Stephen D. Williams

TS/SCI - CISSP - IT Architect / Dev / Admin / Mgmt. - AI / Perf. / Security / Usability

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Mission: **Create important, elegant, and efficient solutions while improving technology when possible.**

Objective: Lead interesting, important, and competitive development opportunities in the Bay Area.

Professional Profile: Full Resume http://sdw.st : HTML PDF WORD— Minimal: HTML PDF WORD— Career Themes

I am able to perform a range of roles in a variety of industries with broad experience doing so. Extensively developing and consulting, I have leveraged my ability to learn and adapt quickly, employ rich soft skills, and exercise deep technical and business capabilities. I am thoroughly hands on while able to relate well to customers and collaborators. For example, I am at home architecting from initial requirements, coding of many types, finding and using current theory, mentoring, and business negotiation. I have worked for 30+ clients, commercial and Federal, on 80+ projects over a span of 26 years. Most projects were development focused while many benefited from additional skills. These skills often involved writing and periodically included secure design & policy, system administration, product marketing, sales, management, and acquisition. I have founded and run several companies, been CTO in several other positions, and operated as a team leader or member at various levels. I have been directly successful at building millions of dollars of business, at times finding opportunities, winning decisions, and playing leading execution roles.

Core Competencies include:
- **Development:** Java*, C#, C++*, Javascript/AS*, PHP, Matlab, Perl, Python, XML*, SV/CVS/Git, gperf*, kernel
- **Security:** Secure apps*, PKI, policy, accreditation, DoD / DCID / PDD / NIST regulations, XML digital signature, PKI notary
- **Advanced algorithms:** Data formats, Video & Image processing, temporal & graph analysis, protocols*, rule engines, AI
- **Systems:** Linux*/Unixen*, OS X, XP/Vista, Networking*, Cisco, Cray, Stratus, Virtualization*, embedded control, grids
- **Analysis:** DoD program assessment, patents, technology review, groupware, in-depth research* *(* = Many related)*
- **General:** Adaptability, Customer Focus, SW Architecture & Design, Dev Life Cycle, Wide Domain Knowledge.

Innovation Highlights:
After sufficiently mastering existing engineering in a certain area, creative application of broad knowledge can lead to innovative problem solving. This list highlights a few of my more interesting insights.

- 2008: New UI paradigm, Efficient RDF Interchange, Kycycle, wheel alignment sensing.
- 2004-7: esXML: hybrid byte alignment, character sets w/ escapes, continuations, XML Meta Structure, and Elastic Memory.
- 2005: Designed fully-decoupled knowledge oriented architecture (KOA).
- 2002: Combined novel architectural features to create highly-secure web-based payment application.
- 1999: Founded web CRM chat startup, independently invented CAPTCHA (apparently first by a year).
- 1998: Created new Internet application pattern: combined expert system, XML, and Java application server.
- 1996: Created IM-based multi-person video chat system at AOL, including rate based protocol and digital notary.
- 1995: Wrote and scaled AOL's Buddylist, Created web publishing system with image and text conversion.
- 1994: First bank web server: Setup firewall and first public bank web server and firewall for Bank of America.
- 1992: Founded early ISP, have run Internet servers continually since. Implemented satellite delivery of Usenet.
- 1988: Created curses-based web-like scrolling forms with scripting in a custom Postscript-like language.

Software Patterns Implemented:
Software patterns are self-contained descriptions of known-good solutions, normally combined with other patterns and application logic to create solutions. As engineers and architects advance, they increasingly internalize known patterns and begin to create new patterns for challenging problems. To a technical professional, this list of patterns implemented may help indicate maturity and creativity level.

- **Architectural Form:** Comm. Concentrator, Expert System, Explicit Pseudo threading, Small Language, Form Language, web scripting language, Digital Notary, Document Database, Secure App architecture, mobile code, knowledge oriented architecture, multi-stream video player, MVC, Business Delegate, Front Controller, Intercepting Filter, Transfer Object
- **System Design:** Builder, Factory Method, Prototype, Singleton, Adapter, Composite, Decorator, Facade, Proxy, Command, Interpreter, Iterator, Mediator, Memento, Observer, Template, Visitor, Data Access Object / Service
- **Development Idiom:** Rate based protocol, code generator – object / relational, Dijkstra's shortest path map traversal, qsort, expandable circular buffer, efficient string hash, Unicode handling, Hybrid Byte Aligned Format, CAPTCHA

Professional Background:

OptimaLogic, Inc. - President / CTO – 2009 to Present
OptimaLogic is a consulting and product development company, with offices in Mountain View, CA, Herndon, VA, and Honolulu, HI.

Sempra Energy - Senior Security Architecture Consultant
- Evaluated project components, configuration, policy, and performance for very large application replacement projects.
- Performed penetration testing, verification, and validation of fixes and remediations.

