Introduction to Microvision

Overview

An Enabling Technology:
A World of Display and Imaging Opportunities

Microvision's breakthroughs in scanned beam technology are the key to a wide array of major market opportunities across both display and imaging applications. Our patented technology manages light with a level of precision that unleashes new opportunities at both ends of any information system — dramatically enhancing the user's access to, and visual experience of, information. Anytime, anywhere.

Microvision's scanned beam technology and resultant products are expected to create opportunities to gain a strong position in multiple large markets. The management team and employees of Microvision are working to develop these opportunities by providing unique capabilities to the products of world-class companies. Current business relationships with American Honda, BMW, Stryker, VW, NCR and Canon already cover a broad range of display and imaging products in industries where the annual sales potentials could reach from the low hundreds of millions to a billion or more by the end of the decade.

MICROVISION

Founded 1993
NASDAQ:MVIS
Employees 161
9 PhD's, 60 engineers, & 3 researchers.
Located in Bothell, WA
92,500 sq. ft. facility
Strong Intellectual Property
103 issued US patents, 90 US applications pending

2002 Revenue = $15.9M
2003 Revenue = $14.7M

While the company may ultimately experience very broad acceptance and utilization of its technologies, success requires only modest market penetration in a handful of industries. With the powerful advantage combination of price, performance and properly configured packaging to meet rapidly emerging market needs, the entire Microvision team is dedicated to work to make success a reality.

Since its founding in 1993, Microvision has focused on providing technology solutions to a marketplace that is demanding new ways of tapping into, and interacting with, the vast streams of electronic information that course through our professional and personal lives. We began with a mission to commercialize a new scanned beam display technology called the Virtual Retinal Display to enable entirely new kinds of user interfaces that would make our interactions with electronic information more engaging, more productive and more rewarding. Instead of using a conventional screen, this unique display technology eliminates the screen entirely by projecting the image directly on the human eye with a high-speed stream of tiny bursts of light delivered in a precisely scanned raster pattern.

Since 1993, and following the company's initial public offering in August of 1996 (NASDAQ: MVIS), Microvision has expanded its portfolio of scanned beam technology and intellectual property to broadly cover a core expertise in light scanning capability built around an architecture of micro-electro mechanical systems (MEMS) coupled with photonics, drive electronics and optics. With MEMS as the basic proprietary building block, Microvision is becoming recognized as a world leader in high speed, scanned beam technology with a competitive advantage for new approaches to image display and image capture.

With powerful advances in technology in the areas of image quality, component modularity and miniaturization, the company has moved from a research and development oriented environment to a product focus. Having built the capacity to support initial production internally and the expertise and systems to deliver high-volume production, the company launched its first two products in 2002: The Nomad™ Augmented Vision System, a head-up, hands-free, 'see-through' display, and the low-cost, portable hand-held Flic™ laser bar code scanner. In 2003 the company began

production of a cordless version of Flic and in the first quarter of 2004 began production of the next generation Nomad, the Nomad Expert Technician System. Additionally, working with world-class companies, Microvision has created a broad array of innovative and potentially disruptive product prototypes that have the potential to be incorporated into high-performance military, commercial and medical products, as well as mass market digital cameras, cell phones, gaming headsets and automobiles.

Microvision maintains a substantial equity interest in Lumera Corporation (www.lumera.com), a former subsidiary. In July 2004 Lumera became a publicly traded company and now trades on the NASDAQ National Market stock exchange under the ticker symbol LMRA. Lumera is engagaed in the development of proprietary polymer materials and devices for a variety of wireless and optical communications networks, as well as systems for biochemical analysis.

Microvision carries forward into the 21st Century a vision of a world in which light carries information, and enables a new interface between man and machine. Light is projected to the eye as information and light is gathered from the world and converted to information. A vision of a world in which the words "micro-optics" and "microphotonics," which today sound new and strange, will soon be as common and meaningful as the word microelectronics has been in the latter half of the 20th century.

