CHRISTIAN W. DAMUS

Curriculum Vitae

■■■■■ Ave
Ottawa, ON, Canada

T 613.■■■■■
M 613.■■■■■
E christian@damus.ca

19 August 2017

PROFILE

I am an independent software developer/consultant with considerable experience in Java development (almost 20 years) and the Eclipse/OSGi frameworks. Since early 2012, I have consulted on numerous open-source and proprietary projects for large and small customers in North America and Europe, delivering innovative model-driven tools for health care information management, data interchange amongst heterogeneous schemas, real-time collaborative software systems modelling, satellite-based machine-to-machine communication applications, and more.

PROFESSIONAL EXPERIENCE — SUMMARY

Mar. 2012 — Present		Independent Consulting/Contracting
Mar. 2009 — Feb. 2012		QNX Software Systems Ltd
May 2008 — Feb. 2009		Zeligsoft Inc.
Aug. 2003 — Apr. 2008		IBM Rational Software
Sep. 2000 — Aug. 2003		Nortel Networks
Sep. 1998 — Sep 2000		Holonics Data Management Group, Ltd.

EDUCATION

Carleton University, Ottawa, Canada
> Baccalaureate of Computer Science (Highest Honours, University Medal) — 1998
> B.Sc. Geology (with Distinction, University Medal) — 1996

TECHNICAL SKILLS

- Model-driven software engineering using Eclipse modeling technologies
- Java (19 years), Objective-C, C, and Smalltalk programming; UML 2.x, OCL 2.x; SQL
- Eclipse plug-in development, OSGi
- Object-oriented analysis and design with design patterns and Design by Contract
- Relational database design; spatial data warehouse design; Oracle, MySql RDBMS
- macOS, Linux, iOS, Windows
- Eclipse IDE and PDE (Java), NetBeans, VisualWorks Smalltalk/ENVY

OTHER INTERESTS

- Music (piano, vocal performance), woodworking, reading
- Back-country canoe camping, cycling, softball, curling, racquet sports

REFERENCES

References will be supplied upon request. See http://www.damus.ca/ for testimonials.

PROFESSIONAL EXPERIENCE

Mar. 2016 to July 2017	**Ericsson** **Eclipse Papyrus-RT Project**

Funded by Ericsson and sub-contracted through Committerati Consulting Corp., I worked as a committer on the Eclipse Papyrus for Real-Time (Papyrus-RT) project. My primary areas of responsibility were the implementation of the UML-RT metamodel, with its perculiar deviations from the semantics of UML, and a façade API (also modeled with EMF) providing a more convenient domain-specific view of the models managed by the application. Another major contribution in the 1.0 release with Eclipse Oxygen was support for inheritance of semantic content and layout of the visual elements of the capsule structure and state machine diagrams.

Jan. 2014 to Feb. 2016	**CEA LIST, Ericsson** **Eclipse Papyrus Project**

Funded by CEA LIST and Ericsson and sub-contracted through Committerati Consulting Corp., I contributed new features, documentation, community engagement, and more to the Eclipse Papyrus project for its 1.0 release with Eclipse Luna and following releases through Neon. I served as a committer on Papyrus and also on certain key projects that it depends on, such as UML2 and EMF Connected Data Objects (CDO). Key contributions to Papyrus include improvements to transactions and undo/redo in editing workflows, more complete and intuitive handling of read-only model resources, repair and management of profiles and stereotype data, externalized profile applications, workspace model index, diagram assistants, the editor's "welcome" page, and hardening of the software in performance and stability.

May to Dec. 2013	**SkyWave Mobile Communications, Inc.** **SkyWave Application Studio 2 IDE**

Sub-contracted through Committerati Consulting Corp., I designed and implemented a next generation of the SkyWave Developer Studio product on the Eclipse platform. This was not a matter of porting code from the previous C#/Windows-based tool, to Java and Eclipse, but rather a re-design of the product from the ground up. The outputs of compiled and packaged applications are the same, as required by the satellite communication terminal platform on which they run, but everything from editing the Lua source code (using Eclipse's Koneki Lua Development Tools) to describing Lua-based services on the terminal systems using models is re-thought and improved with Eclipse technology.

