Silicon Valley Engineering Council

Nomination of

William “Bill” Jennings
for the
2018 Hall of Fame Award

Nominator:
Yllka Masada
Vice President of Silicon Valley Engineering Council
38 N. Almaden Blvd. Unit 520
San Jose, CA 95110
408-931-4964
kmyllka@yahoo.com

SVEC HOF Award Committee:

Nomination for the 2018 Silicon Valley Engineering Hall of Fame Award

Today we live in a world where everything is almost at our fingertips. We can search what we want, buy what we want and entertain ourselves with any content anywhere. All this is possible due to high-speed Internet access. The backbone of the network is high-speed routers and switches that make this all possible.

William “Bill” Jennings is the visionary that saw this coming. He provided the key innovations required to making possible high speed processing of billions/trillions of bits of data that needed to be processed.

I have known Bill for eighteen years and I respect him immensely. Shortly after I joined Cisco in 1999, he became the Vice President of Engineering for the Catalyst 6500 Modular Ethernet Switch.

Bill designed (invented) the first Network Processor that combined the processing capabilities of a microprocessor with the high speed communication required to process all the data needed to make the high speed internet a reality. Without Bill’s ingenuity and innovation, we would not have achieved the network speeds we have today.

Bill never wants to stop innovating. After creating the highest speed routers and switches, he has directed his efforts to creating more efficient farming processes. He is developing innovative solutions that measure the soil and plant conditions in a way that has never been done before. This data is being used by machine learning algorithms that will help make agriculture significantly more efficient.

It is these crucial innovations that make Bill Jennings one of the most valuable and accomplished engineering professionals I have ever encountered during my lifetime. Bill embodies what SVEC is looking for in their Engineering Hall of Fame recipients, so I am thrilled to nominate Bill for the 2018 SVEC Hall of Fame!

Yllka Masada

Vice President of SVEC

Full Name of the Nominee:

William “Bill” Eugene Jennings

Current Position, employer, and the address of the Nominee:

Vice President, Engineering
FarmX
558 Brewster Avenue, Suite 201
Redwood City, CA 94063

Degree(s), years and Universities:

Bachelor of Electrical Engineering with a Computer Science certificate, *Cum Laude*, Georgia Institute of Technology**,** Atlanta, Georgia. 1985.

[Graduated in 2 1/2 years of class (in four calendar years, enabling earning tuition between terms) (took over 20 hours a term to graduate early) with a full Bachelors degree]

A summary biography:

Today in a world of machine learning, A.I. and autonomous vehicles, we often forget the technology and leading engineers who built the core foundation to make all these and future technologies possible. William “Bill” Jennings is such an engineer.

If you use Windows on your PC, send traffic over the Internet, use a cell phone, navigate by GPS, or have your computer time set automatically, you benefit from innovations that Bill helped invent, create, or led a team to bring these solutions to your world. Today 80% of Internet traffic depends on products that Bill conceived and led teams to build.

Bill designed (invented) the first Network Processor that combined the processing capabilities of a microprocessor with the high speed communication required to process the data needed that makes the high speed internet a reality. Without Bill’s ingenuity and innovation, we would not have achieved the network speeds we have today.

Bill is not only the engineer’s engineer; he is also the CEO’s engineer. Whatever engineering challenge he faces, utmost in his mind is a business model that secures leadership in markets his company enters.

Lastly and rarely mentioned, is an engineer’s humanity. As one reads the numerous recommendations on Bill’s LinkedIn page[#] that speaks to his compassion and support to those who worked with Bill to know the type of person that Bill is.

Bill is passionate about conservation, and is actively using his expertise to invent energy and water conservation systems for commercial farms at FarmX.

[#] Sample endorsements from recommendations on LinkedIn are added into page nine of this nomination

Noteworthy Professional Accomplishments:

FarmX

Bill is leading the development team at FarmX to develop the highest granularity of sensors in a radio network being used for collecting real time plant health and moisture information for commercial farms. This high density data for real time plant, moisture, and weather information will enable significant conservation of our water and energy resources. It was Bill's experience with RF, sensors, communication, and redundant systems that enabled the design, integration, and installation of sensor networks on farms throughout California. It is the culmination of many decades of experience that has enabled Bill to lead the engineering team for this important work, which has significant global implications.

