

## PROFILE

I'm a software manager, architect and developer with over 20 years of experience and broad exposure to different platforms and distinct segments of the software industry. As a consequence I've become versatile and quick to adapt to new projects, code-bases, and frameworks.

After working for QNX Software Systems early in my career, I founded my own company and began consulting in the embedded space. Since that time I've broadened my experience from software control systems to web-based platforms and big data.

When not writing software or keeping projects on track, I'm either drumming up business for a consulting cabal, Bytown Technology Group Inc., for which I am president, or managing a spattering of rental properties in the Ottawa area. If there's free time and weather-permitting, I can be found repairing my sailboat on Lake Ontario or kite-surfing somewhere warm.

## SKILL SET

- Experience as R&D manager, project & product manager, preparing budgets, SRED audits, proposal work, as scrum master & with agile
- Extensive experience in **embedded software design**, software **architecture**, high-availability, technical analysis & troubleshooting
- Extensive experience in embedded **user interface design** and development – both usability/human factors (especially with respect to touch screen displays/embedded form factors) and its **implementation** using various toolkits (**QNX Photon** & PhaB builder, Win32/MFC, Apple QuickDraw, Java AWT/SWT, OpenGL ES, Crank **Storyboard**, **Qt**).
- Extensive experience in RESTful **API design** & deployment
- Experience with software **guidance control systems**, software **PID** loops.
- Familiar with formal engineering practices and processes specific to **Medical Devices**, **Military applications**, and writing waterfall **validation protocols**, **hazard analysis**.
- Development with **POSIX UNIX** (Linux, Solaris, FreeBSD, **QNX 6**), **QNX 4**.
- Depth of knowledge in the field **Artificial Intelligence**; traditional heuristic and expert systems, genetic algorithms (classifier systems), genetic programming
- Years of experience with **C**, **C++**, **x86** assembly, **Lua**, **JavaScript**, **Java**, **Perl**, **PHP**, **Smalltalk**, **Python**, **Clojure/Scheme** and dabbled in many others.
- Strong debugging and troubleshooting skills, porting experience, proficiency with the **GNU toolchain** (gdb, gcc, makefiles), unix administration, docker, cvs/svn/git version control
- Postgres, MySql, Solr, MongoDB, Sqlite, Datomic experience
- Solid foundation in 3D graphics, 2D primitives, lighting algorithms.

C, C++	10+ yrs	Python, Perl	5 years	QNX 4, 6	10+ yrs
Smalltalk	3 years	Lua, JavaScript	3 years	BSD, Linux	2 years
Java	2 years	Clojure/Lisp	8 mths		

## CONTRACT & EMPLOYMENT EXPERIENCE

**CENX Inc.** (Ottawa, CA)

July 2015 – Present

[www.cenx.com](http://www.cenx.com)

Software Developer

CENX has written an orchestration platform to help telcos manage their infrastructure by ingesting huge data-sets and mining them for topological information that can subsequently be visualized and audited. I was part of the rapid-development team whose responsibility was to integrate new customers into an **operation support system** by augmenting the core code-base (written in Clojure) with new heuristics. I also held the role of software architect for the team (of 24) and spear-headed a far-reaching productization framework for Audit.

**Sightline Process Control Inc.** (Ottawa, CA)

Sept 2014 – Mar 2015

[www.spci.ca](http://www.spci.ca)

Software Consultant

Sightline develops **vision based inspection systems** for large manufacturing facilities. I architected and helped developed their next generation system for high volume product inspection and rejection. Qt/Python was used for the touch screen and data management layer while C++/opencv was used for vision analysis.

**Troo Inc.** (Ottawa, Ontario)

May 2012 – April 2014

[www.troo.com](http://www.troo.com)

Manager of R&D

Troo offers a wide range of **applications for managing and tracking commercial fleets** - aircraft, light commercial vehicles and off-shore marine assets. I lead the R&D group (staffing, project management, technical leadership, SRED audits), architected their next generation technology stack. Among my responsibilities was to present the technical vision to outside parties, write the foundation (in PHP & Python) for the server-side web-service framework on which the entire API-centric design was based, and product manage several GIS development projects, among them an on-time routing web-application (written in GWT) used to manage and track fleet activity and notify operators of schedule deviations.

**Team O'Neil** (New Hampshire, USA)

Dec 2010 – Dec 2011

[www.teamoneil.com](http://www.teamoneil.com)

Technical Consultant

Team O'Neil Rally School is the premiere training center in the world for rally car instruction. I served as a technical consultant for the development of **software based automotive training** systems.

