

PROFILE:

- Over 30 years of full-stack SDLC experience.
- Extensive experience with medical device development, including ultrasound, patient monitors, laboratory devices, POC devices, and clinical information systems.
- Extensive experience with clinical data interoperability (HL7, FHIR, ASTM, DICOM).
- Extensive experience with Windows Presentation Foundation (WPF) and Windows Forms frameworks in .NET.
- Extensive experience with Angular, Node.js, and React frameworks.
- Extensive mobile application experience with Xamarin framework on Android and iOS.
- Extensive back-end development experience with Java, C#, and C++.
- Extensive experience with messaging systems including Kafka and RabbitMQ.
- Extensive SQL experience with SQL Server, PostgreSQL, and Oracle.
- Over 20 years experience with full-stack Java architecture, development, and implementation.
- Over 15 years experience with full-stack .NET/C# architecture, development, and implementation.
- Database domain expert with extensive relational SQL schema design experience and API design experience utilizing Hibernate, Entity Framework/LINQ, Microsoft Sync synchronization, ADO.NET, JDBC, and ODBC.
- Active contributor to the HAPI FHIR open-source API framework and JPA Server.
- Experience implementing OAuth 2.0 authorization functionality into existing and new applications.
- Experience implementing SMART on FHIR compliant applications.
- Cloud-based development with Amazon Web Services.

KEY SKILLS:

- C#, Java, Typescript, Javascript, C++
- Angular 8 and later, Node.js, React, Java JDK, Spring, .NET, WPF, Windows Forms, Swing, WCF, Win32 API, Standard C++ Library, MFC
- SQL, relational schema design
- ADO.NET, JDBC, ODBC, Entity Framework, JPA/Hibernate
- FHIR, HL7, ASTM

STRENGTHS:

- Architecture, design, and development of scalable, high-availability, multi-threaded systems on Windows and Unix platforms.
- Extensive client application development experience with Angular, Xamarin, WPF, React, Windows Forms, Swing, and MFC/Win32.
- Database development using Java (JDBC, JPA/Hibernate), C# (ADO.NET, Entity Framework), C++ (ADO and ODBC), and SQL.
- Extensive middleware experience developing messaging systems and interoperability solutions for use with HL7, FHIR, ASTM, and DICOM in the medical environment.
- API development.

EDUCATION:

- **B.S. degree** in Computer/Systems Engineering received 5/91 - Rensselaer Polytechnic Institute
- **M.S. degree** in Computer Science received 12/97 - University of Massachusetts

Software Development Contractor - Sunrise Labs

1/2020 – present

- Lead Angular and Node.js application developer for the MOBILion Systems MOBILE mass spectrometry system.
- C#/.NET development including integration of apps with Agilent MassHunter and Spark-Holland mass spectrometry systems.
- C++ development for Windows services.
- Android and iOS cross-platform development using Xamarin and Visual Studio for the Alveo be.well Analyzer mobile application, used for flu and COVID rapid testing.

Lead Developer - Eversolve, LLC

10/2019 – 3/2020

- Lead developer for Omnibus Care Plan (OCP) portal product, deployed in AWS environment. Both server and client-side.
- Server utilizes micro-services architecture implemented in Java 8 and Spring, Docker used for deployment.
- Web client utilized React (React Boilerplate), Redux, Formik, and Yup.
- FHIR architect for OCP data-store. Contributed changes to open-source HAPI FHIR server to support OCP requirements.

Software Development Contractor - Sanofi-Aventis U.S., LLC

12/2018 – 10/2019

- Back-end web developer for Sanofi's diabetes management mobile applications and web portals, implementing new feature and modifying existing functionality. Java, Google Play Framework, Akka, and MySQL.
- Developed SQL-based analytics to support insulin time-to-control and other metric computations.

Software Development Contractor

Substance Abuse/Mental Health Services Administration (SAMHSA)

12/2014 – 11/2018

- Developed with HAPI FHIR JPA Server, serving as FHIR and JPA/Hibernate domain expert. Deployed FHIR Server against a back-end PostgreSQL 9.6 instance on Amazon Web Services.
- Implemented OpenID Connect authentication and OAuth2 authorization layers to support SMART on FHIR within the HAPI FHIR server.
- Submitted fixes to the HAPI FHIR development community to address defects.
- Implemented Java-based XDS.b and PIX/PDQ SOAP clients for patient document retrieval from information exchanges. Apache Axis2 used with ADB and JAXB data bindings. Supported various PIX, PDQ, and document-related transactions in the IHE ITI Technical Framework (ITI-18, ITI-41, ITI-44, ITI-47, et. al).
- SOAP clients successfully validated at the January 2016 North American Connectathon in Cleveland, OH.
- Proof-of-concept implementation showing use of referent indexes for translation of HL7 CCDA and HL7 FHIR clinical interoperability messages exchanged between systems using RESTful services. Successfully demonstrated at the HL7 May 2015 International Working Group Meeting in Paris, France.
- C#/.NET EHR implementation utilizing Entity Framework 6 object-relational mapping framework, Spring.NET RESTful API, and the Object Management Group's Model-Driven Message Interoperability framework. Message transformation hub implemented in Java using Apache Tomcat Server.
- Implemented relational model of the FHIR DSTU3 data framework for use with Entity Framework and SQL Server.

