

Andrew Schulman
Consulting Technical Expert & Attorney at Law
Software Litigation Consulting
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<http://www.SoftwareLitigationConsulting.com>

Expertise

- * Examination of source code under protective order (Languages include: C/C++, Intel x86 assembler, Java/Kotlin, JavaScript, Flash ActionScript, PHP, Python, Objective-C)
- * Software reverse engineering (Windows Win32 & Win64 code disassembly, packet monitoring, examining Apple OSX and iOS code, Android app code, etc.)
- * Undocumented APIs and internal interfaces
- * Code comparisons for copyright, patent, and trade secret issues
- * Web site and web services analysis
- * Assist attorneys with technical aspects of legal complaints, summary judgment motions and responses, interrogatory and discovery requests and responses
- * Assist attorneys with technical aspects of depositions, trial preparation, and cross examination of testifying technical experts
- * Presentations to attorneys on technical issues
- * Software demonstrative exhibits
- * Comparison and correlation of internal documents (emails, etc.) with resulting technical practices
- * Operating systems, particularly Windows
- * Internet privacy and security issues

Employment History

Independent consultant (San Francisco & Santa Rosa CA) 1993-present

Legal consulting: Consulting expert and expert witness in cases involving patent infringement, copyright infringement, trade secret misappropriation, antitrust, and internet privacy. Cases include several Microsoft antitrust cases and patent litigation v. Microsoft, Apple, RIM, Facebook, and others.

Confidential list of clients available on request, under NDA.

Development of software for automated patent portfolio claim analysis/ranking, for locating potential prior-art and infringing software, for developing source-code maps from binary products, etc. (See articles in [Intellectual Property Today](#) and CA state bar IP

section journal New Matter.)

Development of system software and disassembly tools for MS-DOS and Windows 95/98 in C, AWK, and x86 assembler; software design, debugging and reverse engineering; Windows virtual device drivers (VxDs), Windows CE device drivers (for Vega Vista mobile handheld).

Auditing of internet privacy and security software (e.g., paper with Prof. David Martin: "Deanonymizing Users of the SafeWeb Anonymizing Service")

Chief Researcher, Privacy Foundation (Denver CO), Workplace Surveillance project; also researching biometric ID card issues (e.g., paper on "US/Mexico Border Crossing Cards: A Case Study in Biometric, Machine-Readable ID"); presentations on internet privacy in Hong Kong, Australia, US, and Canada.

**O'Reilly & Associates (Sebastopol CA)
1995-1998**

Senior Technical Editor

Editing and acquisition of books on Internet and Windows programming; titles included *Inside the Windows 95 Registry* by Ron Petrusha; *Inside the Windows 95 File System* by Stan Mitchell; *Java Virtual Machine* by Jon Meyer and Troy Downing; *JavaScript: The Definitive Guide* by David Flanagan; *Windows Annoyances* by David Karp; *Windows 95 in a Nutshell* by Tim O'Reilly and Troy Mott

**Phar Lap Software (Cambridge MA)
1990-1993**

Senior Software Engineer

Development of system software for MS-DOS and Windows in C and x86 assembler; documentation; API specification

**Addison-Wesley Publishing Co. (Reading MA)
1990-1993**

Technical editor

Editing and acquisition of a series of books titled "The Andrew Schulman Programming Series"; titles included *Undocumented Windows* by Schulman et al., *DOS Internals* by Geoff Chappell; *Windows Internals* by Matt Pietrek; *Windows Network Programming* by Ralph Davis; *Windows++* by Paul Dilascia

**Lotus Development Corporation (Cambridge MA)
1988-1990**

Software Engineer, Senior Software Engineer

Development of system software (CD-ROM network server) and LISP-like in-house

programming language tools for MS-DOS in C and x86 assembler

Meta Software (Cambridge MA)

1986-1988

Software Engineer

Porting application software from Macintosh to Windows; Mac systems-level emulation on Windows in C

Sapphire Software (Somerville MA)

1984-1986

Software Engineer

Development of digital typesetting software in C

Archetype (Boston MA)

1984-1986

Software Engineer

Development of digital typesetting software in Objective-C, reverse engineering of file/disk systems

Educational Background

Golden Gate University (San Francisco)

2009-2013

Intellectual Property LL.M. program

Courses taken include IP survey, Software & Internet Law, International IP; Copyright Law; Patent Law, Patent Litigation

