

METRICOM, Inc. (NASDAQ: MCOM)

Initiating Coverage: NEUTRAL RATING

September 10, 1999

KEY CONSIDERATIONS

- Metricom (the Company) is poised for a national rollout with its Ricochet technology in the wireless Internet and wireless network solutions markets. Ricochet is Metricom's premier service, a mobile network for Internet access and network solutions.
- Recent \$600 million convertible preferred financing equally by MCI WorldCom (NASDAQ: WCOM) and Paul Allen (Vulcan Ventures) will fund the national rollout of Ricochet but further financing will be necessary. MCI WorldCom and Vulcan Ventures retain, 38% and 49% stakes in Metricom, respectively.
- Recent partnerships with various companies including Sanmina (Nasdaq:SANM), to build Metricom technology, Wireless Knowledge LLC, a joint venture of Qualcomm (Nasdaq:QCOM) and Microsoft (Nasdaq:MSFT), and AvantGo.com are part of the company's evolution into a national wireless network provider.
- Even though the Company currently enjoys a technological advantage (faster data transmission speed), it has never generated a profit, has an accumulated debt in excess of \$265 million, and may never be profitable in a highly competitive industry. Evolving competing technologies represent a big threat.

Recent Price	\$25.44
52WK High	\$56.50
52WK Low	\$3.00
P/E	NM
P/Book	NM
P/Sales	28.66
Market Capitalization	\$484.16 million
Shares Outstanding	19.03 million
Float	7.6 million
Daily Volume (3-month Average)	3.497 million
Short Ratio (5/99)	2.17 million

EPS	Reported
1997	(4.35)
1998	(4.63)
1Q99	(0.80)
2Q99	(0.86)
3Q99E	(1.77)
4Q99E	(2.86)
1999E	(6.82)
2000E	(9.16)

ONE-YEAR PRICE AND VOLUME GRAPH



Courtesy of Yahoo!

COMPANY PROFILE

Based in Los Gatos, CA, Metricom is a provider of wide-area wireless data solutions. Metricom's Ricochet service provides mobile professionals with high-performance, flat monthly fee access to the Internet, private Intranets, LAN, and other online services. Metricom was incorporated in December 1985. Ricochet service began in September 1995. Currently, there are 29,000 Ricochet subscribers in a several metropolitan areas with an aggregate population of 11 million. The company's website can be reached at www.metricom.com

This report was prepared by David R. Rivas, Ph.D., and David Farkouh.

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THE COMPANY

Metricom, Inc is a leading provider of wide area wireless data communications solutions. The company designs, develops and markets wireless network products and services that provide low-cost, high performance, easy-to-use data communications that can be used in a broad range of personal computer and industrial applications. The Company's primary service, Ricochet, provides users of portable and desktop computers and hand-held computing devices with fast, reliable, portable, wireless access to the Internet, private intranets, local area networks ("LAN's"), email and on-line services for a low, flat monthly subscription (approximately \$30 monthly) fee that permits unlimited usage.

The Company's current networks use licensed and unlicensed spectrums to provide end users with speeds comparable to those of commonly used wired modems and, to the Company's knowledge, faster than those of other portable wireless wide area data communications networks. The Company plans to upgrade its existing Ricochet networks and design modems in order to provide end user speeds comparable to those of today's high-speed ISDN telephone lines. The high-speed system under development known as Ricochet², has demonstrated in Company tests to provide the same service as Ricochet, but at faster downstream speeds of up to 128kps. On July 21, 1999, Metricom concluded Beta Testing of Ricochet² citing customers using the current modem saw two-times faster increase in performance over the current Ricochet system. Customers testing the next generation modems, with properly configured systems, experienced speed in excess of 128kps, with some incidents of 160kps performance.

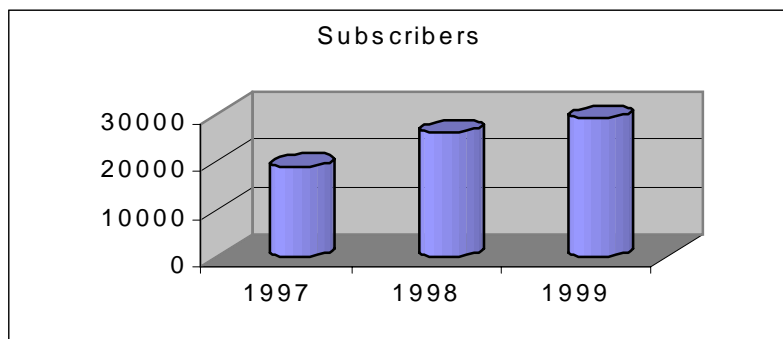
Insiders

Vulcan Ventures Incorporated ("Vulcan"), the investment organization of Paul G. Allen, increased its stake in Metricom to 49.5% of the outstanding Common Stock. Vulcan has been an investor in Metricom since 1993. The Company is currently working closely with Vulcan on the strategic plan through which the Company plans to complete the development of Ricochet² in 1999, and subsequently deploy it in various metropolitan areas in the United States.