- Worked with project owners, developers, and security department to resolve issues and document successful solutions.

New Product Development
- Created new visualization and interaction paradigms for knowledge management.
- Developing clients in C++/Qt, Palm Pre, Android, and iPhone and server side with GWT/AppEngine/AWS.
- Contributed to startup product design, development, and evaluation: medical devices, social networking.

High Performance Technologies, Inc. - Senior Technical Director – 2001 to Present
Active and successful in architecture, development, consulting, management, business development, proposal writing, market and technology research & evaluation, technical interviewing, and program assessment. Selected projects:

Army High Performance Computing Resource Center
- Security, network, & system lead for Cray XT3 & X1E and Liquid IQ supercomputers, Linux systems, Cisco, and VPN.
- Planned, installed, and managed Army DREN supercomputing center as lead security/network engineer, Unix admin.
- Prepared and documented DoD CSA and ATO certification of systems, security, and process.

Semantic Web, Temporal Analysis, SPARQL, Graph Analysis
- Developed semantic **RDF database visualization** components as an **I2 Analyst Desktop** plug-in tool.
- Researched **temporal analysis and graph query** to create correlation search plug-in tool.

W3C Efficient XML Interchange Working Group, Semantic Web
- Key participant in the **EXI** and **XBC** working groups, wrote and edited public documents.
- **Proposed esXML format** and submitted implementation as a candidate.
- Participated in **W3C Semantic Web** interest groups with creators and implementers of semantic web and RDF.

DoD Acquisition, Technology, and Logistics
- Investigated, analyzed, reported, and briefed on several **large DoD program assessments** at the Pentagon.
- Included rapid program understanding, wide-ranging technology investigation, **deep interviewing of government and contractor teams**, and generating program and technical recommendations.

Scalable Awareness Framework (SAF) for intelligence
- Conceived and architected a processing and meta-data framework that manages large data flows, data sets, and synthesis goals over a large distributed processing system, dubbed **Knowledge Oriented Architecture** (KOA).
- Combines unique control methods with universal meta-data tagging, **front and back loose coupling**, and a temporal versioned knowledge base.

Department of Justice CIO PKI/Security Consulting
- Technical lead for the PKI Task and **expert for both PKI and security areas**, provided in-depth investigation, architecture, planning, and input to the creation of a **public key infrastructure and security architecture**.
- Widely interviewed DOJ agencies, presented to the DOJ CIO, and produced numerous documents, plans, and papers.
- Wrote *PKI Enabling and Secure Application Development Handbook* upon request from FBI development teams. This document recently became the basis for the *PKI Developer Guide* at Treasury FMS, which I also helped edit.

Health and Human Services Office of Regulatory Affairs
- Performed final **IV&V for PKI Certification Authority** policies, architecture, and procedures.

Treasury FMS Secure Payment System, Senior Architect, PM, & Tech Lead
- **Architected very highly-secure Java applet and layered server Internet application**. Incorporated Java, HTTPS, XML, Entrust / PKI / SmartCards, JMS/MQ, HP Virtual Vault, and DB2 SQL servers.
- Designed security architecture, secure database model, signed XML, secure object intermediary layer, validation engine, message orientation, GUI isolation layer, look and feel, 508 (accessibility), and audit. Innovations greatly enhance security & verifiability while reducing development & maintenance.
- Interviewed, mentored, and helped run the dev. team while reducing risk with prototype tasks, keeping project on-budget.
- Ran meetings with client, technical, and external teams such as **NIST**, **GAO**, **Treasury executives**, security panel.

ObjectVideo, Consulting Developer – 2001
- Developed **MPEG4 File Format encoder** and RealPlayer plugin player with multi-threaded streams, real-time handling, object descriptor parser, and **BIFS scene graph** handling. Player handled multiple video and audio streams, with overlay.

Jabber.com, Chief Technical Officer – 2000
- Member of both the Technical Advisory Board and as CTO, provided **strategic vision, planning, and market positioning**.
- Performed detailed technical training and assistance with scalability, enhanced features, interoperability, and a roadmap for extending Jabber's open IM/Presence system into an XML platform for general P2P and other transactional applications.

Insta.com, President and Chief Scientist – 1999
- **Founded startup** based on fusion of presence, instant messaging, dynamic web pages, and customer service.
- Participated in **IETF Instant Messaging and Presence Protocol (IMPP)** standards committee.
- Managed a team of six, wrote contracts, and negotiated financial and shareholder arrangements.

ReverseAuction.com, Chief Technical Officer – 1999
- **Architected systems** for operations and auction web application, resulting in successful release and operation.
- Hired & managed technical staff and consultants.