Cisco

Prior to FarmX, Bill led major developments at Cisco Systems during their periods of hyper growth in the 1990s. Cisco doubled in revenue for seven years while Bill was leading key engineering projects. He gained industry respect for incubating new developments across multiple business units, and using external vendor resources to sponsor specific system elements to be co-developed. Examples of such co-developments include working with Dan Dobberpuhl of SiByte to develop a high performance Big Endian MIPS based CPU (SI-1250); Tom Riordan of Quantum Effect Devices (QED) to develop a multi-threaded high performance MIPS CPU (RM7000); Atiq Raza for developing a multi-core CPU at Raza Microelectronics; Eyal Waldman at Galileo Technology for developing a PCI to MIPS system controller (GT-64010), and a MIPS Layer 2 Cache Controller (GT-64012); and Ron Jankov for developing a dense Ternary CAM. These developments led to acquisitions of SiByte by Broadcom, QED by PMC Sierra, NetLogic Microsystems acquiring Raza, Broadcom acquiring NetLogic Microsystems, and Marvell acquiring Galileo Technology. These incubated projects led to multiple generations of routing engines within Cisco, and these developments were also used in nearly all switches and routers from 1996 to 2006 and beyond.

The Cisco 7200 and Cisco 7200 VXR routers were used for the initial release vehicle for these co-developments. These routers became the foundation for all of the Internet Operating System (IOS) development in later years, as they were the fastest single processor router in Cisco. During the fifteen years of production, these routers generated over seventeen billion in revenue.

Bill's deep understanding of memory and CPU systems also led him to create a silicon development team to build the world's first monolithic optical speed network processor, code named "Toaster". A sixteen CPU on a die demonstration was created in 1997, which led to developing the multi-billion dollar Cisco 7600 product line. This product was able to perform WAN level features in software at rates exceeding OC48 (full-duplex 2.4 gigabits per second): an industry benchmark that was not achieved by competitors for years. The ability to have software updates for new features, without compromising performance, kept Cisco in the forefront of WAN Edge routing for many years. This product line generated over ten billion dollars of revenue after its introduction.

This work creating the first network processor led naturally to developing the Quantum Flow Processor: a processor sub-system used today in the ASR series of routers, in production for over a decade now! The Quantum Flow Processor enhanced density of processing, as well as enabling concurrent operation on hundreds of packets without loosing packet sequencing for any dataflow. This enabled system features to be coded in a high-level language, with the low-level timing details handled by the QFP. This product line generated over twenty billion dollars in revenue since it's launch.

The speed and functionality of the Quantum Flow Processor created a need for a much higher density and performance network interface standard. Bill formed a team and created the Shared Port Adapters (SPAs), enabling the same hardware and software drivers to work across three major versions of routing software operating systems, on multiple existing and new network platforms, ranging from the midrange router portfolio to terabit routers. The SPA architecture enabled full-duplex access speeds of 10 Gigabits per second in a twenty-five square inch form-factor, consuming less than twenty watts of power. The interfaces were used for both WAN and LAN, and ranged in speeds from T1 to OC192. These SPAs are still in

production today, over fifteen years after introduction, as Bill's architecture and designs were very power efficient, enabling density and speeds that are still leadership products over a decade after their conception and market introduction.

Bill's experience with the Cisco 7600 let him move into the High End Ethernet Switching domain, leading his engineering team to develop the greatest revenue generating product at Cisco: the Catalyst 6500 Modular Ethernet Switch. With Bill's leadership, the system was augmented from a shared bus to a switching fabric enabling line-rate packet switching for Ten Gigabit Ethernet interfaces and beyond. During his tenure, he introduced the world's first Ten Gigabit Ethernet Switch Port to the market, and extended services offered on the switch by integration (with an acquisition) of the NetIverse team. This added a software application layer enabling e-commerce, security, firewalls, intrusion protection, SSL, and other key protocols to the switching portfolio. With Bill's engineering leadership, this modular, high-speed, software rich Ethernet Switching platform generated four billion dollars of revenue annually.

With broad experience developing products for layers one to three of the networking stack, Bill joined the Software Technology Group, to gain practical knowledge of the networking layers from four to seven. He led all the instrumentation and management of both routers and switches for service providers worldwide. With his team nearing a thousand engineers, in thirteen countries, he developed application software that supported a hardware portfolio generating an eighteen billion dollar a year revenue stream with Cisco's largest customers.

During his tenure at Cisco Bill started from blank sheets of paper, and created many multi-billion dollar businesses. He successfully collaborated with external development partnerts to generate significant revenue for Cisco and enable his partners to be acquired by public companies. He has demonstrated practical product knowledge for all layers of the networking stack, in service provider and enterprise business segments for networking. During his tenure at Cisco he developed products that conservatively generated over sixty billion dollars of profits, those profits continuing today. Over eighty-percent of today's Internet traffic travels over designs, leading to products, that Bill envisioned and implemented.

