***Richard Boyd, BS, MS, MDiv, PhD – Developer and Architect***

More than 20+ years of development experience in .NET, Java, Agile, and AI technologies. Worked on numerous projects over his career involving both object oriented and functional development languages and methodologies, financial trading, web crawlers, Azure cloud development, conversion of complex algorithms, web services, hybrid languages, real time weather applications, ESBs for FAA prototype, animation for educational software, agile methodology, design patterns, unit testing, rapid prototyping. Data related experience includes Object and Relational databases, XML, OData, JSON, JSONP, REST, Entity Framework, LINQ. Web servers IIS and Tomcat. Graphics via Adobe Flex/Flash, Silverlight, HTML5, JavaScript, CSS3. GIS projects involving Google, ESRI, Bing. B.S. in Aeronautical Engineering, M.S. in Electrical and Computer Engineering, PhD in Geophysical Engineering ... and M.Div. in Theology (Greek and Hebrew).

Recent projects include a web kiosk of the University of Washington campus (Rich Geographic Internet Applications). Environmental web projects for Idaho, Oregon, Puget Sound Energy (GeoEngineers). Visual tool to assist in making complex environmental decisions (InfoHarvest/Redlands Institute). Extend website for Cucamonga Valley Water District (CA) to add ability for their 185,000 customers to enter Service Requests and track Status (Weston Solutions). Develop dashboard for real time management of water systems (residential and commercial) for Capstone Metering (TX). Ensure compliance with FDA related products, processes, regulations and automate process using early beta .NET Framework. Develop algorithms in Mathematica to solve complex problems and convert to C# (ScienceOps). Architect, Debug, and Develop system for Microsoft (WA) to demonstrate that Web Service used by .NET Client could communicate with Java Server. Take charge of technology for biometric project to use infrared to read subsurface blood vessels in palm of hand. Build team to develop algorithms for pattern recognition using combination of surface features of palm along with subsurface blood vessels.

Honors and Education:

* Tau Beta Pi (national engineering honor society)
* Golden Key National Honor Society
* National Dean's List
* IEEE Engineer of the Year Award (USAISC, Ft. Huachuca, AZ)
* Best Presenter at Honeywell Conference
* Windows 3 Certification
* C++ [1989] Dr. Ira Pohl at University of California Santa Cruz.
* Parallel Distributed Processing [1989] Dr. David Rumelhart at Stanford University.
* PhD Geophysical Engineering - University of Arizona
* M.S. Electrical and Computer Engineering - University of Arizona
* M.Div. Theology - Trinity Evangelical Divinity School
* B.S. Aeronautical Engineering - University of Washington

Recent development projects:

* Web Kiosk for University of Washington campus -- Rich Geographic Internet Applications
* Idaho Office of Species Conservation -- GeoEngineers
* Oregon Department of Environmental Quality -- GeoEngineers
* Puget Sound Energy Spill Response (WA) -- GeoEngineers
* Complex environmental decisions (WA, CA) -- InfoHarvest/Redlands Institute
* Service Requests and track Status (CA) -- Weston Solutions
* Water systems management (TX) -- Intellacuity
* Ensure compliance with FDA related products, processes, regulations (WA) -- WIRB
* Develop algorithms in Mathematica to solve complex problems (WA) -- ScienceOps
* Develop demo of Web Service used by .NET Client communicating with Java Server (WA) -- Microsoft
* Build team to develop biometric algorithms for pattern recognition (WA) -- Advanced Biometrics
* DoD *Psychological Health and Traumatic Brain Injury* (PHTBI) program (WA) -- Ft. Lewis
* Browse/coordinate multiple research databases (WA) -- Ft. Lewis
* Embed Adobe Flex app to search Oracle database for healthcare info (WA) -- Ft. Lewis
* FAA prototype for cross-country aviation weather (WA) -- Topia Technology
* Computer based cognitive learning program (WA) -- Reality Works Company
* Weather monitoring system for Air Force Bombing Range (WA) -- Coastal Environmental
* Real time Java weather application used by NASA Space Shuttle (WA) -- Coastal Environmental
* Embed h/w, weather algorithms for Swedish Military (WA) -- Coastal Environmental
* Remote, autonomous weather stations for nationwide Canadian weather (WA) -- Coastal Environmental

Experience in the following areas (alphabetical):

**Aeronautical –** Develop computer models to evaluate airloads for Boeing SST and 747 configurations, running FORTRAN simulations on CDC 6600.Test Gemini Space Capsule attitude control thrust engines for Rocketdyne Corp.

