



MicroVision Company Backgrounder

Overview

MicroVision offers the PicoP® laser display engine to power next-generation display and imaging products for pico projectors, vehicle displays and wearable displays that interface with mobile devices. As the world's first commercial ultra-miniature laser-scanning technology, PicoP uses highly efficient laser light sources to display vivid widescreen images with high contrast and brightness from 12 to 100 diagonal inches in size.

MicroVision's products address the unmet need facing growing mobility markets—consumers want a far bigger viewing experience than they currently get from small mobile device displays. Considering the growth of YouTube, flip video cameras and Apple devices, consumers themselves are increasingly the content creators, and sharing those creations in the real-world has meant squinting and huddling around a small screen.

The PicoP laser display engine is small and low power enough to be embedded directly into devices such as smartphones, media players, camcorders and tablets. MicroVision is collaborating with Original Equipment Manufacturers (OEMs) in the telecommunications, gaming and consumer electronics markets to create new experiences that free consumers from the small screen in addition to creating new opportunities for carriers, content producers and brand marketers.

In vertical markets, such as automotive, aviation, medical and defense, there is strong demand for innovative display and imaging products that overcome today's limitations. For example, the PicoP laser display engine can be embedded into a vehicle or integrated into a portable standalone aftermarket device to create a head-up display (HUD), placing critical information directly on the windshield of an automobile or into see-through eyewear displays. MicroVision is working closely with various automotive suppliers and commercial introduction of an in-vehicle HUD using PicoP technology is targeted for the consumer market in 2012. The company has also entered into contracts with commercial and government customers to develop high-definition, see-through eyewear displays.

Industry studies have shown a correlation between device screen size and consumers' willingness to consume long-form video content, and video is on its way to become nearly one-quarter of mobile data traffic by 2012.



Taking the Mobile Experience Beyond the Small Screen

MicroVision is also the developer of a focus-free, plug-and-play pico projector accessory based on the PicoP laser display engine. The second-generation SHOWWX+™ offers a 50 percent brighter display within the same slim size as the award-winning flagship model. It is a "Made for iPod, iPhone, and iPad" product that easily connects and instantly projects when users play media from their own familiar devices, offering the simplest big-screen experience for devices that people simply don't leave home without. SHOWWX+ also works with any device that offers Video-Out or VGA functionality, casting a full-color, vivid 12-inch to 100-inch diagonal image depending on lighting conditions.

Boasting two hours of battery life, 15 laser lumens, a contrast ratio up to five times higher than competing products, and the shortest throw ratio of any pico projector on the market, the SHOWWX+ is the perfect accessory for expanding viewing experiences beyond a palm or tablet-sized screen. The short throw enables SHOWWX+ to display large, bright images even in close or cramped environments, such as on the back of an airplane seat or in a hallway, resulting in images that are twice as big as competing displays from the same projection distance.

In addition, emerging ultra-mobile applications like iPhone games that use accelerometers and gyroscopes for immersive movement, have unique display requirements for which lasers and PicoP are ideally suited. The image produced by the PicoP laser display engine is always in focus, regardless of variations in projection distance or display surface, and every pixel is the same intensity, creating vivid, saturated colors and brightness that are uniform from the center of the display to the edges. Lasers produce all colors simultaneously, in a hundred-millionth of a second, avoiding color break-up or rainbow artifacts that are commonly experienced with other technologies in fast-moving video scenes, or when the projector or the viewer's head moves.

The Technology Inside

Unlike traditional display technologies such as LCD, DLP, and LCOS, PicoP modulates laser light temporally and spatially using MicroVision's proprietary single tiny vibrating MEMS silicon mirror to produce an image. PicoP directs this collimated beam of light via tiny relay optics, to a front or rear screen surface for projection display applications.

The tiny single scanning mirror itself is less than one square millimeter in area—about the size of the head of a pin. It is designed to scan in both horizontal and vertical directions so that a single beam of light can be precisely steered, in a raster-like fashion, at very high speeds to project a complete video image. The flexible PicoP architecture integrates directly modulated lasers with the electronics, optical combiners and MicroVision's MEMS single-scanning mirror.

High optical efficiency of the architecture results in higher contrast, richer colors and less required power. PicoP does not require projection lenses or focus wheels and dissipates less heat, yielding an extremely small form factor. The inherent advantages of this architecture include spectacular image quality, small form factor and low power requirements, making PicoP ideal for embedded applications.

Management Team

Alexander Tokman CEO and president
Jeff T. Wilson CFO
Joe O'Sullivan vice president, global operations
Sid Madhavan vice president of research and product development
Thomas M. Walker vice president general counsel & secretary



Recent Quarter Milestones

Products:

- › Introduced SHOWWX+, a higher-performance pico projector accessory that strengthens MicroVision's position as a premier provider of vibrant, focus-free, plug-and-play, ultra-miniature display solutions.
- › Recognized as a finalist for the CEATEC 2010 Innovation Awards in the Components category for the first-generation SHOWWX pico projector.
- › Successfully integrated early samples of direct green lasers from two leading manufacturers into pico projector benchtop prototypes. Once commercialized, direct green lasers are expected to provide significant advantages in price, power and size over synthetic green lasers, attributes that are necessary for high-volume consumer and automotive applications.

Automotive HUD:

- › Entered into a memorandum of understanding with Pioneer Corporation to develop, manufacture and distribute display engines and display engine subsystems for consumer and in-vehicle head-up displays (HUDs) using the MicroVision PicoP laser display technology. Pioneer is targeting commercial introduction of an in-vehicle HUD using PicoP into the consumer market in 2012.
- › Delivered head-up display demonstrators to two automakers, and provided the PicoP display engine to a third customer to incorporate into its head-up display, reflecting increased interest in customer development of automotive applications.

IP Value:

- › Purchased a significant patent portfolio from Motorola's subsidiary, Symbol Technologies, Inc. which represents the largest, broadest, and earliest filed laser pico projection and display portfolio outside of MicroVision's.
- › Prior to this acquisition, MicroVision was ranked #2 of the top 20 consumer electronics companies in Adjusted Pipeline Impact (API) score, which measures how frequently a company's patents from the previous five years were cited by other patents and is an indicator of patent portfolio value.
- › MicroVision's portfolio has been recognized for its innovation, impact, and breadth by a number of industry organizations including three consecutive years by IEEE and two years in a row by the Patent Board.

Gaming:

- › Collaborated with Intel and Capcom at Comic Con New York to introduce a new gaming experience—"Infinite Reality"—which leverages the focus-free and instant color creation advantages of PicoP to enable gamers to experience first-person shooter or third-person perspective video games all around them. The walls, ceiling and floor are now part of the action as gamers point the gun up to see the sky, and spin around to see what's behind them.

Defense:

- › Demonstrated ongoing momentum with government customers, including new contract awards from the U.S. Army and U.S. Air Force for development of advanced see-through eyewear and an enhanced laser projection display system.



History

MicroVision was formed in 1993 with the commercialization of technology developed at the University of Washington's Human Interface Technology Laboratory (HIT Lab). MicroVision is headquartered in Redmond, Washington, USA, where its prototyping and product development facility spans approximately 65,000 sq. ft. The company is an ISO 9001-certified organization, and is focused on delivering quality and reliability in both product design and customer service. The company has 160 employees in the U.S., and is also represented in Europe and Asia-Pacific.

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Our corporate blog: **www.microvision.com/displayground**

Twitter: **www.twitter.com/microvision**

Facebook: **www.facebook.com/MicrovisionInc**

YouTube: **www.youtube.com/mvisvideo**