MCI WorldCom maintains 38% ownership included in the recent strategic agreement, that is a five-year, non-exclusive wholesale agreement valued at \$350 million with Metricom for Ricochet services. Metricom will utilize MCI WorldCom's high-speed data and Internet network and support operations as it expands nationally.

Subscriber Base and Market Potential

Metricom began commercial Ricochet service in September, 1995, and Ricochet service is now available in the San Francisco Bay Area, in the Seattle and Washington, D.C. metropolitan areas; parts of Los Angeles; and in certain airports and corporate and university campuses. Ricochet's customers include individuals, corporations, educational institutions and federal, state and local governments. As of July 1, 1999, there were approximately 29,000 Ricochet subscribers, and the Company estimates that its networks covered areas with an aggregate population of approximately 11 million people.



International Data Corporation (IDC) predicted that by 2001, 7.3 million of the professionals who carry cellular/PCS phones laptops and other mobile computing devices will do business within the metropolitan areas

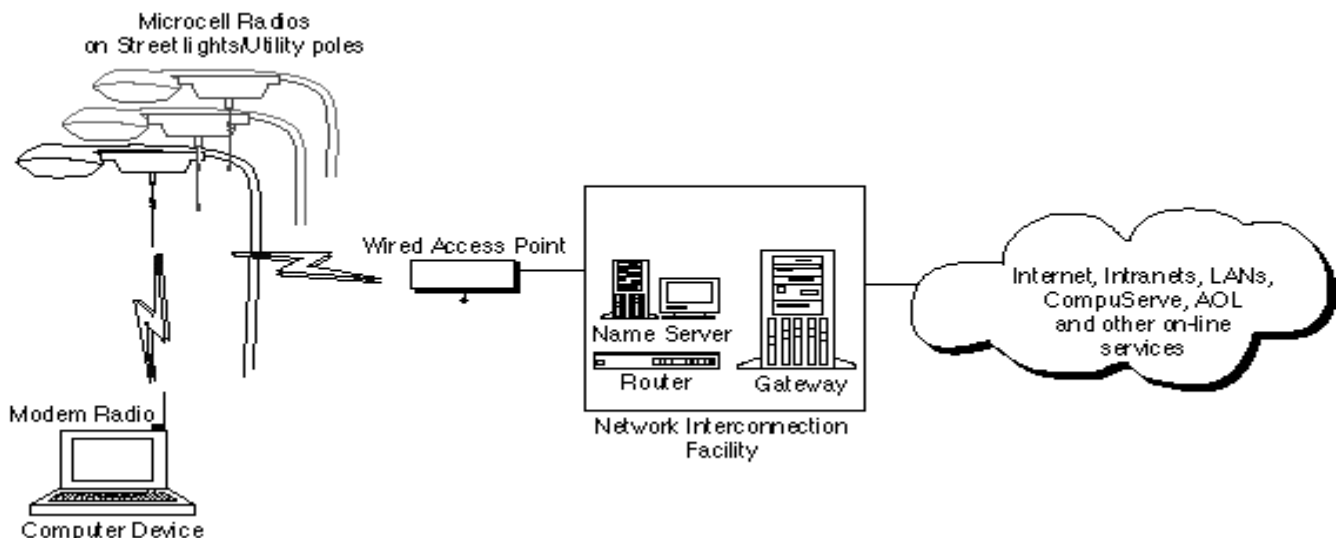
included on Metricom's rollout plans. "The mobile professional market available to Metricom is forecasted to exceed 123 million users in 2005," said Iain Gillott, Vice President, Worldwide Consumer & Small Business Telecommunications at IDC. He also said that "Critical success factors in this segment of the mobile data market are the ability to provide cost effective, reliable mobile Internet and LAN access throughout the major metropolitan areas."

The market research firm, Dataquest, has estimated that the Company could achieve 1.2 million subscribers by 2003 with aggressive deployment of its network. The Gartner Group predicts the number of mobile professionals to be 54 million in three years. These mobile professionals are highly concentrated in and around metropolitan areas and Metricom's network will target primarily these locations.

Ricochet (the Company's primary service)

The Company's Ricochet networks use a wireless data communications infrastructure to provide wide area coverage in metropolitan areas. Individual subscribers access the network with wireless portable radio modems that connect to the serial port of a desktop or portable computer or hand-held computing device.