Software Development Contractor - KMC Systems

7/2010 – 3/2018

- Served as database domain expert providing relational SQL schema and API design/implementation services utilizing Entity Framework/LINQ, Hibernate, Microsoft Sync synchronization framework, ADO.NET, and JDBC frameworks as appropriate. Target DBMS' were Derby, SQL Server, and PostgreSQL.
- Implemented Windows Presentation Foundation (WPF) based applications for various KMC clinical laboratory devices.
- Key developer involved with four clinical laboratory devices - deeply involved with database schema design, database API layer design/implementation, middleware, and GUI.
- Served as clinical data interoperability domain expert architecting and implementing reusable Java and C#/.NET frameworks to support laboratory information system (LIS) interoperability with KMC-designed medical devices. Frameworks used both ASTM and HL7 2.x messaging protocols. Requested new LOINC codes through Regenstrief as necessary to support newly developed automated laboratory tests.

Software Development Contractor – Microsoft Health Solutions Group

10/2009 – 11/2010

- Virtua Health Project
- Designed and implemented the BizTalk 2009 application to process/transform HL7 2.x messages to HL7 3.0, including all necessary BizTalk orchestrations, maps, and infrastructure using Visual Studio 2008. Source messages are from Microsoft's Amalga healthcare system and are being routed to a WellLogic healthcare management system.
- Implemented the necessary SQL Server 2008 schema and changes to support the effort.

Software Development Contractor - Ahura Scientific

04/2007 – 06/2011

- Designed/implemented new functionality as necessary, for client's .NET/C#-based *LibraryEngine* application. This is a SQL Server 2008 interoperable application that manages chemical signatures and other information gathered by client's scientists for use in their hand-held chemical/explosive identification device.
- Provided SQL Server 2008 specific and general SQL knowledge and expertise as required.

Software Development Contractor - ACS through TM Floyd, Co.

6/2010 – 9/2010

- Served as software development/technical resource for a system migration effort involving Texas Medicaid Healthcare Partnership's insurance claims processing for third party liability.
- Reviewed technical documentation and audited C#/.NET source code for third-party applications supporting claims processing. Audit efforts include validation that the third-party liability applications treat all healthcare insurance vendors fairly when determining Medicaid eligibility.
- Installed/configured source control and software development environment to support TMHP's efforts to maintain the TPL applications in-house.

Software Development Contractor - American Science & Engineering

02/2007 – 09/2009

- Key development resource for X-ray baggage and human scanning machines used in airports worldwide, based on requirements from the U.S. Transportation Safety Administration (TSA) and European Civil Aviation Conference.
- Architected and implemented object-oriented database API in C#/.NET used by developers across all products to interface to SQL Server.
- Implemented new UI for AS&E's cargo and mobile X-ray scanning systems using Windows Forms with C#/.NET.

- Completed/productized TWAIN/scanner functionality into AS&E's Cargo Inspection product. Functionality communicates with scanners through the TWAIN API for document scanning and persistence.

Software Development Contractor – Philips Medical Systems

10/2006 – 03/2007

- Implemented changes across three products (IntelliVue Information Center, CareVue Chart CIS, and SureSign Vital Sign Monitor) for compliance with the Integrated Healthcare Enterprise (IHE) framework specification and HL7 Version 2.5. Integrated Healthcare Enterprise (IHE) Connectathon in conjunction with GE Medical, Drager, and Welch-Allyn, and other healthcare information system vendors in early 2007. Demonstration at Healthcare Informatics (HIMSS) Show in 2/2007.
- Worked with IHE personnel to complete initial IHE draft specification and its validation test cases. Specification described a transaction/data model used for HL7 data interoperability between patient monitors, infusion pumps, ventilators, and clinical information systems.

Software Development Contractor – Symantec Corp

02/2006 – 10/2006

- Lead a product enhancement initiative for Symantec's LiveState Delivery product across three separate product releases. LiveState Delivery is a software provisioning/installation platform that allows IT administrators to deploy applications across the enterprise in a highly automated fashion.

Software Development Contractor – Eversolve LLC

05/2006

- Led the platform migration of Eversolve's HL7 message parser toolkit (Medi7) from Java to J# using Microsoft Visual Studio .NET 2003 for one of their customers.
- Performed all tasks for the port – (1) requirements gathering, (2) implementation, (3) testing, and (4) customer support.

Software Development Contractor – Greenfield Online

11/2004 – 12/2005

- Architecture, design, and development of profiling and online survey application server suite in C#/.NET. Designer/developer of Windows service in C# that translated user registration data from a PeopleSoft module into Greenfield's database schema in SQL Server 2000.
- Helped develop the metadata-driven data access library utilizing ADO.NET to interface to SQL Server 2000, and various API's to retrieve user profiles from the data repository for dynamic survey distribution to users. Also developed SQL Server stored procedures for various complex database operations.