**ERL Phase** (Winnipeg, CA)  
[www.erlphase.com](http://www.erlphase.com)  
Software Consultant

Mar 2010 – Apr 2012

ERLPhase is a world leader in the production of **transmission line protection relays** and recorders for the power industry. I extended their legacy framework (in C) and integrated it with a UI framework (written in Lua) targeting an embedded LCD front display.

**National Bank Services Inc.** (Plymouth, USA)  
[www.nationalbankservices.com](http://www.nationalbankservices.com)  
Project Manager

Oct 2009 – Aug 2010

National Bankcard Services is a leading provider of electronic payment and loyalty services. I managed a project for which Bytown Technology Group was contracted to provide low-level software components for their next-gen **financial transaction platform**.

**Bytown Technology Group Inc.** (Ottawa, Ontario)  
[www.bytowntech.com](http://www.bytowntech.com)  
Partner, Software Consultant

June 2008 – Present

Bytown Technology Group is an integrated hardware/software solutions provider. We are a collection of very senior consultants with a long history of technical achievement in the embedded device industry. We offer a wide range of services including embedded device development, analysis & design. My responsibilities at Bytown range from business & project leadership to software development and consulting.

**Proven Process Medical Devices Inc.** (Boston, USA)  
[www.provenprocess.com](http://www.provenprocess.com)  
Software Consultant

Feb 2007 – June 2009

PPMD are experts in the design, development, validation, and manufacture of Class II and Class III therapeutic and diagnostic devices. I assisted in the architectural design of QNX based software control system for an **artificial heart** & led team of 3 senior software developers to produce core elements (in C) of the control system as well as the user interface.

**Coherent Inc.** (Portland, USA)  
[www.coherent.com](http://www.coherent.com)  
Software Consultant

July 2008 – Sep 2008

Coherent is the world's leading supplier of photonics-based solutions. I was brought in to perform analysis of their software (written in C) to determine areas of deficiency. Their team was on their last leg trying to troubleshoot performance issues. My findings allowed them to make exceptional performance gains to such an extent that they were able to market a subsequent generation of product with the improvements (**laser power meter**)

**MMIST.** (Kanata, Ontario)  
[www.mmist.ca](http://www.mmist.ca)  
Software Engineer

Sept 2006 – July 2007

Mist Mobility Integrated Systems Technology Inc. (MMIST) is a world leader in the development, production and support of precision aerial delivery systems. I was the software lead for the CQ-10 SnowGoose aerial cargo delivery **unmanned aerial vehicle**.

I was dropped-in (excuse the pun) to take ownership of a complex code-base responsible for all software elements of the UAV control system including guidance and hardware integration. I extended the guidance system (written in C++) for custom military scenarios and augmented their falconview-based windows flight simulation and planning software.

Responsibilities also included direct involvement in live flight testing in the field and post-flight analysis. Obtained level II national security clearance.

**FlightFab Inc.** (Maryland, USA)  
[www.flightfab.com](http://www.flightfab.com)  
Technical Consultant

Nov 2005 – Dec 2005

FlightFab, Inc. is a quick response aerospace fabrication and design company. I was brought in to familiarize myself with an existing QNX 4 based **gamma-ray detector** they had inherited and subsequently streamline the deployment process and provide training and documentation so their staff could continue to maintain the product.

**Teather & Clifton Ltd.** (Ottawa, CA)  
Software Consultant

Sept 2004 – Apr 2005

TCL provides design and development services in the areas of installation planning, software, electrical/electronics, mechanics, control systems, and safety analysis. I designed and developed the firmware for an 8051-based microcontroller (in C/assembly) for a self-contained class II **x-ray blood irradiator**. Blood-irradiation is used to treat blood to reduce the risks to immuno-suppressed patients when receiving a transfusion.

**MDS Nordion.** (Kanata, CA)  
[www.mds.nordion.com](http://www.mds.nordion.com)  
Software Consultant

April 2003 – June 2004

MDS Nordion is a global leader in radioisotope technology used to prevent, diagnose and treat disease. I designed and developed the user interface and in-room displays (in C) for their next generation of cobalt-based class II **cancer therapy machine**. I also contributed to the design of the underlying dual-redundant software control system used to drive and monitor the gantry and collimator (containing the cobalt-60 source). Cobalt-based radiation is widely used to treat cancer patients and is especially effective for soft tissue applications such as throat and neck therapy.