The primary elements of a Ricochet network are compact, inexpensive network radios that are deployed on streetlights, utility poles and building roofs in a geographical mesh pattern. The Company's mesh network architecture and patented routing technology moves data packets across the network along any of a number of alternative paths, thus allowing data packets to be routed around busy or non-functioning radios. In addition, system congestion can be reduced and network coverage and capacity increased by the installation of one or more relatively inexpensive network radios. Network radios are quickly and easily installed since no wired communications line is required and power is normally obtained directly from the street light. Wired Access Points, or WAPs, in clusters of 8 to 12 service up to 140 network radios. A WAP is believed by the company to support approximately 1,200 customers for up to a 15 mile area. In the upgraded network, the Company expects capacity to exceed 3000 customers with more advanced WAP systems. All of the WAPs in the Ricochet network are interconnected with high-speed frame relays wired backbone. This wired backbone provides access points to the public switched telephone network, gateways to other networks such as the Internet, private Intranets and LANs, which provide email and value-added services.



Ricochet networks employ packet-switched technology. Data communications networks that utilize packet-switched technology offer a number of inherent advantages over circuit-switched networks such as the commonly available wired data communication networks. Multiple users can more efficiently share networks as data packets can be routed along alternative pathways. Since a physical connection is not established between

modems at each end of the circuit, network capacity is used only when data packets are actually being transmitted. In a circuit switched network, a dedicated physical connection is established between modems at each end of the circuit, thus limiting network capacity to the number of circuits available and modems installed. Packet-switching networks are not bound by circuit-switched network unavailability when the number of users exceeds the number of physical connections available.

A data packet transmitted by a subscriber's Ricochet wireless modem travels through one or more network radios wirelessly to a WAP where is routed to its destination over the wired backbone. The network is designed so that a data packet typically requires no more than one or two hops through network radios before reaching a WAP. Destinations may include another Ricochet modem anywhere in the Ricochet network, a public packet-switched network like the Internet, a private Intranet, a LAN or an on-line service. In addition, Ricochet modems can support communications with one another without accessing network radios, provided that they are close enough to establish a direct radio connection. Network performance is monitored and controlled by the Company's network operations center located in Houston, Texas. As the size of the Ricochet networks grow, certain network management activities that are currently performed centrally will be distributed throughout the network to provide redundancy and limit administrative communications over the network. Ricochet supports operation with standard protocols and interfaces. This permits the use of software applications intended to communicate over dial-up telephone lines for access to the Internet, private Intranet, LANs, on-line services and e-mail.

The Company's current networks use unlicensed spectrum and provide end users with speeds comparable to those of commonly used wired modems. The Company plans to upgrade its existing Ricochet networks and design modems in order to provide end user speeds comparable to today's high-speed ISDN telephone lines. The high-speed system under development, known as Ricochet2, has demonstrated in Company tests to provide the same service as Ricochet, but at faster downstream speeds of up to 128kbps. This improvement in speed is in part the result of the Company's acquisition of licensed spectrum in the 2.3 GHz frequency band in the Wireless Communications Service ("WCS") auction held by the Federal Communications Commission ("FCC") in 1997. The licensed spectrum consists of two 5 MHz licenses covering the western and central United States, one 5 MHz license covering the northeast United States and 10MHz licenses covering the Seattle, Portland and St. Louis metropolitan areas. The Company intends to use the licensed spectra, together with unlicensed spectra in the 902 to 928 MHz and 2.4 GHz frequency bands, with its existing technology and infrastructure to add capacity to its commercial networks and to increase end user speeds to 128 kbps. The Company's existing modems and networks will be compatible with, and enjoy a slight increase in performance as a result of, the Ricochet2 system. Ricochet2 is a proven technology, it came out of beta test in July 1999.

NETWORK DEPLOYMENT

The Ricochet network deployment process consists of obtaining site agreements, including lease, supply and right-of-way agreements, designing the network configuration, acquiring and installing the network infrastructure and testing the network. Once the necessary site agreements have been obtained, installing the network infrastructure and testing the network can typically be completed in two to three months. The service territory in a metropolitan area will typically be expanded beyond the initial service territory as additional site agreements are obtained and as the market for the Company's service expands.

The Company installs most of its Ricochet network radios on streetlights on which it leases space from electric utilities, municipalities or other local government entities. In addition, the Company is often required to enter into agreements with owners of the right-of-way in which streetlights are located and supply agreements with providers of electricity to power the Company's network radios. The Company also leases space on building rooftops for WAP sites. In the event the Company is unable to negotiate site agreements in a timely manner and on commercially reasonable terms or at all, it will seek to obtain sites to deploy network radios on commercial buildings, residential dwellings or similar structures. While deploying a large area in this manner could be significantly more expensive than installing radios on streetlights, it has been used on a limited basis to reduce the delays historically experienced in the deployment process.

