

Eric Fleischman
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Core Skills

Core Skills: Information Assurance (IA) and Cyber Security Defense, Data Communications Protocols, Network Centric Operations (NCO), Network Architecture Design, Electronic Commerce, Systems, Systems Analysis, Application Integration (middleware), Information Technology.

Professional Experience

I am a former cyber-security consultant who now teaches data communications and cybersecurity at Central Washington University. I am a systems person who has substantial technical depth. I have worked as both a network architect and as an information assurance (IA; i.e., cybersecurity) architect together with virtually every constituent part of those domains, including protocol design and development. I have led groups of up to hundreds of people. I have been periodically tasked to rescue “at risk” programs, projects, or high-profile tasks. I often have represented my employers to external entities (customers, standards bodies, consortia, governments). I have worked in high assurance computing. My primary area of research is in securing safety systems, network security (e.g., policy-based routing, digital provenance), integrity assurance, and identity and access management.

Information Assurance (Cyber Security defense):

- Technical Fellow within Boeing’s Information Security organization. Performed IA (security) analysis, consulting, helped create Boeing’s corporate security architecture, and conducted security program reviews. Supported the development of Boeing’s cyber defense programs. Participated in multiple security pilots of a US government entity; helped found the Cybersecurity Research Alliance (CSRA) consortium; member of the architecture board of the international Transglobal Secure Collaboration Program (TSCP; identity and access management (IAM)); and co-chair of the Trusted Network Connect Operations Subgroup within the Trusted Computing Group (TCG).
- In 2009 was a co-chair of the US Government’s National Cyber Leap Year Conference, focused on digital provenance. I subsequently consulted with the White House (worked with direct reports to the National Security Advisor of the Obama administration) regarding US national cybersecurity issues.
- Technical Integrator for Boeing’s Security Information and Event Management System (SIEM) deployment.
- In 2006 I was the Principal Investigator for a contract with the US Federal Aviation Administration (FAA) to provide recommendations for extending FAA certification processes and procedures to handle onboard security and safety issues arising from highly networked environments. This included writing two books found on the FAA’s website as well as speaking at FAA conferences.
- Consulted Boeing Commercial Airplanes (BCA) on aircraft security designs as well as aviation data link technologies. In 2009 I made an extensive aircraft security architecture proposal for Boeing’s next generation aircraft. In 2010 I assisted the BCA security organization develop security processes; helped with the security certification of the 747-8; and contributed to a proposal to the FAA to define mechanisms to streamline the security certification processes.
- In 2016 again consulted the FAA: recommended a methodology to identify the cybersecurity issues that are relevant-to-aircraft-safety in terms of the FAA’s existing Safety Risk Assessment (SRA) processes. One of the 3 deliverables was a report identifying security issues potentially impacting current deployments of the Aircraft Communications Reporting and Addressing System (ACARS).
- One of three Boeing engineers who designed the Joint Tactical Radio System (JTRS) Wideband Network Waveform (WNW) product. Also was the program’s IA lead.
- Co-lead for the security design of the JTRS Ground Mobile Radio (GMR) program and led the subsequent GMR product security redesign. Interfaced with and made many formal presentations to the NSA, JTRS JPEO, and US Army and Navy.
- Extensively consulted on DoD’s High Assurance IP Encryptor (HAIZE) technology and DoD communications security (COMSEC). Was Boeing’s expert on the non-cryptographic parts of HAIZE.
- Consulted many smaller programs in IA; e.g., designed a solution for securing a military program’s directional antenna system.
- Researched mechanisms to secure safety systems (e.g., factories, aircraft, etc.); security automation; data security; and methods to foster cyber situational awareness with command and control.

Network and Distributed Computer Designs and Deployments:

- In the early 90s I was the chief data communications architect of The Boeing Company. Guided Boeing to become (in 1994) the first major corporation in the world to create a ubiquitous enterprise-wide network infrastructure using Internet Protocols (IP). To accomplish this, we created migration paths to enable each of our deployments of 22 different protocol families to transition to IP.
- E-Commerce Architect: Designed and helped build Microsoft's original electronic commerce infrastructure, which supported Microsoft's ~80K business partners (e.g., OEMs, ARs, DSPs, SSBs, etc) and conveyed a significant percentage of their total corporate revenue.
- Helped write Boeing's proposal responses for six DoD contracts, including the Army's multi-billion-dollar Future Combat Systems (FCS) program. Created FCS' original data communications architecture and co-created their original IA (security) architecture. During 2002-3 I was the temporary chief network engineer for the FCS program. During that time I worked closely with the US Army's CIO Office to formulate the Army's IPv6 transition strategy and policy. In 2008 I returned to the program to again become its chief data communications architect.
- Served as a member of the US Army's Integration Committee (ICWG) representing both the JTRS and FCS programs in order to create the Army's LandWarNet design. Also worked DoD-wide Global Information Grid (GIG) architecture issues including DoD-wide HAIPE issues.
- Proposed a network architecture for the US Air Force. Also was a member of the Air Force's MJPO Network Architecture Working Group (NAWG; for transformational satellite (TSAT) requirements) concentrating on mobility and routing.