Northwestern California University School of Law

2004-2008

J.D. program; passed CA bar exam

University of California (Berkeley)

1975-1977

Area of study: History of science and mathematics

Publications (Partial List)

Andrew Schulman, *Patent Litigation: An Introduction to Patent Claims, "Limitations," Infringement, and Invalidity* (6-part series published at DisputeSoft.com, 2018)

Andrew Schulman, *Source Code & Software Patents: A Guide for Attorneys and Experts on Source Code Examination for Software & Internet Patent Litigation* (forthcoming; extensive notes and outline available at SoftwareLitigationConsulting.com)

Andrew Schulman, *Claim Charts for Patent Litigation* (forthcoming; extensive notes and outline available at SoftwareLitigationConsulting.com)

Andrew Schulman, "Open to Inspection: Using Reverse Engineering to Uncover Software Prior Art," 2-part article in *New Matter* (State Bar of California, Intellectual Property Section), Summer and Fall 2011

Andrew Schulman, "Hiding in Plain Sight: Using Reverse Engineering to Uncover Software Patent Infringement," *Intellectual Property Today*, November 2010

Andrew Schulman, "Finding Binary Clones with Opstrings and Function Digests," *Dr. Dobb's Journal*, July 2005 (Part 1), Aug. 2005 (Part 2), Sept. 2005 (Part 3)

Andrew Schulman, *Unauthorized Windows 95: A Developer's Guide to Exploring the Foundations of Windows "Chicago"* (Foster City CA: IDG Books, 1994); updates (August 1996)

Coauthor and editor, *Undocumented DOS: A Programmer's Guide to Reserved MS-DOS Functions and Data Structures* (Reading MA: Addison-Wesley, 1990); 2nd edition (1994)

Coauthor and editor, *Undocumented Windows: A Programmer's Guide to Reserved Microsoft Windows API Functions* (Reading MA: Addison Wesley, 1992)

Coauthor, *Extending DOS: A Programmer's Guide to Protected-Mode DOS*, edited by Ray Duncan (Reading MA: Addison-Wesley, 1990); 2nd edition (1992)

Articles in *Microsoft Systems Journal*, *Data Based Advisor*, *BYTE*, *Dr. Dobb's Journal*, *PC Magazine*, *Web Review*, *Infoworld*, and other publications. Some representative articles:

"The US/Mexico Border Crossing Card (BCC): A Case Study in Biometric, Machine-Readable ID," March 2002

"The Extent of Systematic Monitoring of Employee E-mail and Internet Use," Privacy Foundation report, July 9, 2001

"Computer and Internet Surveillance in the Workplace," *Corporate Governance International* (Hong Kong), *e-law asia* (Hong Kong), and *Privacy Law and Policy Reporter* (Australia), March-June 2001

"The Caldera v. Microsoft Dossier," O'Reilly Network, February 2000

"Java Shines When HTML Stars," *Web Review*, August 15, 1997

"Java on the Fly," *Web Review*, July 25, 1997

"Java: Will Invention Become the Father of Necessity?," *Web Review*, June 27, 1997

"InActiveX," *Web Review*, May 23, 1997

"Differences Between NT Server and Workstation are Minimal: Registry Settings Used to Force Use of Microsoft Web Server," O'Reilly, November 1996

"Microsoft Deliberately Limiting NT Workstation 4.0 as a Web Server," O'Reilly, September 1996

"SoftRAM 95: 'False and Misleading'," O'Reilly, August 1996

"Inside the Windows 95 Registration Wizard," O'Reilly, January 1996

"LA Law" (on *Stac v. Microsoft*), *Dr. Dobb's Journal*, May 1994

"Examining the AARD Detection Code," *Dr. Dobb's Journal*, September 1993

"Exploring Demand-Paged Virtual Memory in Windows Enhanced Mode", *Microsoft Systems Journal*, December 1992

Commercial Software

Working as part of a team on e.g.:

- Lotus CD/Networker;
- Phar Lap 286/DOS-Extender;
- Meta Software MetaDesign (Petri net graphics software for Mac and Windows);
- Vega Vista mobile handheld software for Windows CE; and
- Archetype digital-typesetting software.

Windows Source Disassembly Pre-Processor, versions 1 and 2, V Communications (San Jose CA, 1992-1998).