Metricom plans to deploy regional Ricochet networks in a significant number of major metropolitan areas throughout the United States. Metricom has prioritized the major metropolitan areas of the United States based on a number of factors, including population size, population density, number of computer users, availability of site agreements for Metricom's network infrastructure and strategic value to Metricom and its partners. Based on these factors, Metricom has deployed Ricochet networks in the San Francisco Bay Area and the Seattle and Washington, D.C. metropolitan areas. Currently underway is work to acquire right-of-way to lay the groundwork for deployment of Ricochet² in 12 major markets covering 60 million people and 1,300 municipalities. As Ricochet²'s reach is extended, subscribers will benefit from being able to use Ricochet as they travel to major cities around the country. The plan for Ricochet² is to rollout the 128kps service at the end of Q2 2000 in those twelve major markets which include the three established markets, Los Angeles, the New York metropolitan area, and seven more cities from nine that have been identified, which include Atlanta, Boston, Chicago, Dallas, Denver, Houston, Phoenix, Baltimore, Philadelphia, and San Diego.

MANAGEMENT

Officers

We believe that the company's management and board of directors are capable of maintaining the Company's leadership, national acceptance and network deployment execution. Timothy Dreisbach is Metricom's Chief Executive Officer and President, and has been with the company since May 1998. Prior to joining Metricom, Dreisbach served as president and CEO of Premenos Technology Corp., a \$40 million supplier of software and services for business-to-business electronic commerce. There he successfully returned Premenos to profitability, and assisted in the company's merger with Harbinger Corp., one of the nation's leading providers of single source electronic commerce and EDI solutions. He previously served five years as senior vice president for North American Sales and Services at Boole & Babbage, a \$200 million provider of enterprise systems management software, and was a founding officer of Legent Corporation. Dreisbach has over 25 years of management and high-tech experience, an undergraduate degree from Dartmouth College, and a graduate degree from UCLA's School of Engineering and Applied Science.

Bob Schellman, Senior Vice President of Network Operations and Services, brings 25 years of experience, including managing network growth and operations for UUNET/MCI WorldCom, MCI Telecommunications, and Sprint. At UUNET, Schellman led the organization responsible for global IP network expansion, and quadrupled network capacity within eight months. Prior to UUNET, he created and managed network operations centers at both MCI and Sprint. In addition, Schellman served as General Manager for Sandwell, Inc's DATAP Systems Division. Most recently, he headed operations for Telocity, Inc, a Venture Capital-funded company positioned to provide DSL and high-speed Internet services.

John Wernke, Senior Vice President of Sales and Marketing, has over 15 years of experience in achieving business-building results in the Client/Server and Open Systems market. Prior to Metricom, he served as Vice President of Enterprise Product Marketing at Harbinger Corporation, where he was instrumental in positioning the company as an industry leader, as well as achieving a revenue goal of over \$40 million on a \$4.2 million budget. He has also served as a Product Marketing Manager at OpenVision, where he directed the positioning of storage products, accounting for over 80% of the company's revenues.

Directors

Robert S. Cline is chairman and chief executive officer of Airborne Freight Corporation, the third largest air express company in the country.

Ralph Derrickson is a founding partner at Watershed Capital, LLC. He is a representative of Vulcan Northwest.

Bob Dilworth is currently a member of VLSI's Board of Directors. Dilworth is also a Director of VLSI Technology and Data Technology Corp. He serves as a Director and is Chairman of the Board at Metricom.

Justin L. Jaschke has served as Chief Executive Officer of Verio Inc, a national ISP and web site hosting company. Jaschke served as Chief Operating Officer for Nextel Communications.

David M. Moore is a Senior Analyst with Vulcan Northwest. Moore was President of Paralex Corporation. Moore was a Developer and Manager at Microsoft for 16 years and worked on many products including Multiplan, Word, Chart, Works, Publisher, Mail, and Commerce Server.

William D. Savoy is President of Vulcan Northwest Inc., managing the personal finances of Paul Allen, and Vice President of Vulcan Ventures Inc., a venture capital fund wholly owned by Paul Allen. Savoy serves on the Advisory Board of DreamWorks SKG and also serves as director of CNET, Inc., Harbinger Corporation, Metricom, Inc., Telescan, Inc., Ticketmaster Online-CitySearch, U.S. Satellite Broadcasting Co., Inc., and USA Networks, Inc.