Software Development Contractor – Philips Medical Systems

5/2002 – 12/2005

- Implemented functionality to support DICOM export/import of color 3D ultrasound data-sets into Philips' iU22 ultrasound platform.
- Implemented a remote 3D-rendering application using Philips' Sonos ultrasound product that receives loop frame data from the ultrasound machine and displays it on a PC, allowing for remote diagnosis/analysis. Gigabit Ethernet and DCOM used for data transport layer with C++ and MFC as the implementation language and API library, respectively.
- Key developer of high-end ultrasound imaging products, iE33 and iU22, utilizing C++, STL, COM, and the Windows XP platform.
- Implemented new functionality in EnVisor (C++/MFC/STL) to provide full-screen ultrasound image review.
- Re-implemented large portions of EnVisor measurement display functionality to improve usability based on feedback from clinical specialists.

Software Development Contractor - Valco Data Systems

6/2001 – 5/2003

- Implemented a variant of the multi-threaded Java-based interface engine developed for Intrinsiq, providing a data interoperability solution for Valco's image archive product. The engine receives incoming TCP/IP messages in HL7 from the GE/Marquette MUSE hospital system, stores the relevant data into Valco's image archive database system, and notifies the archive system that data is available.

Software Development Contractor – Philips Medical Systems

7/2001 – 6/2002

- Ported Eversolve's HL7 parsing API (Medi7) to C#/.NET to support application development.
- Implemented Windows service in Java and C++ that polls terminal servers asynchronously for clinical data via TCP/IP, translates incoming messages into ASTM format, and persists the ASTM messages to files, ready for import into Diametrics' IDMS (Integrated Data Management System) product.
- Leveraged MessageServer engine framework to provide a data interoperability solution unique to Philips which translates and delivers messages between the Diametrics IDMS (Integrated Data Management System) and various clinical laboratory systems.
- Developed a COM module in Visual BASIC utilizing ADO which served as the interface between their IDMS product and the MessageServer.

Software Development Contractor – Bayer Medical

4/2002 – 5/2002

- Designed and implemented a C++ DLL using Visual C++ in Windows NT for use with Bayer's RapidPoint Blood Gas Analyzer product. DLL translated relevant information from test samples to HL7-format messages utilizing Eversolve's Medi7 parser API. Messages were then passed via TCP/IP to external systems using acknowledgement handshaking.

Software Development Contractor – Intrinsiq, Inc.

10/2000 – 5/2002

- Served as co-architect and lead implementor for a Java-based persistent messaging server (*MessageServer*) intended for medical information interchange applications. This server application receives incoming HL7 messages from various ADT and Clinical Laboratory systems, parses the necessary patient data from the HL7, persists them to SQL Server via JDBC for reliability, and forwards the messages to Intrinsiq's application. Utilized TCP/IP, multi-threading, JDBC 2.0, and RMI. System is intended for mission-critical applications and therefore was designed for high performance and high availability.
- Designed/implemented several MessageServer configuration/support applications using the Java Swing framework.

Contractor

Compete, Inc: 9/2001 – 4/2002

- Designed and implemented a 2-TB per year data warehouse utilizing a star schema with DB2 and Linux on Intel 32-bit hardware. Responsible for all facets of the implementation, including schema design, database installation and creation, performance tuning, benchmarking, and report implementation. Gained extensive experience with the use of DB2 for Very-Large Databases (VLDB's).
- Designed and implemented server-side applications in C++ utilizing the PCRE and cURL open-source libraries that parse Compete's raw clickstream files and retrieve HTML content for archival storage and later viewing.

Principal Software Design Engineer

Engage, Inc: 2/1997 – 7/2001

- Designed/implemented cross-platform multi-threaded server applications utilizing TCP/IP and ODBC interfaces in C++; such applications profiled users accessing web sites in order to provide future customized experiences.
- Project/Technical leader of an effort to integrate the Engage suite of products with the AdManager ad-serving engine.
- Project/Technical leader of the Engage Automotive Team, tasked with providing customized solutions to Engage's automotive customers (i.e., Ford Motor Co., AutoSite.com).
- Designed and implemented functionality into the Engage Workbench tool with MFC and ActiveX.
- Participated in development of a highly-parallelized data transformation tool (utilizing ACE and STL frameworks) which helped create data warehouses containing valuable web site statistics.

Software Design Engineer

Medical Products Group - Hewlett-Packard: 4/94 - 1/97

- Developed and maintained system configuration applications, a print spooler, and low-level TCP/IP and RS-232 device interfacing applications for the client/server HP-UX-based *CareVue 9000* product.
- Provided enhancements/support for the HP-UX/MS-DOS-based *Clinical Event Review* medical data trending product.
- Participated in effort to design and implement a system interoperability architecture for medical products utilizing the HL7 protocol, CORBA, and TCP/IP proxies.

Software Quality Engineer

Medical Products Group - Hewlett-Packard: 7/91 - 4/94

- Designed/implemented applications to address test automation needs for the Patient Monitoring Division. One application reduced testing time for heart-rate calculation algorithms by several orders of magnitude.
- Designed/implemented hardware interface products to facilitate automated product testing.