

Executive Summary



Silvus Technologies, Inc.

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Babak Daneshrad, Ph.D

Founder and CEO

Established in 2004

Company Overview

Silvus Technologies, Inc. provides semiconductor IP solutions, which enable engines that will drive broadband wireless applications in 802.11n, wireless HD video, and tactical military systems.

Since its founding in 2004, Silvus Technologies (www.silvuscom.com) has become the leading developer of complex wireless IP technologies that are expected to reshape broadband wireless connectivity worldwide. Backed by an unmatched team of Ph.Ds and design engineers, the company's technologies enable a unique approach to enhance the performance of broadband wireless. Silvus' broadband wireless IP solutions provide enhanced wireless data throughput; wireless interference mitigation; advanced MIMO technology - up to 4x4; anti-jamming via spatial cancellation; and Quality of Service (QoS) improvement for support of wireless HD video transmissions.

As a successful business entity, Silvus is self-funded and already cash flow positive. The company has a team of 18 people that continues to grow.

Challenges & Trends

The extraordinary success of wireless voice-grade and moderate-speed data services (i.e. WiFi) has increased the consumer's appetite for ubiquitous high fidelity and broadband wireless connectivity for use in such demanding applications as streaming HD video. Along with the demand for these capabilities has come the need to maintain a price point that is supportive of the consumer market. Achieving this will require:

1. Operation in one of the unlicensed ISM bands to lower price and increase range
2. The introduction of sophisticated state-of-the-art, multi-antenna MIMO techniques
3. An overarching system centric approach that can guarantee high QoS communication in the presence of jammers and intense interfering sources
4. Backward compatibility with existing moderate- to high-speed data services

802.11n systems address point 1 above and part of point 2, but fail to address the critical issue of interference, which is an ever growing problem as more and more non-compatible, uncoordinated systems are operated within the same spectrum (e.g. cordless phones, baby monitors, WiFi Access points, Bluetooth headsets, etc.).

The Value Proposition for Solving this Problem

Current IEEE 802.11a/g WLANs operate with raw data rates up to 54M bit/sec with actual throughputs of no more than 20M bit/sec. While this is acceptable for many existing applications, future applications are demanding an even higher throughput. Applications that demand higher data rates, such as HDTV (720p up to 1080i) and streaming video, require wireless data throughput rates of 100M bit/sec and higher.

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Achieving this throughput within the unlicensed channel of 20 MHz requires improvements in the physical layer (that is, the raw data rate) and the efficiency of the media access control (MAC) layer, such that the throughput is closer to the raw data rate. Throughput in excess of 100M bit/sec in 20-MHz to 40-MHz of bandwidth that will be operational in a real world environment is a very challenging engineering task.

First-Mover Advantage and Competitive Barriers

The need for high-speed wireless broadband data throughput with a high level of Quality of Service (QoS) has lead Silvus to develop leading-edge broadband wireless IP solutions. For the past three years, Silvus has been at the forefront of introducing these IP-based solutions into military tactical communication systems. This culminated in the company being chosen as the sole performer on a multi million, multi-year contract for 'Mobile Network MIMO' (MNM) from DARPA. These awards have allowed the company to be in first-mover position with respect to advanced broadband wireless – specifically the latest WiFi standard, 802.11n.

As a result, Silvus' broadband wireless IP solutions can be directly applied to today's commercial broadband systems such as WLAN, WiMAX, etc. The company's solutions will ultimately provide the QoS and throughput that can support the over-the-air demands for wireless HD video transmissions in real world deployments.

Silvus' IP cores consist of software, digital signal processing & algorithms, and mixed-signal blocks such as AFEs.

Management Team

Babak Daneshrad, Ph.D., Chairman & CEO - A scientist with demonstrated early-stage company experience, Dr. Daneshrad has been a professor with the UCLA Electrical Engineering Department since 1996. He is viewed as a thought-leader in his field of expertise and is well published in the area of wireless communications, with an emphasis on experimental multi-antenna systems. Prior to joining UCLA he was with AT&T Bell Labs focusing on broadband wireless data communications. In 2001, he co-founded Innovics Wireless, raised \$14 million in venture capital and developed the first multi-antenna, diversity-enabled WCDMA-3G mobile terminal ASIC. In 2004 he co-founded Silvus technologies with a vision of bringing cost-effective MIMO solutions to deliver communications in the harshest of environments.

Dr. Daneshrad obtained his PhD in electrical engineering from the Integrated Circuits and Systems Lab of UCLA in 1993. He obtained his MEng and BEng (honors) degrees from McGill University in 1988 and 1986 respectively.



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Phillip Duncan, Ph.D., V.P. of Business Development & CO - Dr. Duncan has had success as an entrepreneur in both electronic design automation software and wireless communication IP, serving roles ranging from CTO to CEO. During these start-up efforts he was responsible for raising several rounds of private funding. Through an acquisition, Dr. Duncan became a Senior Marketing Manager with Conexant, developing strategy in the wireless multimedia and home networking sector. After leaving Conexant he spent several years as a business and technology consultant with an emphasis on start-up companies.

Dr. Duncan attained his Ph.D. in electrical engineering from the highly regarded Integrated Circuits and Systems Lab of UCLA in 1993. While at UCLA he headed a research effort focusing on digital architectures and design automation techniques to facilitate very low power digital signal processing as an enabling technology for today's generation of smart portable communication devices. The research was collaboration with Texas Instruments corporate research division, where Dr. Duncan was employed as a research engineer.

Contact

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