Management Team

Microvision is headed by CEO Richard F. Rutkowski, one of the original employees of the company. Rutkowski joined Microvision in December 1994 as chief operating officer. He was named a director in August 1995 and chief executive officer in September. Prior to that, he served as executive vice president of Medialink Technologies Corporation (formerly Lone Wolf Corporation), a developer of high-speed digital networking technology for multimedia applications in audio/video computing, consumer electronics and telecommunications. Rutkowski also was principal of the consulting firm of Rutkowski, Erickson, Scott.

Other members of the executive team include: Stephen R. Willey, President; Richard A. Raisig, Chief Financial Officer; Dr. V.G. Veeraraghavan, Senior V.P. of Research and Product Development; Andrew U. Lee, VP of Sales; Todd R McIntyre, Senior VP of Business Development; Thomas E. Sanko, VP of Marketing; Thomas M. Walker, VP, General Counsel and Secretary; and Jeff T. Wilson, VP of Accounting.

Overseeing Microvision is the company's board of directors, headed by Walter Lack of the law firm Engstrom, Lipscomb & Lack as Chairman of the Board. Other board members include: Jacqueline Brandwynne of Brandwynne Corporation; Richard Cowell of Booz-Allen & Hamilton Inc.; Slade Gorton, Of Counsel, Preston Gates & Ellis LLP and former U.S. Senator from the State of Washington; Robert Ratliffe, of Kennedy Associates; Dennis J. Reimer, former Chief of Staff of the U.S. Army and member of the Joint Chiefs of Staff; and Richard Rutkowski and Steve Willey of Microvision. Further information on Microvision's corporate officers and directors is available on the company website: http://phx.corporate-ir.net/phoenix.zhtml?c=114723&p=irol-governance

Technology - Part One

Platforms: Scanned Beam Technology

Microvision is developing and seeks to commercialize technologies and products relating to the display and capture of information. Microvision's scanned beam display and imaging technology is being developed around a small number of modular components: scanners and associated drive electronics, light sources and optics. Put together in different combinations, it is possible to create a variety of "engines" or platforms for display and image capture products.

For example:

High performance Helmet-Mounted Displays.
Augmented Vision and Augmented Reality Displays.
Near-eye, Mass Market Occluded Displays.
Image Capture/Cameras.
Projection Systems (Front - or Rear - Projection; opaque or "Head - up").

The core technology of these engines is the MEMS scanner that directs a tiny beam of light. The MEMS scanner is a small, electro-mechanical biaxial mirror that can be cost efficiently manufactured on silicon wafers using batch fabrication techniques similar to integrated circuits. The device is made from a small sliver of silicon, roughly half the size of a U.S. dime. In the present configuration now being manufactured, the scanning mirror itself is less than 2.5 square millimeters in area and is pivoted in the horizontal and vertical directions using the fast and slow flexures as hinges. The movement of the mirror, controlled by the drive electronics, steers the single beam of pixels with great precision.

Many of the drive electronics and algorithms that operate this steering process and modulate the light sources are described in a number of patents in the company's patent portfolio. While complicated, the electronics can be placed on a small ASIC chip and are inexpensive when manufactured in high volume. The smallest of the light sources are roughly the size of a grain of table salt and manufacturers of sub-assemblies like DVD heads have already learned to fabricate them in tiny packages with the kind of accuracy Microvision's technology requires. The optics can be molded from plastic and therefore can meet stringent cost requirements.

The modular components provide enormous flexibility, scalability and adaptation to wide ranging products. Light sources and optics can be interchanged to create different versions of augmented vision displays, and various forms of projection displays or image capture devices. These characteristics make it possible to improve the performance of the technology more rapidly and with significantly lower research and development and tooling costs. At the same time, the broad range of applications promises the potential of better economies of scale for production. Miniaturization and volume based cost reductions are expected to lead to less expensive products.

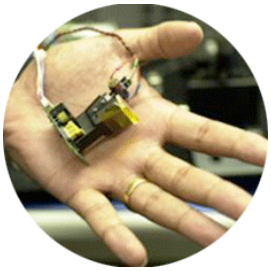
Improvements in any of the basic building blocks— scanners, drive electronics, light sources and optics — can improve overall system performance. In particular, each new generation of the MEMS scanner becomes essentially a whole new platform, expanding the potentials of all components and enabling rapid increases in application possibilities in both image display and capture.