During this time, Bill's products received a number of industry honors, including:

- 7206VXR: Infoworld 2008 Technology of the Year: Best Aggregation Router
- Catalyst 6000: Search Networking 2007 Product Leadership Silver Award:
- ISR 4000 (based on QFP and SPAs): Best of Interop in Vegas (April '14), Best of Interop in Tokyo (Jun '14), Networking Product of the Year, Tech World (Nov '14)
- ISC/MPLS Diagnostic Expert: Network Management Product of the Year in 2008 and 2009 by Network Computing Magazine

Also, while at Cisco, Bill was responsible for assessing and integrating seven acquisitions at Cisco: Navarro Networks, Hammerhead, Nashoba Networks, P-Cube, Jahi Networks, and Sheer Networks.

Symmetricom

Bill led engineering at Symmetricom, the world's premier timekeeping company. If you use GPS, are using a cell phone, or you have your time set automatically on your phone or computer, those devices are likely using a time base that synchronizes back to a precision atomic clock that was designed and brought to market under Bill's leadership.

Precision timing, achieved currently with an atomic clock reference, is required for operating cell radio networks to insure absolute maximum data throughput over the wireless network. Without an accurate clock, the channelization and modulation accuracy degrades, impeding dense reliable wireless networks.

Some of the key innovations developed at Symmetricom while Bill was leading engineering includes cell tower Rubidium clocks, Network Time Servers for PTP and NTP, Cesium reference standard clocks, and Hydrogen maser clocks used for Stratum One (and beyond) atomic based clocking references.

Distributing accurate time over the Internet requires an understanding of both networking and precision timing. Bill's network experience, coupled with his knowledge of atomic clocks, enabled Bill to lead senior scientist, Dr. Doug Arnold, to become co-chairman of the IEEE 1588 Precise Time Protocol Study Group.

Another key innovation was the commercialization and release of the Chip Scale Atomic Clock (CSAC). By clever use of MEMS hardware, custom semiconductor LASERs, and embedded algorithms in firmware, the world's smallest and lowest power atomic clock was developed. Its performance is one hundred times better than an oven-controlled oscillator (OCXO), yet consumes only two percent of an OCXO's power. With this capability, wireless oil exploration in the oceans became cost effective and practical.

Bill was responsible for the US Military's primary clocks used today: the Hydrogen masers and Cesium Stratum One clocks. An ensemble of fifty Cesium clocks, and twenty Hydrogen masers are the precise time base for the GPS satellite system: they are all Symmetricom commercial products selected for their accuracy and robustness. These seventy clocks upload time information to satellites and use that information for accurate ranging made possible with multi-point triangulation based on time.

The precision time that comes from NIST (http://www.time.gov) today is from an array of seven Symmetricom Hydrogen masers re-calibrated (re-centered) quarterly by using the Country's F2 Cesium clock in Boulder. But as the F2 clock is loosely put together on a light table, and not hardened for 24x7 operation, the Symmetricom Atomic Clocks are the flywheel that serves time to the Internet today.

Much of the innovation at Symmetricom is used for the government and military applications, so there are no public awards for these products. However, Symmetricon received numerous grants from DARPA, the ONR, and the Air Force, providing an endorsement of the success of these programs. Symmetricom was acquired by MicroSemi in November 2013.

Coral Networks

Bill was the first engineer hired at Coral Networks, and Bill was the technical lead developing the World's first multi-protocol hardware based layer-two packet switch. This packet switch switched FDDI, Ethernet, Token-Ring, T1 and T3 traffic at full-performance. This switch was tested by Scott Bradford of Harvard, along with other packet routers and switches, and had the highest degree of redundancy and performance for any tested product. Coral Networks was acquired by Synoptics Communications in October 1993.

Prysm

Bill was recruited by the Prysm Board of Directors to harden and grow the Prysm product line. Prysm had a functional product: an amazing full immersion video experience with seamless video walls that could fill a gymnasium. However, the product needed telecommunication capability and a lower field-failure rate. In general, the Laser Phosphor Display (LPD) was a great invention by the founders, but needed a senior product executive to enable the company to scale and become profitable.

Bill's diligence and leadership quickly improved the product quality and cost-effectiveness. So much so, that prior to Bill's joining the team, the company had not received repeat business from a customer. Soon after customers were confident enough in the system's performance that nearly all became satisfied repeat customers.

His product work at Prysm created a premier telecommunications platform recognized with these industry awards: Best of Show Infocomm AVTechnology 2015, Best of Show ISE 2015, Best of Infocomm Rave 2015, Best of Show Infocomm 2014, Commercial Integrator Best Award 2014.

Edsun Labs

Bill joined a four-person startup in New England, Edsun Labs, was the initial developers of Continuous Edge Graphics (CEG). This graphic system was used to merge "clip art" into live broadcast TV, being the industry's first system to do this for broadcast TV (1980s). Bill worked to move the technology into a RAMDAC for Personal Computers. Edsun Labs was acquired by Analog Devices in 1991.

