



## Stephen Heitmann

Senior Software Architect and Engineer, Innovator, Entrepreneur

Specializing in Mobile Web, Telematics, C/C++, Javascript, Python, Ruby

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"Good Design is Good Business" – Thomas J. Watson, former Chairman, IBM Corporation.

### Key Strengths

- Generalizing specialist, research and innovation. 40+ years' experience. Long track record of innovative problem solving.
- Ideation and design through to implementation completion, including architecture, algorithm, and schema design.
- Adept use of systems analysis, applied mathematics, data-flow modeling.
- Experience identifying emerging markets and technologies, and conceptualizing products targeting vertical markets.
- Excellent complex pattern identification, research, and problem definition skills.
- *Prefer hard challenges or developing new territory to easy accomplishments.*

### Experience

- **Mobile, Telematics.** Computer telephony, unified communications, location-based services, speech recognition. Web development, frontend, UI design, and integrated backend database, including automated agents. RDBMS and Information Retrieval (IR). Content management, search engines, backend. Current interest: Using ZDDs for compression and rapid search of polyhierarchical thesauri for information retrieval apps.
- **General Technical.** Multi-threaded and multi-process backend servers; cross-platform, real-time, and embedded development. Extensive application experience with LANs, WANs, WiFi, routers, hardware devices; media conversion, content analysis, data extraction, automated agents, web scraping; applied mathematics (analysis and statistics), signal analysis (frequency and time series analysis), non-linear curve-fitting, trend analysis.
- **Project Management.** Successfully brought software products to market. Extensive experience making tough decisions, leading, and developing business analyses, market analyses, market & customer surveys, competitive analyses, strategic marketing plans, financial projections and detailed "use of funds" budgets, risk assessments, and contingency plans.
- **Communication, Collaboration.** Outstanding written, verbal communication skills. Positive "can-do" attitude. Good interpersonal communication and negotiation skills. Work independently or in a team. "Bi-lingual" in both technical and business communication. Experienced in preparing and giving presentations to non-technical business people; promotional and technical writing; working closely with marketing and sales; and understanding and meeting the needs of customers.

### Work History

**Employers:** Mercedes-Benz Research & Development, Dotster, IBM T.J. Watson Research Center, Atlas Telecom, Envoy Global, Tektronix Laboratories, University of California. **Startups:** Data Dynamics, Inc. (1980, Chief Architect, founder, CEO, 10 years), Cognilink, Inc. (1990, Chief Architect, founder, CEO, 9 years), Amercom Technology Group (2002, Chief Architect, co-founder, 2 years), Unwired Media Corporation (2009-2012, founder, contracting, Smartphone Android Apps market), Zharma Solar, LLC (2012 – Present, founder, solar-thermal concentrator, solar greenhouse, thermal battery heating/cooling, and hydroponics R&D, consulting. Preparing to market extendable DIY solar hydroponics greenhouse).

### Languages, Frameworks, OSs, IDEs and Tools

- C/C++, SQL, RegEx, Matlab—30+ years. Ruby, Python, PHP, Javascript, DOM—12-20+ years.
- HTML, CSS—22+ years; CSS-driven "tableless HTML"; HTML5, CSS3.
- Ruby On Rails—3+ years.
- MySQL (23 years), SQLite (10 years) ). Some experience with other various RDBMS', including MariaDB and Oracle .
- Android, Linux, Unix, Windows 11. IDE's: Webstorm, Titanium, Eclipse-C/C++.
- Excel (30+ years, expert level, including VBA), Word, PowerPoint, GIMP.

### Location

- Palo Alto, CA or Portland, OR—Remote telework only during pandemic.

### Education

**University of California, Davis.** B.S., Mathematics, emphasis on Analysis, including Numerical Analysis and Statistics. 12 units of graduate-level mathematics, nearly all undergraduate requirements completed for a B.S.E.E., and 30 of 36 units toward M.S.E.E. in Computer Science, emphasis on Information Systems.