**Algorithms** – Develop algorithms to solve complex problems -- Ex: calculate optimal layout for long strips of 2 inch wide electrical floor heating elements, in order to cover the most irregular floor area with the least waste of material. Develop computerized solution using Mathematica, then convert Mathematica to C#. Take charge of technology for biometric project that used infrared to read subsurface blood vessels in palm of hand. Build team to develop algorithms for pattern recognition using combination of surface features of palm along with subsurface blood vessels.

**Architecture** – Architect, Debug, and Develop system for Microsoft to demonstrate that Web Service used by .NET Client could communicate with Java Server. Architect and Develop technology for DoD *Psychological Health and Traumatic Brain Injury* (PHTBI) program ... to support military personnel and families. Architect and Develop system to browse/coordinate multiple research databases that supported the DoD mandated PHTBI. Architect and Develop Adobe Flex app, embedded in HTML page, to search Oracle database for info about DoD healthcare websites. Develop FAA prototype for aviation weather encountered during cross-country flights ... in order to demonstrate how mobile Java objects within ServiceMix ESB could handle monitoring and maintenance. Create computer based cognitive learning program to give children confidence and motivation to learn. Develop software agent to assist online user to make automobile searches similar to what is found in newspaper classifieds ... using fuzzy logic to allow "fuzzy" database queries. Architect framework to implement patented push technology product for updating software via internet ... establish and justify design alternatives. Analyze and Architect Java and Embedded Linux application that interfaced with X10 powerline protocol to send signals over existing AC wiring in order to control simple electrical devices.

**Asset Management** – Develop website for Microsoft, using Decision Analysis techniques, to monitor Microsoft vendors/partners in order to determine needs/wants/issues. Develop Product Lifecycle Management tool to track and index product data scattered across multiple systems in order to manage change orders and communicate with ERP systems. Architect conversion process, from 4GL to Java, and evaluate best technologies, for converting an existing job scheduling and IT process automation system that targeted Oracle databases. Develop engineering and estimation prototype for pipe configuration system for Ameron Corp.

**Biometrics** – Take charge of technology for biometric project to use infrared to read subsurface blood vessels in palm of hand. Build team to develop algorithms for pattern recognition using combination of surface features of palm along with subsurface blood vessels.

**Communication** – Architect and Develop system, and **Present paper** at HLSUA conference, to configure and optimize Datanet8 front-end of Honeywell mainframe ... won award as **best presenter** (Zenith laptop). Develop and **Present** Technology Overview to senior staff. Begin development of website **to educate** psychologists and developers in latest technologies. Create computer based cognitive **learning program** to give children confidence and motivation to learn. **Promote** and **Educate** about advanced technologies with CAP Gemini ... endeavor to build vendor alliances. Develop *Brown Bag* **Seminars** to Educate City of Seattle personnel in technology trends.

**Database** – Experience with

* Object Oriented Databases -- GemStone, Objectivity, Tensegrity, POET, Versant
* Relational Databases -- SQL Server, MySQL, Oracle, DB2, PostgreSQL
* Spatial Databases -- SQL Server 2008 Spatial, ESRI
* Cloud - Azure
* ORM -- LINQ, Entity Framework, Hibernate
* NoSQL -- Exploring (Hadoop, Mongo, Couchbase)

**Debug** – Ensure compliance with FDA related products, processes, regulations and then automate process using early beta .NET Framework ... debug 500,000 lines of VB.NET code that suffered from memory leaks, after client had worked with Microsoft for about six months to solve ... discover 163 classes that were creating instances that were never garbage collected. Debug *buggy* Plat Map application that had been outsourced ... unravel logic, fix bugs, refactor code. Debug Borland C++ application for Lamont's IS department.

**Decision Analysis** – Develop website for Microsoft, using Decision Analysis techniques, to monitor Microsoft vendors/partners in order to determine needs/wants/issues. Partial upgrade of key components of decision analysis code from VB6 to VB.NET so that system became functional under .NET. Develop eCommerce software that accelerates decision flow for OEM and suppliers of custom parts.