Intelligent Systems / Quadram

With Intelligent Systems in Norcross Georgia, Bill led efforts for personal computer adapters including the industry's first Intel 80386 accelerator CPU board for the personal computer. He conceived the concept of "Quadram Inside", which was quickly copied for the competitive product from Intel. If you've ever seen the tagline "Intel Inside", this was a direct result of Bill's idea. The Quad386XT received numerous industry awards, including Comdex's best of Show, and Infoworld best in class design. The Windows/386 operating system was enhanced to support the PC/XT class personal computers under his leadership.

Summarizing, key products developed under Bill's leadership include:

- Internet Routers, Switches, Application/Service Appliances
- Distributed Application Software and Embedded Instrumentation managing global networks
- Cell tower timing systems, enabling high bandwidth data transport using cell phones
- Timekeeping systems used for GPS navigation: Satellite, NIST, and ONR (military) time
- Personal Computer systems: hardware and operating systems
- Agricultural Sensors, Wireless Networks, and Data Processing (Internet of Things, Data Science)
- High-end Communication (Video) endpoints for Broadcast, Enterprise, and Education

Granted US Patents, and Filed Provisional Patent Applications:

1. ***U.S. Provisional Patent Application No. 62/446,272.*** *13 Jan 2017. FarmX.* Soil Moisture Monitoring System Apparatus using Radio Frequency Stimulus.
2. ***U.S. Provisional Patent Application No. 62/434,340.*** *14 Dec 2016. FarmX.* Multi-Depth Soil Moisture Monitoring Systems and Methods.
3. ***U.S. Provisional Patent Application No. 62/418,675.*** *07 Nov 2016. FarmX.* Systems, Methods, and Media for Optimization of Irrigation Management.
4. ***U.S. Patent 7,895,412.*** *22 Feb 2011. Cisco. Referenced by 10 other patents.* Programmable arrayed processing engine architecture for a network switch.
5. ***U.S. Patent 7,380,101.*** *27 May 2008. Cisco. Referenced by 3 other patents.* Architecture for a processor complex of an arrayed pipelined processing engine.
6. ***U.S. Patent 6,836,838.*** *28 Dec 2004. Cisco. Referenced by 7 other patents.* Architecture for a processor complex of an arrayed pipelined processing engine.
7. ***U.S. Patent 6,513,108.*** *28 Jan 2003. Cisco. Referenced by 42 other patents.* Programmable processing engine for efficiently processing transient data.
8. ***U.S. Patent 6,442,669.*** *27 Aug 2002. Cisco. Referenced by 41 other patents.* Architecture for a processor complex or an arrayed pipelined processing engine.
9. ***U.S. Patent 6,272,621.*** *07 Aug 2001. Cisco. Referenced by 32 other patents.* Synchronization and control system for an arrayed processing engine.
10. ***U.S. Patent 6,226,771.*** *01 May 2001. Cisco. Referenced by 59 other patents.* Method and apparatus for generating error detecting data for encapsulating frames.
11. ***U.S. Patent 6,195,739.*** *27 Feb 2001. Cisco. Referenced by 62 other patents.* Method for passing data among processor complex stages of a pipelined engine.
12. ***U.S. Patent 6,182,267.*** *30 Jan 2001. Cisco. Referenced by 29 other patents.* Ensuring accurate data checksum.
13. ***U.S. Patent 6,173,386.*** *09 Jan 2001. Cisco. Referenced by 80 other patents.* Parallel processor with debug capability.
14. ***U.S. Patent 6,119,215.*** *12 Sep 2000. Cisco. Referenced by 72 other patents.* Synchronization and control system for an arrayed processor engine.

15. ***U.S. Patent 6,101,599.*** *08 Aug 2000. Cisco. Referenced by 93 other patents.*
    System for context switching between processing elements in a pipeline of processing elements.
16. ***U.S. Patent 5,793,987.*** *11 Aug 1998. Cisco. Referenced by 165 other patents.*
    Hot Plug Adapter with Separate PCI Local and Auxiliary Bus.
17. ***U.S. Patent 5,490,252.*** *06 Feb 1996. Coral. Referenced by 453 other patents.*
    System having central processor for processing packets.