STRATEGIC PARTNERSHIPS

MCI WorldCom and Metricom have entered into a strategic relationship, which includes national distribution of Ricochet. Under the terms of the deal, MCI WorldCom and Vulcan Ventures, Inc. will purchase 60 million new convertible preferred shares of Metricom stock, priced at \$10 per share. When consummated, and following an allowed conversion from preferred to common, the breakdown of ownership will include Vulcan Ventures, Inc. at 49 percent, MCI WorldCom at 38 percent, with the remaining 13 percent ownership held by other current public shareholders. The transaction is subject to certain conditions, including Metricom shareholder approval. Metricom will remain a publicly traded company headed by CEO Timothy A. Dreisbach. The investment underscores Vulcan Venture Inc.'s ongoing endorsement of Metricom and the Ricochet technology. Included in the strategic agreement is MCI WorldCom five-year, non-exclusive wholesale agreement valued at \$350 million with Metricom for its Ricochet services. Metricom will utilize MCI WorldCom's high-speed data and Internet network and support operations as it expands nationally. Metricom will also enlist additional distribution channels for Ricochet, and embark on a multi-million dollar branding and marketing campaign to raise awareness and advance adoption of the service among the target market of mobile professionals.

Metricom has recently entered into an alliance with **Sanmina Corporation**, a leading electronics contract manufacturer, to build network equipment in support of Metricom's national rollout of 128 kbps wireless data service. The agreement calls for Sanmina to provide turnkey manufacturing services to produce MicroCell radios that will hang from light poles in local markets as well as key radio components for Metricom's Wired Access Points (WAPs). The equipment will start being delivered in the fourth quarter for field deployment, with commercial availability of Ricochet 128 kbps service scheduled in select markets by the middle of next year. Sanmina's expertise in Radio Frequency (RF) is critical to the high-volume manufacturing of Metricom's digitally controlled RF poletop radio transceivers. Sanmina Corporation is a leading electronics contract manufacturing services company providing a full spectrum of integrated, value-added electronic manufacturing services.

Wireless Knowledge LLC, a Microsoft Corporation and QUALCOMM Incorporated joint venture company based in San Diego, enables wireless carriers to deliver on the convergence of wireless communications and information technology with the delivery of productivity and information services in an airlink- and device-independent environment. Wireless Knowledge LLC; expects the availability of Wireless Knowledge's premier wireless data access service, the Revolv service via Metricom's Ricochet 28.8 kbps service in the near future. The companies plan to jointly develop additional applications for the upcoming Ricochet 128 kbps service that is currently undergoing field trials. Metricom's technology will expand and enhance the Revolv service by offering it via Ricochet.

AvantGo.com is the premier mobile information management company, which offers solutions for extending Web-enabled, enterprise and consumer applications to handheld computers. AvantGo.com and Ricochet give customers relying on handheld devices real-time remote access to personalized content and interactive applications on the Web. By combining Ricochet service, AvantGo.com and a handheld device, professional users can access the latest market statistics and stock quotes, read the industry news, access enterprise application, and interact with a variety of personalized Channels while they are "on the go."

COMPETITION

Competition in the market for data communications services is intensifying and a large number of companies in diverse industries are expected to enter the market. A number of communications companies have developed or are developing new wireless and wired data communications services and products using competing technologies. Ricochet is positioned primarily as a portable service with its largest competitive advantages being portability and low flat rate pricing.

Dial-up ISPs

The Company's Internet access services compete with those currently offered by a large number of companies, primarily when the Company's services are used by consumers at home, where a phone line is an available alternative. The Company's existing competitors include numerous national and regional independent Internet service providers, established on-line service providers such as America Online ("AOL") and the Microsoft Network, as well as long distance and regional telephone companies. The competitive environment could limit the Company's ability to grow its subscriber base and retain existing subscribers and could result in increased spending on selling, marketing and product development activities. The Company is currently considering to offer, as part of its service offerings to its customers, the ability to access other Internet service providers.

Fixed-point high-speed data technologies

A variety of fixed-point high-speed data technologies for both wired and wireless products are in various stages of development. Fixed-point data services and technologies include xDSL, wireless LANs, cable modems, satellite service, Integrated Services Digital Network ("ISDN") and point-to-point terrestrial solutions such as those offered by Wavepath. These services are aimed at providing data connectivity to the home or office at high speeds that will support future video & multimedia applications over the Internet, and typically require either high quality phone line connections or special modems and hardware/infrastructure. Metricom's competitive advantage relative to these technologies is portability.

Portable data communications services

Current offerings of portable data communications services include CDPD, cellular analog, cellular digital, ARDIS, RAM and two-way paging. The primary attributes distinguishing these competitors are speed, price and availability. These competitive offerings are generally widely available throughout the United States, and pricing is typically based on usage. The actual user throughput speed for these competitors range from 2 to 12 kbps and consequently, users generally regard the throughput of these networks as not fast enough for standard Internet browsing. Many of these services are thus currently used for specific web applications only such as email, news, stock quotes, etc. In the near future, providers of digital voice PCS service may also become competitors, as many are planning to offer data services using CDMA and TDMA technology. Such data services are expected to be priced on a per minute basis similar to voice services and offer data throughput speeds of up to 14.4 kbps. It is anticipated that PCS providers could offer higher speed solutions by combining channels and refining their protocols.