May 2013	**Zeligsoft, Inc.** **Spectra CX Integration with IBM Rational Rhapsody**

Analysis and design of integration of Zeligsoft's (PrismTech) Spectra CX product with IBM Rational Rhapsody. Whereas Spectra CX is built on IBM Rational Software Architect (RSA), which provides a rich UML modelling capability, this project integrates Rhapsody as the front-end for UML modelling in the Spectra CX tool. This entails updates to Zeligsoft's Domain Development Kit (DDK) product using the Rhapsody API to generate Rhapsody profiles in addition to RSA profiles to extend UML for a particular embedded software domain, especially based on the Software Communications Architecture (SCA) for software-defined radios. Also, plug-in extensions in the Rhapsody tooling push the user's model to Spectra CX for validation and code generation.

Sep. 2012 to Apr. 2013　　　**CEA LIST**
　　　　　　　　　　　　　Papyrus Integration with CDO Model Repositories

Funded by CEA LIST and sub-contracted through Committerati Consulting Corp., I contributed design and development of integration of the Papyrus UML modelling workbench with the CDO model repository technology. This comprised contributions of new features to the Eclipse UML2 and CDO projects to support persistence of UML models in CDO repositories, as well as enhancements in CDO's support for graphical modelling applications based on Eclipse GMF, and CDO-based workflows in the Papyrus application. During the term of this contract, most of the Papyrus workflows for persistence of models (and all of the most common use cases) were adapted to support persistence in CDO repositories as an alternative to the local filesystem (Eclipse workspace). This included not only extensive refactoring of Papyrus's foundation APIs for model management and editing, accounting where appropriate for backwards-compatibility considerations, but also refactoring of the user interface and development of new user interface components for interaction with repository content.

Apr. 2012 to Jan. 2013　　　**ModelSolv, Inc.**
　　　　　　　　　　　　　Model Hub Model Interchange Engine

Sub-contracting through Committerati Consulting Corp., I joined with a small team developing a model interchange system for a large multinational bank. Through a web application interface, users extract data from the central model repository in the form of UML models (multiple dialects for different UML tools), WSDL models, XSD schemas, or other representations. These are modified in the user's tool of choice and submitted through the same web application to update the central repository. The multiple representations of the data effectively implement $M \times N$ bi-directional transformations amongst all representations with M bi-directional transformations on a pivot model. This pivot is the basis on which model deltas are computed from updates submitted by users, and transformed deltas shipped out to push the updates to other repositories.

March to July 2012　　　　**Office of the National Coordinator for Health Information Tech.**
　　　　　　　　　　　　　Model-Driven Health Tools (MDHT)

On the Model-Driven Health Tools project, a sub-project of the Open Health Tools open-source project funded by the ONC and sub-contracting through Committerati Consulting Corp., I contributed bug fixes and new features in the generation of constraints expressed in Object Constraint Language (OCL) from in model-to-model transformations. User models conforming to the Clinical Document Architecture (CDA), as implemented by UML profiles, define various terminology and structural constraints through class properties, associations, and stereotypes. These, then, are transformed to Ecore models for generation of Java code, including OCL constraints that check the conformance of clinical data captured by an application against the requirements described in the high-level UML model.

Sep. 2010 to Feb. 2012　　　**QNX Software Systems/Research In Motion Ltd, Kanata, Ontario**
　　　　　　　　　　　　　BlackBerry Tablet OS

Following the acquisition of QNX by Research In Motion, I took advantage of an opportunity to develop my systems programming skills to help the small Core OS team take on the considerable challenge of delivering the first release of the operating system for the BlackBerry PlayBook tablet device. I first took on the responsibility for the service that implements power management for the displays,

both the on-board LCD and backlight, and the HDMI interface. This comprised a process, implemented in C, which automatically dims and shuts off the displays on user inactivity when video content is not playing, shuts them on or off when the power button is tapped, and more, based on user configuration and inputs such as the kind of power source that is connected, external displays and audio sinks, and other constraints. I also developed the user interface components for power management settings using ActionScript and the QNX UI toolkit for Adobe AIR.

