# Thomas Micheline

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Software engineer with over 30 years of experience developing solid, extensible, and maintainable solutions while utilizing a wide array of technologies including C++, Java, Kotlin, and SQL meeting diverse business needs in industries including health care, telecommunications, military, publishing, and scientific research.

## Professional Experience

**Principal Software Engineer**
**VSee Lab, Inc., San Jose, CA, 100% Remote**
*From May 2011 to March 2023*

- Single-handedly ported VSee Messenger, a multi-platform video conferencing and chat application, to Android.  This included porting a large C/C++ code base, numerous third party libraries (Gloox, WebRTC, Boost, etc), implementing platform specific video processing, architecting the JVM/native communication tools using SWIG, and building the Java application from the ground up.  Developed the open source jni++ variadic template C++ library to call JVM code from C++ via JNI.

- Implemented VSeeKit for Android, an API for embedding VSee Messenger features in third party Android applications.

- Took ownership of XMPP chat features implemented in C++ and used by all platforms.  This involved working closely with the server team to optimize both one-to-one and group chats including extending XMPP specifications where necessary and developing optimized SQL queries for both the client-side SQLite and server-side PostgreSQL databases.

- Transitioned group chat features from using affiliation-based group membership to ejabberd's MucSub by extending the Gloox library.

- Led effort to modernize VSee Messenger's Android code base by transitioning from Java to Kotlin and implementing Clean Architecture.  This effort included strategic planning of architectural details, documentation of proposed architecture and coding standards, and a complete example application to illustrate and shake out the new architecture.

Senior Software Engineer II
**Moebius Solutions, San Diego, CA, 100% Remote**
*From August 2010 to March 2011*

- As a senior member of a scrum team, built an XML-DB backed, Intranet portal site for the US Marine Corp 1st Marine Expeditionary Force utilizing Ext-JS on the front end and Jersey-based web services on the backend.

Principal Software Engineer
**Global Crossing, Rochester, NY, 100% Remote**
*From May 2000 to July 2010*

- Designed and built BGP prefix filter maintenance application that polls the Routing Assets Database (RADb) to identify changes in customer route lists.  Changes are queued in an Oracle database until the relevant routers can be updated using a custom-built expect script with only deltas on each update to minimize changes to router configuration.  System includes a web-based dashboard with highly detailed historical analysis using JRuby with Rails and ExtJS.

- Built a Java Swing based desktop application that provides convenient access to in-house project/time-tracking web application that records time spent on individual projects.

- Designed and developed GlobalView, an Oracle database of the hardware and circuit information for Global Crossing's world-wide network which is leveraged by a variety of internal support and automation systems.   Populated via custom ETL utility which draws from a variety of sources, including router configurations and SNMP polling data.

Senior Software Engineer
**Mitchell International, San Diego, CA**
*From March 1997 to April 2000*

- Designed and implemented Quality Recycled Parts (QRP) server-side system which includes high-performance Oracle-backed database for storing and distributing automotive used part data supplied by the Automotive Recyclers Association (ARA) to clients connecting via dial-in TCP/IP connection.

Chief Software Architect and Partner
**RTD Systems & Networking, Tucson, AZ**
*From 1993 to 1997*

- Chief software architect for all in-house and commercial software products.

- Brought leading Internet Service Provider (ISP) account maintenance and billing software (UTA™ and NetReporter™) to market.  Designed and developed highly configurable systems for managing dissimilar account types, tracking on-line time for billing, and generating custom reports and invoices.

Senior Systems Software Specialist
**Sunquest Information Systems, Tucson, AZ**
*From February 1993 to February 1995*

- Ported system support utilities and scripts for hospital lab system to early release of Digital OSF/1 and brought first OSF/1 client site on-line.

Programmer
**Department of Chemistry, University of Arizona, Tucson, AZ**
*From January 1991 to January 1993*

- Designed and developed electron spectrometer instrument control and data acquisition software for the Surface Analysis Laboratory of the Chemistry department,  which replaced aging PDP-11 based control system with PC based system.

## Open Source Projects

jni++
**GitHub: https://github.com/TomMicheline/jniplusplus**

A C++ library utilizing variadic templates to simplify calling JVM methods from native code.  By specifying return and parameter types in templates, automatic type conversion and compile-time type checking are enabled while eliminating the excessive boilerplate of standard JNI code.

## Additional Skills

- **Languages: C++, Java, Kotlin, SQL, shell scripts, plus many others**
- **Platforms: Android, UNIX, Linux, MacOS**
- **Frameworks: Android SDK, Android NDK, Dagger and Hilt, Hibernate**
- **Databases: SQLite, PostgreSQL, Oracle, MySQL**
- **Tools: SWIG, gradle, git, svn, Android Studio, UNIX command line utilities**
- **Protocols: XMPP, WebRTC, TCP, UDP, JSON**
- **Native English speaker**