It should be noted that cellular service providers use the circuit switch technology as opposed to Metricom's packet switching technology. This is the main reason why they have to charge according to time of usage as opposed to Metricom's much more attractive flat rate. This could represent a barrier to entry to Metricom's market until they improve their technology and make it more affordable.

Metricom has begun its national rollout and for the foreseeable future offers the fastest portable and most affordable pricing for Internet service (a flat rate of approximately \$30 monthly). Most significant players do not anticipate offering a flat-rate service. However, the service requires the purchase of a portable modem. Recently Vodafone AirTouch Plc and GTE Corp have begun rollouts of wireless data services that will bring Internet access to much of the U.S. by early next year. The advantages GTE and other competitors have are the piggybacking of Internet access through a digital phone linked to laptop by cable. The significance of this is in addition to not needing to purchase a portable modem(app. \$300-\$400), only a digital phone(app. \$100), that the network for such communications, a cellular network, has already been built and is fully functional. This technology by AirTouch and other digital carriers may offer significant competition due to their currently built networks, cross-marketing, and market share. The disadvantage of this technology and networks are as or more significant than

the advantages. The speeds for digital Internet range below Ricochets's current 28.8kps, AirTouch's system currently is at about 14.4kps. However, it is unlikely that a national rollout of Internet technology would be based on 14.4kps technology speed. It is likely to expect technological improvements for this service, however, there may be significant obstacles including the networks capability to do so. Ricochet²'s 128kps Internet service is likely to represent a strong competitive advantage. Nevertheless, as we discuss above, the deployment of Metricom's systems depends on the establishment of leases and agreements with various urban entities for the placement of its equipment, which could result in a slow and expensive rollout. This supports Metricom's targeting population centers and urban areas.

The Wireless Data Transmission Industry

According to Business 2.0 [August, 1999], there are currently only 2.5 million mobile data users (compared to more than 70 million for wireless voice), and data represents less than 2 percent of all wireless traffic. However, new wireless phones that handle both voice and data are on the way. Wireless data network speeds are getting faster, and by this time next year we should be seeing speeds around 56kbps. Metricom currently enjoys the highest data transmission speeds but its network could be expensive to rollout market-by-market. Metricom competes and will compete directly with the following wireless carriers:

AirTouch Communications: Offers the advanced service SMS (short message service). With its recent \$55 billion merger with Vodafone Group PLC, it is looking to establish leadership in 3G.

AT&T Wireless Services: has 7.6 million customers and is the largest wireless provider in the US, even though it is a little behind in upgrading to higher bandwidth.

Bell Atlantic Mobile: is one of the most innovators in wireless technology, and will introduce higher data speed trial services in New York and Boston later this year.

Bell Mobility: has an edge in Quebec and Ontario with enhanced services and mobile data.

BellSouth Wireless Data: was selected by 3Com to be the first wireless network for Palm. It has sold Interactive Paging Service aggressively since it was introduced last year.

MCI WorldCom: is acquiring SkyTel Communications for \$1.8 billion, which has a messaging network but not quite a data network. In addition, Metricom's strategic partnership with MCI WorldCom may also represent the late and necessary expansion of MCI WorldCom to become a prominent competitor in the wireless industry.

Nextel Communications: is the best turn-around story. Microsoft has invested \$600 million, and MSN will serve as the portal for Nextel's Internet customers.

PageNet: is forming key strategic alliances with a diversity of services such as CNN, Forbes, BellSouth Wireless Data, Yahoo! and Iridium.

SBC Communications: has 7.2 million subscribers and this number should increase once its integration with Pacific Bell Wireless and Ameritech is completed. However, it is a lagging since it has nearly no data offerings.

SkyTel Communications: has invested heavily in a two-way messaging network. MCI should now help it to acquire customers for it due to MCI's relationships with the data and corporate worlds. In addition, possible synergies could be exploited between this network and MCI's local cable access property.

Sprint PCS: is finally starting to aggressively push its wireless data effort. It has recently launched its text messaging offering and signed a deal with Yahoo!

ANALYSIS OF RISK FACTORS

Competition

As mentioned above, competition in the market for data communications services is intensifying and a large number of companies in diverse industries are expected to enter the market. A number of privately and publicly held communications companies have developed or are developing new wireless and wired data communications services and products using competing technologies. There can be no assurance that the Company's competitors will not succeed in developing new technologies, products and services that achieve broader market acceptance or that could render Ricochet obsolete or noncompetitive.