Professional experience summary:

FARMX, Redwood City, CA; Jan. 2016 – Now
Vice President, Engineering / Preferred Shareholder (Investor)
Water and Energy Conservation Systems for Commercial Farmers

PRYSM, San Jose, CA; Jan. 2014 – Oct. 2015
Vice President, Engineering
Video Collaboration Systems for Education, Enterprises, and Broadcast

SYMMETRICOM, San Jose, CA; Oct. 2010 - Sep. 2013 (bought by Microsemi in Nov. 2013)
Vice President, Engineering
World's leader in Precise "Atomic" Timekeeping and Distribution

CISCO SYSTEMS, San Jose, CA & RTP, NC; Oct. 1994 - Jan. 2010
Vice President, General Manager
Service Provider Network Management Business Unit (07/05 –01/10)
Application Software for all major Service Provider networks in the world

Vice President, General Manager & Engineering
Advanced Routing Technology Business Unit (06/03 – 07/05)
Core Routing (QFP) & Interface technology (SPAs) for Service Providers

Vice President, Engineering
High End Ethernet Switching Business Unit (10/00 – 06/03)
High Speed Modular Switches for Financial Services and Enterprises

Vice-President, Engineering
WAN Edge Routing Business Unit (08/98 – 10/00)
World's First Monolithic Network Packet Processor at Optical Rates

Senior Director / Director / Senior Engineer, Engineering
Interworks Business Unit (10/94 – 08/98)
Channel, Token Ring, APPN, High CPU content Packet Switching

CORAL NETWORKS, Westborough, MA; Oct. 1989 – Sep. 1994 (bought by Synoptics in Oct. 1993)
Principal Design Engineer, Hardware and ASIC Engineering
World's first Hardware based Multi-protocol Packet Switch

EDSUN LABS, Waltham, MA; Sep. 1988 – Oct. 1989 (bought by Analog Devices in Nov. 1989)
Design Engineer, ASIC Engineering
Continuous Edge Graphics: High Resolution Graphics for PCs

QUADRAM, Norcross, GA; Jan. 1986 – Sep. 1998
Design Engineer, Hardware
Personal Computer Enhancements, Windows Software Development

Board of Directors / CEO Advisor
Navarro Networks, Lightspeed Logic, NetLogic Microsystems, MoSys, Raza Microelectronics, Sandcraft, SiByte, Quantum Effect Devices

Organizations Co-founded by Bill Jennings:

Bill joined FarmX in January 2016 as their engineering lead, to raise seed funding, and to develop the product architecture and implementation. FarmX completed seed round financing in January 2017.

Navarro Networks: Bill recruited the Navarro CEO and engineering team, got it Cisco funded, and became a board member. Navarro Networks was a Cisco spin-in, leading to a Cisco acquisition, to build the world's fastest network processor under Bill's direction.

Founding executive for two Cisco Business Units: the Advanced Routing Technology BU: responsible for developing the Quantum Flow Processor and Shared Port Adapters; and the WAN Edge BU: responsible for the highest performance single CPU Routers used for services and route calculations.

Technical Society Memberships and Activities:

Anita Borg Institute

The Silicon Valley Engineering Council recognizes the Society of Women Engineering as a Technical Society as part of their Member Organizations. Bill is active in a similar, yet different group: the Anita Borg Institute (ABI).

In 1987, computer scientist Anita Borg started a community for women in computing. Today the Anita Borg Institute works with women technologists in over 50 countries, and partners with leading academic institutions and Fortune 500 companies.

The ABI Change Alliance consists of 60 companies who have made the important commitment to measure their technical workforce. These 60 companies represent more than 1.3 million workers, including more than 540,000 technical workers across industry verticals including Consulting, Finance, Insurance, Media, Research, Retail, Hardware, Software and Information Services. On average, 53 percent of the workforce at these companies is technical.

Bill is an active member of the Anita Borg Institute, contributing to its program as a speaker/panelist, a mentor to university students, aiding its finances with generous donations, and submitting award nominations for their annual recognition banquets. Through his efforts, women have better tools and incentives to participate in the technical community.

Community Service:

Boy Scouts of America

Bill is an active Assistant Scoutmaster of Troop 581 in Saratoga, where he mentors teenagers in Scouting on a weekly basis. He serves on the Alumni Committee of the Silicon Valley Monterey Bay Council. He has received the James West Award for his contributions to Scouting. He served as a prestigious Philmont Ranger (instructing backpacking at the National High Adventure Camp in the Sierras). Bill was elected by his peers to be the Section Chief of the Order of the Arrow (leading activities in Tennessee and Kentucky), was a National Leadership Training Seminar Coordinator for the Region, an instructor at National Order of the Arrow Conferences, an instructor at National Indian Seminars, was invited to teach conservation practices for sustainability at the National Jamboree, is a lifetime member of the National Eagle Scout Association, was a recipient of the E. Urner Goodman Founder's Award and the Vigil Honor. His Scouting Indian Vigil name, chosen by others, in Lenni Lenapi is *Wunita*, when translated to English means "He who is able".

Children of the American Revolution

Senior President of the Captain Matthew Ramsey Society

Los Altos History Museum

Co-founder / Co-Director of the Annual Train Days Events (Train Safety & History)
This event has the highest participation for California's Operation Lifesaver (train safety) for kids

Sample endorsements from colleagues, found on LinkedIn:

Daniel Scharre
Head of Business Development, Access at Google
June 13, 2013, Daniel managed Bill directly

Bill is an agent of change. As Symmetricom's markets evolved, it was necessary to change our product focus, transform our development processes, and reshape our engineering organization. Bill was the key driver in all of these initiatives.

