DAVID VAN MAREN

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PROFILE

I am a computer **programmer**, system **architect**, technical **leader**, and **manager** with a reasonably broad experience in software languages, problem spaces, tools, and practices. I enjoy understanding and explaining complex systems, and developing and leading the development of innovative solutions. I also enjoy mentoring younger engineers.

EXPERIENCE

SOFTWARE ENGINEERING MANAGER, BECKMAN COULTER; FORT COLLINS, CO — 2011-PRESENT

Led a group of 4-6 engineers through **5 new software releases** for Flow Cytometers, and in defining the software architecture for a plate loader. Prototyped and demonstrated an **SOC-based approach**, which maximized re-use and modularity, while reducing costs and enabling support of **mobile devices**. Used a **Raspberry Pi** for the demo, and showed it to multiple project teams at multiple sites. Defined and put into place an **efficient software development procedure** that fully complied with Beckman Coulter's strict development requirements (derived from FDA guidance for medical device software). Benchmarked and tested .NET technologies against native platform-independent C++ technologies, choosing the latter.

STAFF SOFTWARE ENGINEER, BECKMAN COULTER; FORT COLLINS, CO — 2008 - 2011
SENIOR SOFTWARE ENGINEER, DAKO; FORT COLLINS, CO — 2002 - 2007
SENIOR SOFTWARE ENGINEER, CYTOMATION; FORT COLLINS, CO — 2000 - 2002

Led instrument control group in implementation of two generations of sorting Flow Cytometers (MoFlo XDP and MoFlo Astrios). The software was composed of **1.2 Million lines of C++ code**, organized in a **service-oriented architecture**. Our group also owned automated testing, installation, administration, and diagnostic tools. We also owned the developer tools, and integrated them together using **Python**. We drove major refactoring efforts between releases. During this time, I also mentored a junior engineer on **C++**, **object-oriented design**, and other architectural issues, resulting in his becoming a major architectural contributor. Early on, I developed an **object-oriented database** and led another engineer in an effort to integrate it with our software. Later on, I integrated another engineer's cutting-edge spectral modeling system into the instrument.

SENIOR SOFTWARE ENGINEER, RETRIEVE; BOULDER, CO — 1996 - 2000

We started Retrieve to create embedded SW that would run on a RAID controller, which would provide **SAN speeds** (across SCSI on Fiber Channel), but the **capabilities of NAS** (via a file-level protocol, rather than a sector-level protocol). We developed pass-through file systems for **Solaris** and for **Windows NT**, which supported both host types to be connected simultaneously. I led the effort to develop the Windows NT file system, which was ultimately subcontracted out. I also implemented a layer which cached permissions for each file, and mapped between NT and Unix file attributes, so that the files had consistent owners and permissions on all connected hosts.

MEMBER OF TECHNICAL STAFF, HEWLETT PACKARD; GREELEY, CO — 1990 - 1996

Principal **architect** and **Technical Lead** of a team of one HP engineer, two **contractors** and two **ISVs** in development of a C++ File Interchange **Object Framework**. Parts of this were used in HP and third-party products and it has been released into the public domain. My part of the implementation focused on the format-intensive objects. **Educated** and **consulted for** more than six different optical ISVs, including *Kodak* and *Wang*, on the UDF specification and how to use the HP Object Framework. Had leading role in *OSTA Technical Committee* in development of **UDF** ("Universal Disk Format" - see http://www.osta.org/) **ISO/IEC 13346**. Fought hard for simple

practical subset. Made key presentations on UDF to **DVD** TWG and to DVD users' groups, which led to incorporation of UDF in the DVD specification. In turn, it has been adopted for **CD-R**, **CD-E** and even **QIC** standards.

MEMBER OF TECHNICAL STAFF, HEWLETT PACKARD; BRISTOL, UK — 1988 - 1990

Adapted data buffer management firmware from half-inch tape drive to first-generation DAT drive. Co-defined **DDS-DC** format and presented it to DDS committee. It is currently the industry standard format for DAT tapes, and has multiple patents issued for it. Also co-defined microprocessor **interface** to second-generation data compression chip ("Mystic").

MEMBER OF TECHNICAL STAFF, HEWLETT PACKARD; GREELEY, CO — 1981 - 1988

Spent one year in production engineering, supporting Greeley's computer peripherals. Learned about statistical quality control methods by reading <u>Quality is Free</u>. Implemented servo controller code in assembler. Then, co-defined microprocessor **interface** to HP's first generation **Data Compression IC** ("Magic"). Simulated data compression results on wide variety of data sets. Defined fundamental **architecture** of read formatting chip for GCR, PE, and NRZI 1/2" Tape formats used in HP 7980. **Patented** key deskewing FIFO circuit. Defined and implemented half-inch tape **Data Compression Format**. for the **HP 7980XC**.

MEMBER OF TECHNICAL STAFF, HEWLETT PACKARD; VANCOUVER, WA — 1980 - 1981

Early prototyping of controller board for new series of dot matrix impact printers. Drove selection of Intel 8051 as single-chip processor of choice for HP printers.

EDUCATION

University of Wyoming, Laramie, WY — BSEE, 1980

SKILLS

- Technical Architect, Leader, Implementor, and Manager

- Leadership in Organization, Process, and Tools

- International and Standards Committee experience

- Technical communication, oral and written, including patents

- Experience with third-party software vendors and customers

- Broad expertise in Languages, Technologies, and Problem Spaces

REFERRALS
Referrals are available upon request.

PATENTS

7,167,951 (2007)	"Intelligent controller accessed through addressable virtual space" *(derived from 6,493,811)*
6,493,811 (2002)	"Intelligent controller accessed through addressable virtual space"
5,598,388 (1997)	"Storing plural data records on tape in an entity with an index entry common to those records"
5,579,516 (1996)	"Method for storing data files on a multiple volume media set"
5,463,772 (1995)	"Transparent Peripheral File Systems with On-Board Compression, Decompression, and Space Management"

5,298,895 (1994)	"Data Compression Method and Apparatus Utilizing an Adaptive Dictionary"
5,280,600 (1994)	"Storage of Compressed Data with Algorithm"
5,210,851 (1993)	"High Capacity Tape Drive Transparently Writes and Reads Large Packets of Blocked Data Between Interblock Gaps" (*derived from 4,891,784)*
4,974,189 (1990)	"Magnetic Tape Packet Assembler/Disassembler Safeguards Existing Data with Pretries During Appends"
4,891,784 (1990)	"High Capacity Tape Drive Transparently Writes and Reads Large Packets of Blocked Data Between Interblock Gaps"
4,870,415 (1989)	"Data Compression System with Expansion Protection"
4,847,619 (1989)	"Performance-Based Reset of Data Compression Dictionary"
4,672,646 (1987)	"Direct-Injection FIFO Shift Register"