**Minnetronix Incorporated.** (Minneapolis, USA)

April 2002 – Dec 2002

[www.minnetronix.com](http://www.minnetronix.com)

Software Consultant

Minnetronix is a medical device product company specializing in the design and manufacture of custom embedded software and electronics. I developed the graphical user interface (in C) used to configure a class III **left-ventricle heart pump** during the surgical procedure and to monitor its performance while in the patient.

**QP Software Systems Inc.** (Ottawa, Ontario)

April 2002 – April 2008

Principal, Software Consultant

QP Software Systems specialized in the design and development of critical software control systems as well as graphical user interfaces for embedded applications. QP acted as the vessel through which I contracted myself out for embedded work, but on occasion I would employ small teams (2-4) of senior-level contractors for larger projects.

**QNX Software Systems Ltd.** (Kanata, Ontario)

Jan.1998 – Jan. 2002

[www.qnx.com](http://www.qnx.com)

Software Developer

QNX Software Systems is a leading provider of real-time operating system (RTOS) software, development tools, and services for embedded design. At the time QNX was a privately held corporation, but has since been acquired and operated as an independent division – most recently by Blackberry/RIM.

As part of the Photon MicroGUI group, I was involved in many notable R&D initiatives:

- Team-lead for the 'skin' project that enabled the customization of the look and feel of the graphical widget toolkit. This involved both the creation of a full-featured editor and the development and integration of corresponding runtime libraries.
- Contracted to customers for on-site custom engineering services.
- Met with customers and third parties to assess technologies and forge relationships.

Development was mostly in C although a strong proficiency in C++ and the gamut of POSIX tools was essential. We were typically given responsibility for a project from start to finish, including design and testing. Porting third-party software was common, as well as maintenance of existing code-base. I a key developer for the following:

- Voyager and Mozilla web browsers (client front-end, SSL integration, plug-in support).
- Photon File manager (integration with desktop environment, file manipulation).
- Email client (IMAP 4, POP 3, SMTP support, fully threaded).
- Network configuration tool (DHCP, routing table, dialup setup).
- Build tools (front-end for library linker, floppy image creator).
- Dialer (PPP, PPPOE support, integration with CHAT & native scripts).

**Webhost Canada** (Ottawa, Ontario)  
Founder-Partner, Technical Lead

Nov.1999 – August 2000

Managed and co-administrated a virtual domain, web and email hosting service. These were early days before consolidation in the industry and the emergence of VPS services. I gained a great deal of experience in IT operations and proficiency with Solaris and Linux administrative tasks. Note we were not a merely reseller but maintained our own infrastructure.

**Axia Multimedia Corp.** (Calgary, Alberta)  
[www.axia.com](http://www.axia.com)  
Software Developer

Jan.1996 – Aug.1996

I wrote proprietary authoring tools (in Smalltalk and C++ for win 3.1) used to create Axia's training software and developed the multimedia engine for Microsoft Windows based learning products. A lot of refactoring was required of a previous code-base using a 3<sup>rd</sup> party framework (MFC was not widely adopted yet).

**EIC. LAN Operations** (Hull, Quebec)  
Network Administration and Support

May 1994 – Aug.1994  
Jul. 1993 – Aug.1993

I was employed for two terms with EIC (Employment and Immigration Canada) as part of small team that provided IT support to several hundred users. I gained experience administering large-scale IT operations, and dabbled in development of database-driven inventory software for windows.

## EDUCATION

**Carleton University** (Ottawa, Ontario)  
B.CS with honors

Sep. 1992 – Apr. 1998

The computer science faculty was well ahead of its time, known for its publications on **Object Oriented Programming** and its research in **Parallel Computing**, both areas with which I became very familiar and have since been embraced by the industry. In my fourth year I concentrated my studies on applications for **Artificial intelligence** and chose **Classifier systems** and **Genetic Algorithms** as the focus for my honors thesis.

**University Of East Anglia** (Norwich, England)

Jan. 1995 – Jun.1995

I enrolled in the **Information Systems** program at UEA for the spring term of 1995 on an exchange through my faculty at Carleton, and focused on **advanced graphics** and **human factors** in user interface design.

## OTHER

**Board of Directors, Kanata Sailing Club** (Kanata, Ontario)

Nov. 2002 – Nov.2003

The Kanata Sailing Club is a cooperative club that has been operating on the Ottawa River, just west of Lac Duchesnes, for more than 20 years. More information on the club and its services can be found at [www.kanatasailingclub.com](http://www.kanatasailingclub.com).

## LANGUAGES

- Native English speaker
- Functional French (10 years of immersion, little use in recent years) but can quickly re-acquire proficiency.
- Minimal Japanese (2 years of study)