**Environmental** – Extend website for Cucamonga Valley Water District (CA) to add ability for customers to enter Service Requests and track Status ... using GIS, Reverse Geolocation, Web Services, etc. Develop dashboard for real time management of water systems (residential and commercial) for Capstone Metering (TX), using their smart water meter ... GIS, Web Services, live web cam, etc. Build website to gather feedback/comments so that Decision Analysis could be used to fine-tune plans developed by the Oregon Bureau of Land Management that handled Environmental Conflict Resolution. Develop website for Office of Species Conservation (ID) to allow comparison and prioritization of fish habitat restoration for State of Idaho in the Upper Salmon River Basin. Develop website for Oregon Department of Environmental Quality (OR) to conduct Petroleum Cleanup Training Seminars. Convert PDF of Puget Sound Energy (WA) *Spill Response Field Report* to JavaScript/HTML/CSS online web form. Update and convert multi-criteria decision analysis tool to assist Redlands Institute to conduct research into complex environmental analysis, such as potential migration patterns, and threats, of the Desert Tortoise. Convert hybrid weather monitoring system (VB4, C, Assembly, Scheme, Tcl) to Java for Air Force Bombing Range. Develop software for real time Java weather application used by NASA Space Shuttle. Develop embedded hardware system for Swedish Military... of new weather algorithms written in Java, complete Java UI, database, distributed access, voice. Develop software for remote, autonomous weather stations to provide nationwide weather for Canada.

**Federal Government** – Integrate multiple technologies into client/server system to provide graphical UI for status of Army communications worldwide in order to provide instant access to information ... rather than two week delay required by manual analysis. Develop Windows-based prototype to access, display, and edit Army manpower database as alternative to UNIX version which had experienced problems. Perform all analysis, planning, coding, knowledge acquisition, and documentation for Smalltalk system to configure and optimize hundreds of computers, terminals, printers, etc. that were inputs to Datanet8 front-end of Honeywell mainframe. Take over development of *Missing Ordnance Recovery Expert,* which was expert system to emulate activity of Navy Range Officer as he searched for torpedoes that went off-range during ocean tests off Canadian Coast ... using Symbolics 3640 Lisp Machine and OPS5 production rule system. Architect and Develop technology for DoD *Psychological Health and Traumatic Brain Injury* (PHTBI) program ... to support military personnel and families. Architect and Develop system to browse/coordinate multiple research databases that supported the DoD mandated PHTBI. Architect and Develop Adobe Flex app, embedded in HTML page, to search Oracle database for info about DoD healthcare websites. Develop FAA prototype for aviation weather encountered during cross-country flights ... in order to demonstrate how mobile Java objects within ServiceMix ESB could handle monitoring and maintenance.

**Financial** – Develop, for Nike, web version of spreadsheet sales data in order to provide online access for about 20 of Nike's European countries/locations. Maintain, debug, and upgrade loan application for Washington Mutual Bank that was deployed to all their branches. Develop financial trading application similar to commercial products such as Wall Street Analyst or AIQ Trading Expert for client who had 2000 stocks which were monitored daily, but no existing trading application had specific features needed. Use functional programming (F#) to prototype Financial Trading application to discover hidden patterns and cycles within the financial markets through use of mathematical relationships.

**GIS** – Research and Develop GIS Web Kiosk for University of Washington (WA) campus to display assets such as buildings, trees, piping, sewer, bollards, etc. ... link visual assets to database for tracking, maintenance, deployment, monitoring ... allow Facilities crew to make onsite evaluation and instantly update central repository. Extend website for Cucamonga Valley Water District (CA) to add ability for their 185,000 customers to enter Service Requests and track Status on Bing map covering 47 square mile area. Develop dashboard for real time management of water systems (residential and commercial) for Capstone Metering (TX), using their smart water meter on Google Map.

**Legal** – Analysis and Evaluation, as an expert witness in a trial, of both C++ code and proprietary game code (Lisp-like C) for multimedia entertainment applications vendor (Sierra-on-Line) in a lawsuit they had with another company.

**Local Government** – Take over, continue development, and deliver Labor Collection and Billing system for City of Seattle. Online app to gather daily hours, tasks, comments, etc. for City of Seattle employees. Build new development team. Mentor personnel. Develop *Brown Bag* Seminars to educate City of Seattle personnel in technology trends.

**Mobile Apps** – Convert UW Kiosk project from Silverlight to Sencha Mobile Framework. Prototype Android apps using Xamarin Framework ... prefer Xamarin Framework to develop Android and iOS ... and VS2012 to develop Win8 apps.