Robert Lutwak
Program Manager at DARPA
June 16, 2013, Robert worked with Bill in different groups

Don't let Bill's goofy good looks and casual disposition fool you - he is a powerful strategic thinker and a master at "keeping his eye on the ball" and getting things done in challenging environments. When Bill has the ball, I can focus on my own responsibilities and know that it is moving forward thoughtfully and methodically. I have always been able to count on Bill to see the big picture and to do what's best for the stakeholders, even when it lies outside of his job responsitibilities or conflicts with his personal interests.
I would welcome Bill in a leadership role in any organization and hope that we have an opportunity to work together again in the future.

Robbie King
Techinical Lead at Cisco Systems
December 15, 2015, Robbie reported directly to Bill

I had the good fortune of reporting directly to Bill while working as a hardware engineer on multiple platforms at Cisco. In retrospect, working under Bill was one of the best growth opportunities of my career. His breadth of knowledge and ability to drive consensus across engineering disciplines were key to delivering "best of breed" systems that not only generated significant revenue, but also garnered valuable respect within the industry. Working as part of Bill's team spurred my own career growth to encompass both hardware and software disciplines, something I feel would not have happened without his guidance and support. More importantly Bill's integrity, attention to detail and work ethic still serve as examples of the engineer I strive to be.

Steve Nye
Executive Consultant/Board Advisor
February 7, 2010, Bill worked with Steve in the same group

Bill has world-class technical/engineering knowledge in networking hardware and software development. Bill is a very bright, capable and gifted executive. He is a global leader with a wide range, able to dig into complicated issues to building teams to effectively interacting with customer/partner executives. Bill's greatest gift is his ability to quickly understand and assess difficult problems and the courage to solve them.

David Friedman
Sr Product Manager at Cisco
July 7, 2011, David worked with Bill in different groups

Bill has an excellent ability to understand industry technology trends, to drive direction inside his organization, to communicate internally and externally as well as being a pleasure to interact with. I've enjoyed working with him .. and relying on the outcome of his organization's commitments. Together we met customer & industry needs.

Three reference letters that speak to Bill's professional achievement, contribution to the profession and community:

1. Charlie Giancarlo, Former Executive Vice-President and Chief Development Officer of Cisco
2. Telle Whitney: President and CEO of the Anita Borg Institute
3. Dave Holt: Former CEO of Lightspeed Logic, Serial Entrepreneur, Boy Scouts of America

Hall of Fame Nomination: Additional Supporting Information:

1. **Prysm:** Video (from public domain broadcast video) from Dr. Phil showcasing a Prysm Video wall
   To see is to believe: watch the less than two-minute video to see a Prysm video wall in use.
   http://www.teamjennings.net/Dr-Phil-endorses-Prysm.mp4

   Dr. Phil in the first minutes of his Season 13: "We went to the Best of the Best, and we told them we wanted things bigger, we wanted them brighter, and we wanted them better. We have been working on it for months, and today, here it is!" (Dr. Phil then interacts with the Prysm Wall).

2. **Symmetricom:** Chip Scale Atomic Clock (CSAC) on display at the Smithsonian
   Such a significant engineering development, the Smithsonian has it archived.
   http://americanhistory.si.edu/collections/search/object/nmah_1419239

   Developing such a small clock required many innovations in several disciplines, including semiconductor laser technology, silicon processing, vacuum-packing and firmware algorithms. Its portability and low energy consumption have made possible many new applications.

3. **Train Safety at Train Days:** Los Altos History Museum
   California Operation Lifesaver providing education on train safety (mixed in with lots of fun).
   https://patch.com/california/losaltos/train-days-roll-again-los-altos-history-museum

   Participating will be California Operation Lifesaver, providing education on proper rail safety.

4. **Eagle Scout, God & Country, Founder's Award, Section Chief:** Boy Scouts of America
   Photo of some of Bill's Scouting Awards, and description of the Founder's Award.
   https://oa-bsa.org/pages/content/the-founders-award

   The Founder's Award is reserved for an Arrowman who demonstrates that he or she personifies the spirit of selfless service, as advocated by the Order of the Arrow founder E. Urner Goodman.

5. **Philmont Ranger Job Description:** Boy Scouts of America
   Only the absolute best (only one in every thousand Eagle Scouts) are Philmont Rangers.
   http://philmont.wikia.com/wiki/Ranger
   http://www.philmontscoutranch.org/filestore/philmont/pdf/jobs/Ranger_HW.pdf

   In reality, the experience of being a Ranger is more than the job description. Rangers are known for their high-spirit and a can-do, will-do attitude. In face of hardship or challenge, they are more likely to be energized than discouraged or defeated. If needed to clear trail after a blowdown, fight wildfire, search for a lost camper, or carry a litter off a mountain, they are ready.

