawn from a running backlog and orchestrated through JIRA and MediaWiki. The lean workflow incorporated design and code reviews. Development process varied according to task complexity but due to short sprint cycles mostly negated big upfront designs. Instead, pair-programming was adopted as a method for design, review and knowledge transfer. SVN was employed for revision control whilst MediaWiki was used for both internal and external documentation.

Many changes occurred in the business space of 2011. Notably, the Jigsaw and Leica HP products were rebranded into the cohesive 'J' group and the on and off-board teams merged into a single unit. Nonetheless I saw additional responsibilities, including refactoring the complete Leica HP product into an algorithms library within Jigsaw. Given my previous .NET and graphics experience, I then oversaw redevelopment of a legacy .NET project, PitOps to upgrade its deprecated Managed DirectX backend to XNA. Finally, I proudly grabbed numerous side projects, including a Jigsaw iPhone client and 3d animation and marketing projects.

My swan song at Leica was working in a newly established team of five on a brand-new product, the J2 Dragline, a high-precision guidance system for dragline operations. The new product replaced the ageing, Series 3 Dragline offered by Leica, integrating seamlessly into the Jigsaw hegemony. Built from scratch to adopt best-practices, it was built upon a parallelised, event-driven system with soft-real-time constraints. The cross-platform software was written in C++ and made voracious use of the Boost libraries. Unit and integration testing was conducted via Google Test. Git was adopted for revision control. Finally, development was managed and documented in JIRA and Confluence respectively.

## Major Achievements

Compared to earlier roles, I believe my greatest accomplishment was flourishing in the extremely challenging and diverse technical and business landscape of a tier-1 enterprise solution provider. I also gained extensive domain knowledge of mining systems and operations.

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| April 2008 – December 2010 | BAE Systems Australia [www.baesystems.com/australia](http://www.baesystems.com/australia) |  | Permanent |

C++, UML, Linux, Perl, Python, Synergy, CVS, DOORS, Boost, XML, Real-Time, Object Oriented, Safety-critical

Full-time software engineering role in the Autonomous Mission Systems (AMS) division.

## Responsibilities

I was first recruited into a software development role on phase-two of the HERTI OC-1B project. A team of 30+ engineers was assembled to develop the flight and ground control systems for a world-first – a UAV certified for civilian airspace. I was initially tasked with requirements analysis of various sub-system interfaces. However, my capability in formally defining and capturing requirements using *Rational DOORS* and *Rhapsody* for UML modeling led to a request for more involvement in client-side requirements elicitation. All HERTI work was performed in accordance to *DO-178B* certification requirements using *MIL-STD-498*.

I was later afforded a sought-after position in the emerging Mantis UAV program, a larger, combat oriented aircraft. Competing with next-generation rivals, the success of the project was crucial for establishing BAE Australia’s presence in the global UAV market. A dual BAE UK and Australia effort, I was in a team of 10 engineers tasked with developing phase-one of the Flight Control Computer (FCC). Continuation to phase-two was dependent on our team completing all materials within eight months then proving capability through live flight trials.

My primary responsibility was engineering *real-time*, *embedded*, *object-oriented* software solutions for the support and test equipment, most notably the System Test Unit (STU). The STU is a *Linux-*based, aircraft and environmental simulator. The unit interconnects with the FCC and ground control, allowing all capabilities to be tested within a lab environment. I designed and implemented, on schedule, a per-vehicle reusable, *multi-threaded*, plugin-based system using an *XML* data layer in collaboration with other software, algorithm and system engineers. The design addressed risks in changing requirements and limited resources. The software was implemented in C++, with Perl and Bash for tooling and written in Eclipse and VIM using an agile, test-driven development approach with CppUnit. For configuration management, first CVS then Rational Synergy was used.

Following Mantis phase-one trials I was reassigned to the HERTI team and was responsible for expanding STU to support all HERTI systems. In addition I pioneered rigorous solutions for automating integration, deployment, documentation and verification activities.