**American River College.** A.A., Applied Electronics.

## Examples of Work Products, from conceptualization and design through implementation

### INTERNET AND WEB

- Automated Vehicle Advisory (AVA) prototype for Chrysler and Mercedes-Benz Research & Development, North America. Prototype uses IE browser to provide vehicle owner with information about DTCs, CO2 emissions, fuel efficiency, city/highway driving, and more from vehicle data log.
- Various automated Web scraping projects requiring extraction of data from HTML and then storing in a local MySQL database.
- Interactive domain-name database search, finding all similar names among 90,000,000 names in less than 3 seconds.
- Interactive category & thesaurus browser. Client efficiently synchronized in real-time with web server's backend self-referential RDBMS tree structure.
- HTML newsletters, notices and ads customized for each individual subscriber and delivered by e-mail.
- Interactive Webloyalty "rewards" page, which included backend interoperation of web servers via HTTPS, SOAP and an Oracle RDBMS server; and specifying and implementing an end-to-end encryption capability, which exceeds PCI requirements for transmitting personal credit card information over the Internet.
- SQL Injection Prevention—developed pattern recognizers and code to automatically convert browser-originated SQL queries (in a very large PHP code base) to SQL injection-proof form.
- Scheduled daily automatic FTP transfer of several million domain registration reports from Network Solutions, automatic extraction of data, automatic update of the Oracle RDBMS, and automated auditing and exception reporting.
- Implemented an ISP infrastructure—DMZ architecture, Cisco routers, web, ftp and email servers, firewall, Radix authentication, automatic failover, automated backup, and automated failure notification via SMS.
- Several database-backed websites, including layout, graphic design, and coding.

### MOBILE, TELEMATICS AND WEB

- Interactive, mobile encrypted e-mail client for secure messaging via Internet or directly connected modems, cell or landline. Client and mail stores resided on a USB flash memory drive, including the biometric *Trek Thumdrive*. Invented a strong encryption-key management method for mobile use. ATG was one of eight Oregon companies selected (from 42 applicants) to be a member of RAINS <http://tinyurl.com/2vvfz3> with support from Senator Ron Wyden.
- The Mobile Assistant for IBM/Watson. Using spoken requests and synthetic voice response, telephone access to e-mail, voice-mail, fax, appointments, and pre-specified web sites. Successfully demonstrated to DARPA. Included in IBM group patent no. 6771756 for innovations. Study comparing user response to synthetic and natural voice: <http://tinyurl.com/ycuhbgg>
- One Number Anywhere. A service providing a personal 800 number to mobile subscribers, which enables callers to reach the subscribers at multiple cell, landline or voicemail addresses. Subscribers can define call redirection by time and date, Caller ID, blocked Caller ID and other criteria. The subscriber can use the same personal number to make secure and private calls, local or long distance, or to hear voice mail or e-mail via synthetic speech.
- Information retrieval search engine and thesaurus for use with location-based service—efficiently synchronized with backend self-referential RDBMS tree structure and designed to accommodate polyhierarchies. Used geocoding for "nearest location" retrieval. Search engine development included incremental innovations.
- Washington State Lottery Information Service. Winning numbers are recorded daily. Callers make menu selections to hear winning numbers for Lotto, Keno, Daily Game, or Quinto. Data is stored in a database for billing and reporting. Handled up to 400,000 calls per month.
- Bureau of Land Management Automated Registration System. Callers fill out a form with voice or telephone key entries. Key entries are converted to voice. Completed forms are sent to one or more mailboxes. Callers can leave voicemail. Pause, reverse, and fast-forward enable transcription operators to convert the voice form to text for database entry.

### GENERAL TECHNICAL

- Real-time Step-Response Active Laser Trimming of Thick Film Five-Input Amplifier—advanced use of applied mathematics, invented and developed a general purpose first-order optimizer w/no back-tracking to trim hybrid circuits with an ESI laser.
- Unilink, an integrated, multi-media, Unified Messaging and Information Distribution System for customized multi-threaded telephony applications. Using Intel and Dialogic hardware and a multi-tasking operating system, combined voice, fax, email, interactive voice response (IVR), faxback, virtual number, "find me", an EZ-Link batch email interface, and automatic message switch supporting four to several thousand phone lines. With an API and a C++ class library, interfacing with RDBMs, Unilink was programmable, enabling a mix of capabilities and user interfaces, including voice control and non-English languages.