Protocol Development:

- Have been a participant in the Internet Engineering Task Force (IETF) since 1993. Was selected by the IETF leadership to be a member of the 12-person "IPng Directorate" which led the creation of IPv6. I have worked on numerous IETF and/or IRTF working groups and have written 3 RFCs.
- Microsoft representative to ISO to create MPEG-4.
- Invented and suggested to IBM in early 1990s a mechanism to decouple SNA's upper protocol layers from its lower layers so that it could operate over IP networks. In this way Boeing's mainframes could cleanly operate within a routed corporate network. This became the *IBM Anynet* product family. I also made technical suggestions that modified Sun Microsystems' and HP's product offerings to support Boeing's deployment needs.
- Have three patents related to tactical military network technologies (mobile ad hoc network).
- Helped design civil aviation's Aeronautical Telecommunications Network (ATN).

Strategies:

- Was the project manager of the Boeing Information Technology's (IT) group's (then called SSG) *Strategic Technical Plan* which guided the allocation of over \$500M/year of IT's budget (e.g., technical strategies, project definitions, budget allocation, tasking and staffing).
- Wrote business cases that convinced Boeing executives to fund the creation of the Boeing Enterprise Network. To create those business cases, I invented a model to describe any application and/or computer architecture. I then described hundreds of Boeing's most important applications in terms of that model. This enabled executives to evaluate the implications of a wide variety of application evolution options. This model also inspired the creation of Boeing's formal corporate computing standardization processes that significantly reduced IT overheads.
- Wrote Microsoft's *Electronic Data Interchange (EDI)* and *Electronic Commerce* architectures and led the creation of their initial electronic commerce infrastructure

Application Integration:

- Was the Information Systems architect for Boeing's Joint Strike Fighter (JSF) program. I focused on middleware, application integration, and role-based access control (RBAC).
- Consulted Microsoft application developers to successfully migrate every Microsoft-internal business process to become web-based.
- Consulted Boeing software developers to use middleware technologies to integrate applications.

Software Product Development

- Was a program manager within Microsoft's NetShow product group, which created distributed multimedia products. Created and ran a consortium and hosted two conferences to advance Microsoft's multimedia technology.
- I exclusively did software development (i.e., programming primarily in C and Assembler) for my first three computer employers. I helped create a new operating system; wrote Unix device drivers; modified a compiler; and made assembler, debugger, and telephony switch components among other things.

A more complete resume as well as a list of my 300 technical papers are available upon request.

Professional Employment

Central Washington University (March 2017 – present)

Taught Data Communications in the Computer Science (CS) department and currently teach Cyber-Security and Data Communications in the Information Technology and Administrative Management (ITAM) department.

MicroSystems Automation Group (September 2015 – July 2016)

Cybersecurity Contractor; Title: Senior Scientist, Engineer, Systems Analyst

The Boeing Company (March 1998 – August 28, 2014)

Boeing Technical Fellow

Microsoft Corporation (Nov 1995 – March 1998)

Program Manager

The Boeing Company (June 1989 - Nov 1995)

Senior Principal Scientist / Associate Technical Fellow

AT&T Bell Laboratories (1985 – 1989)

Member of the Technical Staff

Digital Research (1984 – 1985)

Software Engineer

Victor Technologies (1983 – 1984)

Software Engineer

Summer Institute of Linguistics (1976 – 1981)

Linguist

Wheaton College (summers 1972-1976)

Instructor in Outward Bound-like program (wilderness experiential education)

Education

Ohio State University (1986)

Graduate Program, Computer Science, GPA 4.0

University of California at Santa Cruz (1983)

B.A., Computer Science, GPA 4.0

University of Texas at Arlington (1977)

M.A., Linguistics, GPA 3.8

Wheaton College, Illinois (1975)

B.A., Biblical Studies / Greek, GPA 3.7

Additional Professional Activities

Conference speaker at 14+ international conferences

Certified as a Certified Information Systems Security Professional (CISSP) by (ISC)² in May 2003

Former member of both IEEE and ACM.

Languages

Spanish, Tagalog, Magindanaon, Greek, German, Cebuano.

Other Activities

Two small businesses:

1. Inter-market analysis, equity investing, and options trading.
2. Own and operate a small timber farm, a small organic vegetable farm, and a small orchard in Kittitas County, WA.

Volunteer at church and also at a local house for youths with autism.