When I had brought the display power management to its initial release readiness, I was refocused onto the security infrastructure for PlayBook as the development prime for the application authorization and launcher components of the operating system. One of the most important aspects of this work was the coordination of requirements from all of the teams developing system services and applications within QNX and RIM to ensure that their applications, or 3rd party applications using their services, could access the capabilities that they needed from the system without compromising system integrity or (without the user's explicit consent) the user's personal data. Adding complexity to this problem were the requirements injected by rapidly evolving corporate security use cases. All the while, I was still continuing to elaborate the display power management component as more audio and HDMI interaction use cases emerged.

Mar. 2009 to Aug. 2010	**QNX Software Systems, Kanata, Ontario** **Momentics IDE for QNX Neutrino RTOS**

I was a senior developer on a small team developing a rich integrated development environment (IDE), based on the Eclipse Platform and the Eclipse C/C++ Development Tools (CDT), targeting systems and application development in embedded and real-time systems on the QNX Neutrino real-time operating system (RTOS). I am the lead developer for the C/C++ projects and build component of the IDE, in which capacity I have made contributions to the Eclipse CDT project, as well as the System Builder component for construction and deployment of OS images to embedded hardware systems.

On the System Builder, I was tasked with a complete overhaul of the weakest component of the IDE, which traditionally had presented the greatest complexity to developers and generated continual requests for better support in the area of provisioning of the operating system and applications on embedded systems. The current technology simply could not evolve to meet the needs of the IDE's users, and its shortcomings risked driving customers away from the QNX Neutrino platform. I applied proven and novel techniques of model-driven development (MDD) to deliver a solution that provided the QNX hardware support teams with a domain-specific language (DSL) for describing components of the Neutrino RTOS with dependencies on software elements (binary and source), which fed into easy-to-use wizards and a visual editor with which the end user defines their system images. Moreover, these visual editing tools work seamlessly with a feature-rich text editor for two-way editing of the system definition files to support the peculiar needs of power users.

May 2008 to Feb. 2009	**Zeligsoft Inc., Gatineau, Québec** **Senior Developer, Domain Development Kit**

Lead developer on the Domain Development Kit (DDK), an internal model-driven development (MDD) solution for rapid construction of domain-specific extensions of the UML 2.2 modeling language, targeted to component-based embedded software systems. This included the definition of metamodels from which were generated UML profiles, model libraries, diagramming tools, and other components. The key Eclipse technologies employed in the DDK are UML2 and OCL for metamodeling, GMF for diagramming, and openArchitectureWare for model-to-model and model-to-text transformations.

The DDK tooling was used by the development team to construct the next generation of the company's CX component-based development software package. Zeligsoft CX offers deployment-aware code generation for embedded systems in various domains, including the Software Communications Architecture specification in the U.S. defense industry, POSIX-compliant operating systems such as VxWorks, and system-on-chip (SoC) environments such as DSPs and GPPs.

I continued as an Eclipse committer, leading the Object Constraint Language (OCL) and other components in the Eclipse Modeling Project. In this capacity I also represented Zeligsoft on the OCL version 2.1 Revision Task Force (RTF) at the Object Management Group. I was instrumental in re-invigorating the task force and contributed significant improvements to the 2.1 revision.

Aug. 2003 to Apr. 2008   **IBM Canada (Rational Software), Ottawa, Ontario**
                                                    Eclipse Modeling Project

Lead committer on components of the Eclipse Modeling Framework (EMF) and Model Development Tools (MDT) projects at Eclipse.org. Particular responsibilities included leading development of the OCL parser/interpreter for Ecore and UML (MDT OCL component), and the EMF resource management substructure of the Graphical Modeling Framework (GMF) project also at Eclipse.org (the EMF Query, Transaction, and Validation components).

I served concurrently as a senior developer on IBM's flagship UML-based modeling product, Rational Software Architect (RSA), which was based on these open-source Eclipse technologies. Primary areas of responsibility included model validation, OCL editing, refactoring, and model resource management. I also contributed as an architectural adviser on all significant new feature development across the Rational UML Modeling Platform.