Name, address and phone number, signature, and date of the nominator signature:

_____ _____

Signature, Yllka Masada — *Dated*

Vice President of Silicon Valley Engineering Council
38 N. Almaden Blvd. Unit 520, San Jose, CA 95110
408-931-4964
kmyllka@yahoo.com

To: Yllka Masada, Silicon Valley Engineering Council August 24, 2017
38 N. Almaden Blvd, Unit 520, San Jose, CA 95110

It is with great pleasure that I write to support the nomination of Bill Jennings for the 2018 Silicon Valley Engineering Council's Hall of Fame Award.

I got to know Bill in the role of the Chief Development Officer (CDO) of Cisco, and we worked together since the early 90s at Cisco. His engineering contributions contributed significantly to the growth of Cisco over his fifteen years there. Bill would often be a guest to my staff meetings, and present system solutions to a host of opportunities in both system hardware and software.

Bill has led teams at Cisco that were responsible for the development of the equipment which transports over 80% of the Internet traffic today; from the edge through the core, in Service Provider and Enterprise networks. His twenty years of networking technology development in the 1980s, 1990s, and 2000s was responsible for the build out of the Internet networking infrastructure that we all count on as a society today.

Bill is a well-respected engineer, who has consistently demonstrated great technical and business breadth. He has been a lead designer for four multi-billion dollar product lines from concept to release. He has hands-on knowledge leading and developing products in the Routing, Switching, and Application Software domains in two major markets: Service Providers and Enterprise Networking. These developments included innovation leading to fourteen granted US patents in networking.

Bill's teams at Cisco were recognized for innovation, teamwork, profitability, diversity, and quality.

- Leading four teams that were recognized with the Cisco Pioneer Award: including inventing the industry's first Network Processor internally called "Toaster"; Launching the Quantum Flow Processor initiative; and collaborating with Intel to Port the Internet Operating System to a Pentium CPU.
- His team receiving the Cisco Software Quality award for three of his major initiatives.
- His Shared Port Adapter team was recognized for their cross-business unit teamwork.
- He had Engineering responsibility for the $4 Billion per year Enterprise Switching Platforms

His innovations and technical incubation of solutions were broadly adopted not just within his business unit, but were commonly used across the entire breadth of Cisco platforms. His core CPU and I/O designs were used in nearly all routers and switches for two decades.

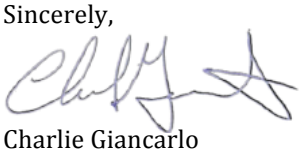
Bill confidentially evaluated and sponsored five acquisitions as an executive: on both technical merit and business fit. These acquisitions ranged in breadth from silicon, to systems, to software.

Bill was a seven year member of the Distinguished Engineer and Fellow promotion committee: reviewing the highest technical promotions in Cisco: a gatekeeper for the highest achievements.

Bill actively partnered with many technology companies, incubating external development of critical systems, including T-Cams, CPUs, memory systems, clocking systems. These partnerships led to acquisitions of smaller teams by major public companies: Marvell buying Galileo Tech, Broadcom buying Netlogic Microsystems, Broadcom buying SiByte, PMC Sierra buying QED Microdevices. His system knowledge was commonly sought out by other companies: both for his ability to partner, and his ability to see a need years before the market was developing.

The engineering community has been well served by his innovation and mentorship, and I can think of no more qualified individual to receive the Hall of Fame honor Award from the Silicon Valley Engineering Council than Bill Jennings, and I am proud to support him today.

Sincerely,



Charlie Giancarlo
Former Executive Vice-President and Chief Development Officer, Cisco Systems

ANITA BORG INSTITUTE

17 August 2017

To: Yllka Masada, Silicon Valley Engineering Council
38 N. Almaden Blvd, Unit 520, San Jose, CA 95110

It gives me great pleasure to support of Bill Jennings's nomination to for the 2018 Silicon Valley Engineering Council's Hall of Fame Award with this letter of recommendation.

I head up the Anita Borg Institute (ABI), a non-profit organization that connects, inspires and guides women technologists, and works with organizations that have large technical workforces, to bring more women into their workforce. Through our work with women technologists and organizations we reach and impact over half a million people.

I met Bill while he was an executive at Cisco Systems. We were introduced to each other by ABI's Vice-Chair, Bill Unger, who served with Bill Jennings on the Lightspeed Logic's Board of Directors.