Partners and Platforms: The Business Strategy
Microvision’s business strategy is to invest in the company’s proprietary microscanning technology to create a small number of technology platforms that enable multiple display and imaging products for a variety of large market opportunities. Microvision recognizes that strategic partnering with clients and customers who are dominant in important product categories is an integral part of this process. By leveraging the company's intellectual property with appropriate financial, technical, manufacturing and marketing relationships, the company is becoming a forerunner in scanned beam technologies for display and imaging products in a broad range of applications from high performance, high value military and professional systems to high volume, OEM manufactured consumer products.

With the platform approach, each new generation of scanning device or related component brings increasing potential to create new and innovative, first of kind products for partners across industry segments. A scanned beam display engine for near-eye, industrial applications (i.e. the Nomad Expert Technician System) has the potential with different light sources and optics to become a mini scanned beam projection system for an automotive instrument cluster or a

replacement mini-CRT for an armored vehicle gun sight. And the scanner developed for a scanned beam display can be used in reverse to create a bar code reader or a laser camera for machine vision or medical imaging.

From Generation to Generation: Moving toward Consumer Products



The Gen 1.5 scanning engine. Consumer engines are soon expected to be smaller and able to integrate with a variety of mass-market information devices.

In the beginning of 2002, Microvision launched its first commercial product, a monochrome, monocular head-worn display called the Nomad Augmented Vision System. This device employed the first generation of a commercial MEMS scanning system. Since that time, Microvision has developed a Gen 1.5 system as a demonstrator for cell phones and electronic viewfinders for digital cameras and a Gen 2 system for the launch of the new version of Nomad.

The company also announced in June 2003 the first prototype of a Gen 3 scanner which eliminates the vacuum housing found in earlier scanner versions, is smaller, lighter, uses less power and is lower in cost. The Gen 1.5 scanning engine system is about one quarter the size of the Gen 1 and the Gen 3 system for consumer products is expected to be roughly the size of the tip of one's thumb. Variations of the Gen 3 engine system platform could be employed in a large number of products such as cameras, gaming headsets, cell phones or personal video devices beginning as early as 2005.

Technology - Part Two

Intellectual Property

Microvision has built a substantial portfolio of technologies around revolutionary new approaches for scanning light to display and capture images. These technologies were initiated and developed within the company's own research and development programs, as well as licensed from third parties. As of July 2004, the company's intellectual property consisted of 103 issued U.S. patents, over 90 pending patents and well over 300 documented invention disclosures for which the company has prepared or may prepare patent applications.

This base of intellectual property covers a very wide range of inventions from general concepts underlying Scanned Beam Technology, to scanning system design, fabrication and drive electronics, to many applications for image display and capture. For the large majority of patents, Microvision owns exclusive rights for all display applications, bar code scanning and certain medical and other imaging applications. With this strong and growing intellectual property foundation, the company is establishing a competitive advantage potential across large segments of image display and capture markets.

Scanned Beam Display Technology - Eliminating the Screen

Microvision's scanned beam technology offers an innovative, cost effective and elegant solution to the market for personal displays. Contrary to flat panel technology, a scanned beam technology creates the appearance of a full sized desktop monitor by scanning almost 30 million tiny bursts of light rapidly and precisely into the eye every second. The human visual system perceives this continuous stream of "pixels" as a complete and stable image. The image appears no different than that created from a 17" high-resolution computer monitor.

Display Components

1) Drive electronics process the signal from an image source such as a computer or video camera, synchronizing the color mix, intensity and placement of the individual picture elements (pixels) that create the image.
2) Light sources are directly modulated by the drive electronics and their output merged to produce pixels of the appropriate color and intensity.

3) A steady stream of these pixels is sent to a biaxial scanner, which "paints" an image left to right and top to bottom in the user's field of view.
4) Refractive and reflective optical elements then project this pattern onto the retina and the eye perceives the image.