**Publications** – Author 330 page *Technology and Standards* – which was volume 3 of the 14 volume of U.S. Army’s Information Systems Architecture. Co-author ~200 page document describing development of ASR 25-6 Prototype – Army Supplemental Regulation required status of outages and hazardous conditions of specific types on equipment to be reported to USAISC HQ on daily basis. Author five Volume documentation describing system to automate configuration and optimization of DATANET 8 front-end to Honeywell mainframe, for Naval Undersea Warfare Engineering Station. Author deployment document for FAA prototype targeting aviation weather for cross-country flights. Author papers and perform analysis to support Army Information Systems. Convert Army Long Range Planning document to hypermedia electronic format using KnowledgePro. Author document titled *Unified Analysis Method for the Calculation of the Steady-State Aeroelastic Airload Distribution* – Boeing Document D6-23828TN. Author document describing results of SuperSonic Transport (SST) wind tunnel tests. Co-author paper titled *POLOG: A Mineral Exploration Expert System* – presented to IEEE International Conference on Systems, Man & Cybernetics. Presentation to Management Science faculty, PhD students and other interested parties at University of Washington ... about Expert Systems and Uncertainty. Co-author Labor Collection System (LCS) user manual ... a Labor Collection and Billing System developed for the City of Seattle. Author Technology Articles for CAP Gemini – Articles written to promote Emerging Technologies for the CAP Gemini Newsletter. Author PhD dissertation titled *Interpreting Synthetic Ground-Penetrating Radar* – submitted to Mining and Geological Dept. at University of Arizona. Author M.S. thesis titled *Plan Generation and Prolog* – submitted to University of Arizona Dept. of Electrical and Computer Engineering.

**Remote Projects** – Extend website for Cucamonga Valley Water District (CA) to add ability for their 185,000 customers to enter Service Requests and track Status on Bing map covering 47 square mile area. Develop dashboard for real time management of water systems (residential and commercial) for Capstone Metering (TX), using their smart water meter on Google Map. Research and develop GIS Web Kiosk for University of Washington (WA) campus to display assets such as buildings, trees, piping, sewer, bollards, etc. Integrate SQL Server 2012 database running Windows Server 2012 on Domain #1 with server code running on Azure (Domain #2) and JavaScript Client on Domain #3. Develop website for Oregon Department of Environmental Quality (OR) to conduct Petroleum Cleanup Training Seminars. Build website to gather feedback/comments so that Decision Analysis could be used to fine-tune plans developed by the Oregon Bureau of Land Management that handled Environmental Conflict Resolution. Develop website for Office of Species Conservation (ID) to allow comparison and prioritization of fish habitat restoration for State of Idaho in the Upper Salmon River Basin. Convert PDF of Puget Sound Energy (WA) *Spill Response Field Report* to JavaScript/HTML/CSS online web form. Update and convert multi-criteria decision analysis tool to assist Redlands Institute to conduct research into complex environmental analysis, such as potential migration patterns, and threats, of the Desert Tortoise. Develop financial trading application similar to commercial products such as Wall Street Analyst or AIQ Trading Expert for client who had 2000 stocks which were monitored daily, but no existing trading application had specific features needed. Use functional programming (F#) to prototype Financial Trading application to discover hidden patterns and cycles within the financial markets through use of mathematical relationships. Develop Clojure Web Crawler to dynamically search Amazon for media info based on movie titles read from MySQL database. Develop REBOL web crawler to dynamically search web for potential customers that could use specialized image compression software.

**Web** – Integrate SQL Server 2012 database running Windows Server 2012 on Domain #1 with server code running on Azure (Domain #2) and JavaScript Client on Domain #3. Architect, Debug, and Develop system for Microsoft (WA) to demonstrate that Web Service used by .NET Client could communicate with Java Server. Extend website for Cucamonga Valley Water District (CA) to add ability for their 185,000 customers to enter Service Requests and track Status. Partial upgrade of key components of decision analysis code from VB6 to VB.NET to use ASP.NET Web Services. Research and develop GIS Web Kiosk for University of Washington (WA) campus to display assets such as buildings, trees, piping, sewer, bollards, etc. Develop dashboard for real time management of water systems (residential and commercial) for Capstone Metering (TX), using their smart water meter. Develop Clojure Web Crawler to dynamically search Amazon for media info based on movie titles read from MySQL database. Develop REBOL web crawler to dynamically search web for potential customers that could use specialized image compression software.

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