Ricochet network success depends on a number of factors particularly:

- o cost competitiveness,

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- o data rate,
 - o ease of use, including compatibility with existing applications,
 - o cost and size of Ricochet modems,
 - o extent of coverage,
 - o customer support,
 - o marketing,
 - o distribution and
 - o pricing strategies of the Company and competitors,
 - o Company reputation and
 - o general economic conditions.

Pricing Pressures and Profitability

The Company has suffered recurring losses from operations and has a net capital deficiency that raise substantial doubts about its ability to achieve profitability. The influx of capital from strategic partners is key to the Company's near and long term future. The Company has received significant financing from Vulcan Ventures and MCI WorldCom, however, will require further financing to meet its goals. The Company will incur significant expenses in advance of generating revenues and is expected to realize significant operating losses in the future as a result of the continuing development, deployment and commercialization of its Ricochet networks. The Company's future operating results are subject to a number of risks, including the Company's ability to implement its strategic plan, to attract and retain qualified individuals and to raise appropriate financing as necessary.

The Company intends to continue to develop, deploy and commercialize its Ricochet networks. The timing and amount of capital expenditures may vary significantly depending on numerous factors including:

- o market acceptance of Ricochet,
- o availability and financial terms of site agreements for the Company's network infrastructure,
- o technological feasibility,
- o availability of Ricochet radios and modems and
- o availability of sufficient management, technical, marketing and financial resources.

Potential delays and setbacks in the rollout of Ricochet

The Company's future success depends on the successful deployment of Ricochet in major metropolitan areas of the United States. Before offering Ricochet service, the Company must complete deploying the network in a portion of a metropolitan area that is large enough to justify commencement of marketing and sales efforts. Deploying the network includes obtaining site agreements, designing the network configuration, installing the network infrastructure and testing the network.

The construction of the Company's networks will depend on the Company's ability to lease or acquire sites for the location of its network equipment and to maintain agreements for such sites. The Company installs most of its Ricochet network radios on streetlights on which it leases space from electric utilities, municipalities or other local government entities. In addition, the Company often must contract with providers of electricity to the street lights to provide power for the Company's network radios and with owners of the right-of-way in which street lights are located. Completing these complex contracts could cause significant delays in deploying Ricochet networks. In some instances, cities have never faced requests similar to the Company's, and are reluctant to grant such rights or do not have a process in place to do so. If the Company is unable to negotiate, renew or extend site agreements in a timely manner and on commercially reasonable terms, or at all, it would need to obtain sites to deploy network radios on commercial buildings, residential dwellings or similar structures. Deploying a large area in this manner could be significantly more expensive than installing network radios on street lights and may be restricted or prohibited by a municipality. The Company also leases space on building rooftops for its Wireless Access Point ("WAP") sites. In connection with the leasing of WAP sites, the Company faces competition with other providers of wireless communication services. The Company expects that the site acquisition process will continue throughout the construction of the Company's networks.

New FCC regulations

The Company is subject to various FCC regulations. The FCC, pursuant to the Communications Act, regulates non-government use of the electromagnetic spectrum in the United States. The Company has met satisfactorily all regulations, however, being within a relatively new industry and service the Company may be subject to unforeseen regulation.

Loss of key employees

As of the first quarter of 1999, the Company employed approximately 310 people, all of whom were based in the United States. Of the total employees, 40 were in manufacturing, 63 were in network operations and deployment, 101 were in research and development, 42 were in sales, marketing and customer support and 64 were in administration. The Company is highly dependent on certain members of its management and engineering staff, the loss of the services of one or more of whom might impede the achievement of the Company's development, deployment and commercialization of the Company's products and services.

EXPLANATION OF FINANCIALS

Revenues. Revenues consist of service and product revenues. Service revenues are derived from subscriber fees and modem rentals for Ricochet and fees for UtiliNet customer support and are recognized ratably over the service period. Product revenues are derived from the sale of UtiliNet products and Ricochet modems and are recognized upon shipment. Ricochet service charges a flat rate of \$29.95 monthly as a recurring charge to its approximately 29,000 customers.

Cost of Revenue. Cost of service revenues is primarily costs incurred to operate Ricochet networks, the cost of providing customer support, certain excess capacity costs and manufacturing variances associated with manufacturing the Company's network components and depreciation of modems rented to Ricochet subscribers. Cost of service revenues also includes the cost to design the Ricochet networks and maintain site agreements for the Company's infrastructure in the metropolitan areas where commercial service is currently offered. These costs are expensed as incurred due to the uncertainties regarding the realizability of these costs. Cost of service revenues were \$28.3 million in 1998. Cost of service revenues is expected to increase significantly as a result of the continued operation of Ricochet networks and planned future deployment of Ricochet2 networks. Cost of service revenues is expected to be greater than service revenues for the foreseeable future.