Advantages of Scanned Beam Displays

Scanning a beam of light eliminates a whole set of extremely complex development and fabrication challenges, costs and inefficiencies of cathode ray tubes and matrix array flat panel displays. The architecture requires only a light source, creating one pixel at a time, and a single tiny mirror to position it. Resolution potential is now higher since it is limited only by diffraction and optical aberrations of the light source, not by the minimum size requirements for a pixel built into a large array. Contrast ratios are excellent because of the ability to directly modulate the intensity of the light sources. The color range and fidelity resulting from using the pure light from red, green and blue light sources is superior to any other electronic display technology.

The company believes that as display technologies attempt to keep pace with miniaturization and other advances in information delivery systems, conventional cathode ray tube and flat panel technologies will no longer be able to provide an acceptable range of cost performance characteristics, particularly the combination of high resolution, high level of brightness and low power consumption required for state of the art mobile computing or personal electronic devices.

Image Capture Devices

The market for electronic image capture devices has grown. These applications include data capture, machine vision-based inspection systems and video-based medical images. The current products that address these markets are based on pixelated light-to-charge or light-to-voltage converters such as CCD or CMOS arrays. Microvision believes that its scanned beam imaging engines have the potential to deliver superior performance at a lower price.

Scanned beam imaging devices generally work by moving a beam of light over an object or an image and reading the reflected light back into an optical sensor. Microvision uses its scanned beam technology to sequentially illuminate each pixel in a field of view in a raster pattern. The reflected light from the pixel is then gathered and converted to an electrical signal using a photo detector and the sequence of reflectance values is correlated to specific pixel locations, creating a digital map for a fully viewable image.

In conceptual terms, this is like having a film camera with a very small aperture and extremely high shutter speed taking millions of small pictures each second. The result is a new level of price and performance capability: high resolution, high magnification, large depth-of-field and very sharp focus, all in a small, relatively low cost, low power package that virtually eliminates problems with motion blur. Enabled applications include one and two-dimensional bar code readers and miniature high-resolution cameras for machine vision and medical imaging.

Display Products

Commercial See-Through Displays using Augmented Vision and Augmented Reality

Microvision launched its first commercial display product, the Nomad Augmented Vision System, at the beginning of 2002. This was followed by an updated version called the Nomad Expert Technician System in the first quarter of 2004. The Nomad Expert Technician System is a wireless, head-worn, monocular, monochrome red, see-through display for augmented vision applications. It was designed in consultation with customers in the automotive industry (American Honda, Volvo Trucks, and others) to function as a personal head-up display, delivering information to the user at the point of task. Units are being sold directly to customers by company sales personnel and through a network of value added resellers, integrators and representatives.

Augmented vision and augmented reality for point of task applications represent a whole new way to work and offer significant opportunities to improve return on investment through increased productivity, improved quality of work and enhanced work safety. In automotive applications, the Nomad delivers benefits to all parties: to customers in faster turnaround for their vehicles and work done right the first time; to automotive dealers with higher throughput for their service operations and more efficient technician training; to technicians in the ability to do more jobs and earn more money; and to manufacturers, in more satisfied customers willing to buy another vehicle. In time trials and demonstrations, the Nomad has shown productivity improvements as high as almost 40% and has provided utility to service advisors and parts employees as well as service technicians. Microvision continues to work with American Honda and other OEM's to match system capabilities to needed applications. Production of the Nomad Expert Technician System began late in the first quarter of 2004.

The Nomad is proving itself in the field. The units ordered by the first Stryker Brigade Combat Team in September 2003 have been deployed with the brigade in Iraq since early December, giving Stryker vehicle commanders a see-through, repeater display for the onboard situational awareness computer system that shows terrain mapping and data on the known location of friendly and hostile forces. Reports from Iraq in the first quarter of 2004 indicate the units are performing well in the challenging environment and have been recommended to a second Stryker Brigade.

Microvision has identified three broad categories of applications opportunities for the Nomad Expert Technician System:

- Alignment, positioning and navigation
- Real time monitoring
- Electronic performance support

A version of the Nomad Expert Technician System

Many of the applications in the first category are "plug and play," or very nearly so. In these the Nomad system is used as a head-up display to give navigation, alignment and position information to the user, such as a Stryker vehicle commander. Other uses identified to date are surgical instrument positioning, indoor measurement and tracking systems, machine control (bulldozers), geospatial information systems for surveying, patrol craft navigation, electronic flight information systems and supplementary marine navigation displays for radars.