Geico, Consulting Chief Architect and Team Lead – 1998
- **Architected and won a large contract** to build a flexible, maintainable N-tier web interface to Geico's quoting system.
- Used Elements Advisor rule engine, Netscape Application Server, and Oracle RDBMS **to implement a new type of rule-based web application** that resulted in rapid rule implementation for the fluid auto insurance industry.
- Managed client, hired and lead team, and mentored both on the concepts and strengths of rule engine technology and my new application architecture which lead to fast consensus and efficient development.
- The design of this system was a cutting edge solution to the problem of rapidly building difficult, fluid applications.

America Online, Inc., Senior Consultant – 1995 - 1998
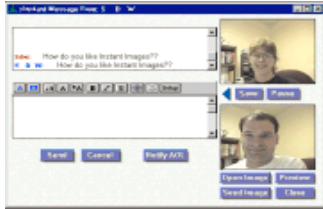
- Designed and implemented **Buddy List** server and UI, starting the IM revolution.
- Conceived and developed an end-user **video IM system** (**Instant Images**), **first for large IM service**
- Developed digital notary and **a rate-based protocol**, allowing over 10 bidirectional video streams.
- Participated heavily in the design of new products with marketing, UI, and development.
- Created object-relational C code generator in Perl with a high-performance database library.
- Implemented custom terminal emulator for Stratus development resulting in more efficient workflow.
- Generated $1 million in new revenue every 5 days in early 1996.

Bank of America, Senior Consultant – 1994
- Installed and configured Dec SEAL firewall and internal and external web servers - **first public web server for any bank**.
- Integrated PC, Mac, and Unix Internet access software. Wrote installation procedures, scripts, and graphic production.

Lexis-Nexis, Senior Consultant – 1992 - 1994
- Developed new document processing architecture for **online search engine** in C, C++, SunOS, Motif, Interviews, RDBMS.
- Rewrote X.25 external stock quote system in C++ for online service. Wrote satellite data reception system.

GE Aircraft Engines, Senior Consultant – 1989 - 1991
- Wrote an **expert system shell library in C++** for a distributed process diagnostic and auto-recovery tool. This included an extensible object and inference engine design with forward and backward chaining.
- Managed ae.ge.com, implementing DNS and email servers, connecting 25,000 systems to the Internet.
- Developed tools for more than 1000 HP and Apollo workstations enabling X.500-integrated Internet email, backup / restore, and automatic troubleshooting and recovery.
- **Ported gcc, g++, Emacs, Kerberos**, and other tools to HP and Apollo platforms.

NCR Retail, Senior Consultant – 1988
- Developed Communication Management Platform product in C++ for **remote package management of Unix systems**.

Computer Sciences Corp., Member Technical Staff – 1987
- **Created Postscript-like language and scrolling form capability in C++ that greatly anticipated today's Web forms, complete with inline scripting and HTML-like page definition.** Used in the following projects:
- Developed an **expert system**-based application for military logistics with PC to mainframe interchange, installed at Robins.
- Developed real-time formatted email on early Internet DDN using PCs, C++, and a multithreading kernel on MSDOS on an emergency project. This system was used for a number of years for flight communication for all 88 Air Force depots.

NCR Corp., Staff Consultant – 1986
- Developed NCR Flex benefits application as team lead under tight deadline, **distributed to all 33,000 NCR employees**.
- Developed Progress 4GL application to perform transformations on structured data files for the NCR Order System.

GE Lighting Business Group, Programmer/Analyst – 1984 - 1985
- Developed embedded control system for rotary indexing bulb forming machine in Pascal MT+ and Z80 assembly. A new class of bulb, **output of this machine formed half of the re-lighting of the Statue of Liberty in 1985.**
- Developed in C on Unix v7 and System V, DEC VMS, and worked with expert systems and machine vision.

Older or Limited Engagements:

Early stage startups Advising product features, marketing, pricing strategy, technology. - **2008**
Lex Brodie's Imported fanless PXE-boot Linux systems. Wrote & installed custom terminal emulator. - **2005**
Skymoon Ventures Architecture / R&D for DSL/Video set top startup. - **2001**
RTS Renovated network, office environment, storage, remote access, disaster recovery. - **2001**
Interactive Gaming Institute Presented to Commission: tech for age / ID / location of web users. **- 2001**
Alexus C++ ASP custom scripting engine, MSSQL, Javascript: Dev., UI design, mgmt. tech/artistic team. - **2000**
Netword LLC CTO, Architect, managed technical support and development team of 5 people, marketing. - **1997**
WareOnEarth Consulted on encrypted USPS communication product and development process. - **1999**
Weil, Gotshal & Manges LLP Expert witness in patent infringement case with extensive research. - **1998**

Chemical Bank Firewall, web server, secure data transfer. Built early web page authoring system. - **1995**
Maxxoft President Created accounting SW in C for MS-DOS & Unix. Performed other Unix Consulting. - **1985**
Maumee Valley Computer Center Performed sales, Development, Acquisition, and Customer support. - **1982**

Education:
- Stanford University Computer Science Artificial Intelligence Certificate Program (2008-2009)
- Cray X1 and XT3 Series System Administration (2008)
- American University Masters Degree program - **4.0 GPA** - all but thesis - (2004-2007)
- HPTi Effective Writing for Bus. and Proposals (2007), HPTi Bus. Dev., Proposal Writing, Project Mgmt. (2005)
- NSA / General Dynamics Taclane/Fastlane KG training (2002), Netscape Application Server (1998)
- Primarily and continuously self-taught. Frequently engaged in personal R&D.