## Major Achievements

I’m very pleased with all I accomplished working at BAE and the valuable experience I gained engineering safety critical systems. However, I’m particularly thrilled knowing the solutions I presented encouraged a continuing culture shift towards more modern, extensible and automated systems and processes.

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| August 2007 – March 2008 | Industrea (AMT) [www.industrea.com.au](http://www.industrea.com.au/) |  | Contract |

C#, VS 2005, .NET, UML, SVN, Gemini, Enterprise Architect, Infragistics .NET Advantage, WiX

Contracted to develop a range of configuration and training tools for a proprietary vehicle collision avoidance system.

## Responsibilities

I was the preliminary developer responsible for the on and off-board software of Industrea’s next-generation of vehicle collision avoidance system (CAS). The system defined, detected and alerted on hazardous collision scenarios between suitably equipped vehicles. Additionally, I constructed visual configuration, playback and simulation tools for programming and validating CAS equipment and personnel training.

I was responsible for all aspects of the SDLC until phase one was completed on schedule and handed over to a complete team for phase two. I adopted an agile development methodology with 3-4 week release cycles. Project management was primarily carried out using Microsoft Project and Countersoft’s Gemini Project Issue Tracking software. Finally I liaised regularly with the software development manager, the CTO and BHP stakeholders.

Requirements’ gathering was elicited through interviews and workshops in conjunction with *Enterprise Architect’s* (EA) requirements gathering tools. Specification, analysis and design of the business, data and client tiers were communicated through plain-text documents accompanied by *UML 2.0* and database diagrams built with EA and *MS Visio 2007*. The software itself was written as a desktop *C#* application using *Visual Studio 2005* and Managed Direct X with *NUnit* for unit testing. The backend was written using *CodePlex’s Repository Factory* against an SQL Server database. Installation and setup was managed with the *WiX* and *Votive* toolset.

## Major Achievements

The interactive tools I developed were declared an immense improvement, even as prototypes, on the existing text-based tools. Users were able to specify collision avoidance scenarios in minutes and immediately visualize feedback without expensive and time-consuming iterations of field installations and tests.

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| August 2007 – January 2008 | Industrea (GPS Online Pty Ltd) [www.industrea.com.au](http://www.industrea.com.au/) |  | Contract |

C++, C#, Cygwin, Eclipse 3.2, Visual Studio 2005, UML 2.0, Wavecom Wireless CPU (M1306B, Q2686)

## Responsibilities

Contracted in addition to my current role to develop a new *GPRS* communications infrastructure for asset tracking systems. I designed and constructed the firmware and developed all support tools and documentation.

## Major Achievements

I’m extremely proud of the success of the *Wavecom* project – on completion, Industrea was employing *GPRS* as its primary communications interface on a rollout of thousands of its *GPS* tracking units. Being my first commercial embedded system project I learnt a great amount about writing robust firmware and comms systems.

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| --- | --- | --- | --- |
| July 2006 –January 2008 | Industrea (GPS Online Pty Ltd) [www.industrea.com.au](http://www.industrea.com.au) |  | Contract |

C#, VS 2005, .NET 2.0, SVN, NUnit, Infragistics .NET Advantage, SQL Server 2005, WiX, OOP

## Responsibilities

Designer and developer for a 3-tier desktop-based GPS asset tracking and driver monitoring system geared towards the mining industry. Began work as part of a paid 60 day university internship before being contracted as a full developer. Software was designed in UML and written in C# using VS 2005 against an SQL Server database.

## Major Achievements

I’m most proud of my work on the journey replay tools and the knowledge I gained on geodesy and mapping systems.

# Education

## July 2007 Bachelor of Engineering, Software (Hons)

## University of Queensland

## Personal Interests

Motorcycle riding, social coding, startups, yoga, running, cycling, swimming, hiking, reading, food and travel.

# References

References are available upon request.