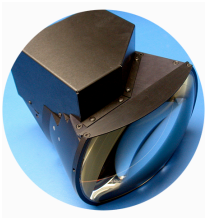
The second category, real time monitoring, overlays in the field of view the output of remote sensors such as video cameras, engine and stress sensors, and infrared and high technology specialty devices. Applications include security, crane control, emergency response and medical critical care.

Electronic performance support is developing into the largest potential segment, especially for automotive applications. Here, maintenance, repair and overhaul information is already digitized, widely available and in common use. The wireless Nomad system places this information in the technician's field of view, at the point of task, eliminating frequent trips to a computer terminal and printer. Other areas where the benefits might well be similar, but where the information content may require further formatting or digitization, include maintenance repair and overhaul operations for aviation, military equipment, machinery, manufacturing and power plants.

Display Prototypes

Automotive Displays

Over the last three years Microvision has been building prototype displays for automotive customers to demonstrate the range of capabilities enabled by the company's technology platforms. The most promising of these is a new compact head-up display – "Micro-HUD" –the first variation of which was installed in a European luxury sedan in the fall of 2003.



The Micro-HUD

The Micro-HUD leverages off the Nomad engine architecture, incorporating specific advantages of Microvision's laser scanning technology:

- Many degrees of freedom to optimize the optical design and make possible a smaller and more compact
- overall package readily adaptable to different car models.
- A dynamic range exceeding one million to one that provides a very bright, high contrast image that is crisp and distinct over the full range of ambient light conditions. The driver sees only the content being displayed (and not the entire panel as with LCD-based HUDs).
- The ability to pre-distort and displace content. Electronic alignment can be used to ensure a quickly installed unit delivers an image with the right shape and in the correct location for a wide range of windshield surfaces.
- Low thermal loading and high thermal tolerance. Lasers and highly efficient beam shaping optics require little or no radiators used on other systems to dissipate heat. A high tolerance to incoming solar heat also eliminates the need for cold mirrors, shutters, or other temperature control devices.

Of particular significance, with the Micro-HUD Microvision has pioneered the development of new beam shaping and other optical technology and can now deliver an exceedingly bright and completely speckle-free image that meets critical requirements. The target market is mid to high end automobiles with a broader future potential as volume drives down unit costs.

Occluded Displays

In 2002, Microvision completed its first commercial contract with Canon, Inc., delivering a reduced size display. This work is being continued under a third contract and Microvision believes the occluded near-to-eye microdisplay under development will have a disruptive impact on the digital still camera market due to its numerous competitive advantages as an electronic viewfinder (EVF) over liquid crystal displays (LCD's) and optical viewfinders. A high quality EVF image would also enable image processing functions to be built into the camera, giving the camera user the ability to not only pre-process a photograph to achieve a desired effect, but also to display such photograph prior to final recording. The current optical viewfinder would no longer be needed.

Linking Microvision's EVF directly to the camera image sensor is anticipated to enable all digital cameras to achieve the full viewfinder functionality of a premium single lens reflex (SLR) camera - i.e. the viewing of the entire scene that is to be recorded through the lens by the digital sensor. An unpixelated, high resolution, full color image would allow the user to preview the image in a meaningful way for critical focus control and depth of field adjustments.

EVF Camera: Electronic Viewfinder

Since most of the largest digital camera manufacturers have already released products using low resolution EVF's, Microvision's miniature viewfinder package is being viewed with great interest as a replacement component, particularly for application in high-end cameras. Volume opportunities for this market are anticipated to be in the high tens of thousands to hundreds of thousands of units and the volume potential would likely grow rapidly as manufacturing costs are able to be reduced and the use of EVF's is extended from high-end cameras down to those in the middle price range.