His passion for creating opportunities and increasing awareness of the positive impact of women in the engineering profession was refreshing, and inspiring. So much so, he was invited and attended two of our annual conferences – the Grace Hopper Celebration of Women in Computing. At these conferences Bill met with university students at breakfasts, shared in CTO roundtables regarding high impact for women in industry, and learned effective ways to bring awareness to his company and industry. This year's conference included eighteen thousand people, primarily women. Perhaps most important, he took many of the ideas of creating an inclusive culture back to his organization.

Bill has also attended ABI's annual Women of Vision awards banquet, and was instrumental in nominating candidates for several of our awards, that recognize women leaders in technology, leadership, and social change.

Bill has also financially supported ABI, which allows us to advance our goals for creating cultural change in organizations that value gender diversity and women in engineering.

Not only was he effective at keeping Cisco's awareness high, he used ABI's content and best practices to build out an award winning Network Management team that was women-led in engineering development, engineering test, and product marketing.

After increased hiring of women engineers into his team, and re-aligning the team to be a significantly higher percentage of women that other teams: the Cisco Transport Manager team in Cisco received industry awards for innovation, and a corporate award for software quality.

His service to the industry and to the Anita Borg Institute is noteworthy, and I can think of no more qualified individual to receive the Hall of Fame honor Award from the Silicon Valley Engineering Council than Bill Jennings, and I am proud to support him today.

Sincerely,

Telle Whitney
President and CEO
Anita Borg Institute

Bill Unger
Former Vice-Chair
Anita Borg Institute

Dave Holt Consulting

15575 On Orbit Dr.
Saratoga, CA 95070
408-839-7342 mobile
408-872-6796 skypephone
Skype ID: habaneroholt

Date: August 6th, 2017

To: Yllka Masada, Silicon Valley Engineering Council
38 N. Almaden Blvd., Unit 520, San Jose CA 95110

Re: 2018 Silicon Valley Engineering Hall of Fame Award Nomination: Bill Jennings

It is with great pleasure that I write to support the nomination of Bill Jennings for the 2018 Silicon Valley Engineering Council's Hall of Fame Award.

I am a serial entrepreneur. My first startup experience was as an engineer growing to General Manager at Convex Computer Corporation. I later co-founded Chromatic Research, which was purchased by ATI in 1998, and I have served as CEO or at the C-level at multiple startups and larger companies for the subsequent 19 years. I now work as an Executive Consultant, currently with five start-ups either as part-time C-level executive or CEO-adviser.

I have known Bill Jennings since 2003. At that time I was CEO of Lightspeed Logic, a pioneer in structured ASICs. Frank Marshall, former VP Engineering at Cisco, and my former boss at Convex Computer, recommended Bill as an outside board member for Lightspeed. I met Bill and immediately felt that his in-depth knowledge of networking architecture, systems, and the market would be of great benefit to us. I introduced him to Bill Davidow of Mohr Davidow, Irwin Federman of USVP and Bill Unger of Mayfield, the three board members other than myself. All interviewed him and felt as I did that he would make an outstanding outside board member. Bill served on the board of Lightspeed from 2003 until 2008 when we performed an orderly shutdown of the business, selling assets and returning significant capital back to our investors.

During his tenure as Lightspeed Board member, Bill provided innumerable technical and business insights that proved invaluable to the strategic and tactical decisions we faced. His in-depth knowledge of router architecture, from micro-code to RTL to caching and memory structure were invaluable in helping shape our product decisions.

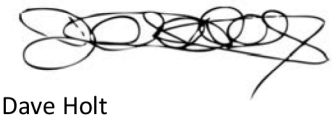
I find that Bill has a thirst for understanding the details of any problem before he moves toward a solution. This optimizes the time-to-market vs. quality tradeoff and produces excellent customer satisfaction. He drives his teams to excel. He and I continue to meet on a frequent basis and discuss his engineering challenges and how he is tackling them – from personnel to architecture to materials science.

I also know Bill Jennings from his participation in the Boy Scouts of America. He is an active Assistant Scoutmaster of Troop 581 in Saratoga, a unit in which I once was Scoutmaster and now serve as Unit Commisioner. Bill is an Eagle Scout, who is now giving back to the community with his service as an adult scouter. He has a vast experience in Scouting, including teaching backpacking as a Ranger at the National High Adventure Base Philmont Scout Ranch in Cimarron, New Mexico. He is well respected for his Scouting experience, built from years of contributions of his time, experience, and resources.

I have had the great privilege to work with some of the top engineering talent in the computer industry in my career. No one of my acquaintance has a deeper understanding of networking architecture or more thorough approach to solving engineering problems than Bill Jennings.

I can think of no more qualified individual to receive the Hall of Fame honor Award from the Silicon Valley Engineering Council than Bill Jennings, and I am proud to support him today.

Sincerely,



Dave Holt