Certifications:
CISSP in 2003, NSA INFOSEC Assessment in 2003, Brainbench Master Unix Admin in 2000

Clearance:
Active DoD ISA/TS SCI, periodic review completed by DISCO 7/23/2008.

Membership:
ACM, IEEE, CISSP, Infragard, AOPA, lifetime AAAI, IETF, and W3C.

Publications:
- *AI, AGI, Safety, Empathy*, Convergence08, Mountain View, CA, 2008.
- *The EsXML Data Format*, submitted to the W3C Efficient XML Working Group, 2006.
- *DOJ IT Security Architecture*, special to the Department of Justice, 2004.
- *Public Key Infrastructure Enabling – Secure Application Development*, to the Department of Justice, 2003.
- *FDA ORA PKI IV&V*, special to FDA ORA, 2004.
- *esXML,* at W3C Binary Interchange Workshop, Santa Clara, 2003; Mitre/DoD Binary XML Workshop, Hampton, VA, 2005
- *Efficiency Structured XML – A Standard Binary Infoset and API,* Extreme Markup, Montreal, Canada, 2003.
- *Internet Communication Technology Futures,* presented at Interactive Gaming Conference, Las Vegas, 2001.
- *Biometrics, Security, and Location Verification*, Nevada Gaming Commission & Control Board, Las Vegas, 2001.
- *The Future of Instant Messaging,* presented at Pulver PIM, Boston, 2001.
- *Instant Messaging and Presence Protocol,* presented at Internet Engineering Task Force #46, DC, 1999.
- *Internet Services Experience,* presented at Internet Implementation Practices Conference, Chicago, 1999.
- *The Emergence of Internet Communities,* presented at Rural Datification Conference, Chicago, 1992.

A Hierarchy of Professional Passions and Interests (a la Maslow)

Here, experience is organized by theme, linked to related areas of recent personal investment. This is a Maslow Hierarchy in the sense that the lower theme levels need to be satisfied in an organization before higher levels can be consistently successful. My drive for self-sufficiency and professionalism, along with persistent curiosity, has enabled me to reach competence, sometimes more, in each of these areas. Rather than being randomly "all over the map", as a systems architect I work to avoid holes in capabilities that would prevent successful solutions. No one can maintain perfect freshness in every area. However, it *is* possible to retain and reason with many key conceptual patterns and to then reacquire and deepen details jus- in-time. Not a classic "Jack of all Trades", I have gained most of this breadth by focusing exclusively on one challenging problem at a time. These deep dives usually achieve some degree of mastery of a new area.

Capability Themes	Related Experience	Future Focus
Intelligent Systems: *Opportunistic / Prep*	**Stanford, Federal Agencies, GE, Geico**	**Knowledge Viz / DB / Efficiency, Semantic Tech, AI Vision, Robotics/Mechatronics, Advanced Algorithms, AGI**
Useful & Usable Systems: *Primary Focus*	**AOL, Lexis, CSC, GE, ObjectVideo, Startups, IETF, Federal**	**New rich desktop/web/handheld apps, UI paradigms, Secure apps, Flex/AIR, JS/DHTML, Erlang, Cloud tech, C++0x, Java/C#, Ruby/Rails, DekiWiki, 3D.** *Emerging:* **Scala/Groovy, Python/SciPy, SoldWorks, Matlab/Scilab, Sim/Analysis, RDFa**
Scalable Systems: *Often used & central*	**Federal Agencies, W3C, AOL, Lexis, NCR, Startups**	**Scalable Apps/Infra., Efficient XML & RDF, Erlang, Cloud Tech, CUDA/many core, Scalable EXI/ERI/Semantic DB, Virtualization**
Supporting Knowhow: *Constantly leveraged* - **Grounding in CompSci, dev. methology & documentation, communication, psychology / sociology - high EQ, security, management / business, legal / regulatory, accounting / finance, and depth in multiple broad industry verticals.**		

Personal Interests:
Writing, photography, private pilot, SCUBA, running, bicycling, kayaking, volunteering, and travel.

References:
Available upon request. Public recommendations available at: http://sdw.st/in

Related:
Career Themes: http://sdw.st/sdwthemes