The digital still camera market size is forecast to be about 51M units in 2007 (Info Trends Research Group, November 2002). In January 2003, 57% of digital camera shipments were for higher resolution cameras of greater than 3 megapixels (Japan Camera Industry Association, reported in Silicon Strategies March 6, 2003) that could incorporate an EVF system. The technology could also be adapted quickly to digital camcorders where unit volumes are expected (by IDC, McLaughlin Consulting Group) to be about 12M in 2005. Volume potentials in these markets are anticipated to help drive prices for the microdisplay platform toward the range necessary to support widespread use in consumer products.

Microvision expects that the range of potential products modeled after the EVF might also include cellular phones, pagers, personal digital assistants, or hand held computers.

Replacement (Mini) CRT's

Microvision has demonstrated the use of its scanned beam technology in a replacement display for a small CRT used in gun sight electronics for light armored Army vehicles. Using a patented process, the required green image was created using a Nomad display engine. The resulting package has significantly reduced size and power requirements.

High Performance, High Value Displays

Working in conjunction with the U.S. Army, Microvision has developed a series of demonstration prototype Helmet Mounted Displays (HMDs) for advanced military flight systems. These HMDs use lasers and Mechanical Resonance Scanner scanning engines to create high resolution, high luminance and a wide field of view. The systems are binocular and have been built in both monochrome green and full color versions.

Prototype Helmet Mounted Display

A simplified, monocular, full color, SVGA (800x600) version HMD called Spectrum has also been developed for use in medical trials and a modified version is currently in the initial stages of flight testing by the U.S. Army. The system has the potential to be a relatively inexpensive solution to providing digital battlefield display capability to pilots of legacy aircraft.

Image Capture Products

Hand-held Bar Code Devices

The Flic laser bar code scanner, Microvision's first image capture product for the bar code market, was introduced in September of 2002. At an MSRP of $99.95 (with software), the unit provides a very attractive combination of price and performance with its smaller size and lower power requirements than traditional devices in the hand-held scanner segment. It uses a simplified mechanical scanner operated by the energy created from depressing the scan button and three AAA batteries to power the laser and electronics. The unit will store up to 500 bar codes with time stamp in the un-tethered mode of operation and a new cordless version with Bluetooth wireless capability is now available.

Flic™ Laser Bar Code Scanner

Analysts at Venture Development Corp. (VDC) place the market size for hand-held scanners at a little over $1B with an annual growth rate of 7.5%. This market is divided into wands (about 7%) averaging around $125 on the low end, linear charge coupled devices (CCD's) in the mid price range (about 25%) and laser devices averaging around $400 on the high end. The Flic scanner is being positioned to sell at the price of wand scanners, but with the performance of a laser scanner and with the added value of free software. With the addition of Bluetooth capabilities the Flic scanner will also compete in the larger, portable data terminal market (VDC 2003 estimate about $2.6B). Unit growth for this market is estimated to be 15% and the common form factor combines the laser-scanning device with the data terminal. Microvision intends to separate the scanning and data terminal functions, using a wireless link to a PDA or hand-held computer with the Bluetooth version of Flic as the scanner.

Flic is being marketed through distributors and value added resellers under its own name and is being supplied directly to NCR on an OEM basis. The company is expecting that with Flic's unit price, ease of use and performance it has the potential to open up new market applications, particularly for small and new retail operations.

Image Capture Prototypes

2D Bar Code Readers and Endoscopic Imaging

At the annual meeting, June 24, 2003, Microvision held the first public demonstration of its laser scanning camera. The prototype has been used to demonstrate the potentials of Microvision's scanned beam technology for endoscopic imaging and 2D bar code reading.

In comparison tests with a state-of-the-art 2D bar code imager, Microvision's prototype demonstrated twice the depth of field, about 30 times less sensitivity to motion blur, and superior performance on low contrast surfaces. These characteristics and Microvision's system architecture could enable a 2D bar code reader at a comparable price and as easy to use as the common laser scanners for linear bar codes in use today.

In comparison tests with 10mm rigid endoscopes – the industry "gold standard" – Microvision's prototype demonstrated at least comparable resolution with better color fidelity, better distinction, and improved uniformity of illumination. Microvision believes its image capture scanning technology has the potential to be packaged in significantly smaller diameter form factors, either rigid or flexible, and manufactured at much lower costs than existing alternatives.

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