Provision for Network Replacement. In the fourth quarter of 1998, the Company recorded a one-time charge of \$14.4 million to write down the carrying value of the Ricochet network equipment that is currently in operation in three metropolitan areas. This charge was recorded as a result of the Company's plans to replace this equipment with Ricochet2 equipment in the near future.

Research and Development. Research and development expenses increased to \$27.3 million in 1998. Approximately two thirds of the increase in 1998 was due to development of the high speed Ricochet2 network technology and subscriber devices. The increase was also due in part to an increase in costs incurred in 1998 to obtain right-of-way and site agreements in metropolitan areas where the Company currently plans to offer service. The Company expects research and development expenses to increase significantly in absolute dollars in future periods as the Company continues the acquisition of right-of-way and site agreements as well as the development of Ricochet2. The company plans to spend the \$600 million from the MCI WorldCom and Vulcan Ventures financing within a nine months period from the time of the closing of the deal on October of this year.

Selling, General and Administrative. Selling, general and administrative expenses increased to \$22.9 million in 1998 from \$21.2 million in 1997 primarily due to charges of approximately \$3.5 million in severance to employees terminated in the third and fourth quarters of 1998. Partially offsetting this increase was a reduction of \$2.3 million in costs associated with the Company's reduced Ricochet sales and marketing efforts in 1998 compared with 1997. Selling, general and administrative costs are expected to increase significantly in the future

as a result of the Company's planned deployment of Ricochet2, which is currently in development. The company plans to spend the \$600 million from the MCI WorldCom and Vulcan Ventures financing within a nine months period from the time of the closing of the deal on October of this year.

Interest Income and Expense. Interest expense decreased to \$3.9 million in 1998. Interest expense in 1997 included a one-time charge for the interest paid against short-term borrowings incurred to participate in the FCC auction in April 1997. Interest income increased to \$1.9 million in 1998 from \$1.8 million in 1997 primarily due to a slightly higher average balance of cash, cash equivalents and investments in 1998 as compared with 1997.

Convertible Debt Offering. The Company has devoted significant resources to the development, deployment and commercialization of wireless network products and services. As a result, as of December 31, 1998, the Company had incurred \$233.5 million of cumulative net losses. In August, 1999, the Company's debt is approx. \$263 million. The Company's operations have required substantial capital investments for the purchase of Ricochet network equipment, Ricochet modems and computer and office equipment. Capital expenditures were \$15.9 million, \$10.6 million and \$5.0 million in 1996, 1997 and 1998, respectively. The Company expects that it will continue to have substantial capital requirements in connection with the ongoing development and planned deployment of Ricochet2. The Company also expects that, to the extent Ricochet2 is deployed and marketed, increasingly significant capital expenditures will be required to procure Ricochet2 modems

Investment Opinion

The Company is poised for its national rollout and is the technological forerunner of the yet undeveloped mobile data communications market. The Ricochet² network and its technology, cost and effectiveness, is the premier future service and should continue to be so until major obstacles and technological advances can be met by other companies. Strategic alliances and financing with MCI World Com and Vulcan Ventures represent a great deal of financing and marketing required to bring Ricochet to a national audience.

However, even though competitors do not have surpassing products, their alternative technologies are rapidly advancing and being added to their extensive existing communication infrastructures. The market and products for this new area of communications are still in development and future possible advances in data transmissions speeds by competitors could represent a major threat for Metricom.

We believe that the Company is richly priced relative to its inability to ever generate a profit. Long term debt is in excess of \$250 million. The stock price represents the future ability of the Ricochet network to gain a national presence. This will take at least 2 years under any circumstances and will require substantially further financing. The building of the network is likely to encounter setbacks.

Dial-up ISP	P/S ratio	Wireless carriers	P/S ratio	Cable ISP	P/S ratio
Prodigy	6.3	Metricom	27.3	Exite-@Home	79.0
Bell Atlantic	3.1	Nextel Communications	6.93	High Speed Access	537.2
Earthlink	5.7	AirTouch Communications	NA	Internet Cable Corp.	201.4
MindSpring	7.7	SBC Communications	3.3	Online System Services	53.8
AOL	24.3	SkyTel Communications	2.2	Softnet	35.2

The above table shows the Price to Sales ratios of various types of companies that compete with Metricom. We can see that cable ISPs trade at a premium because of the expected growth of bandwidth demand for near future multimedia applications. Furthermore, the other wireless carriers are mostly voice carriers and thus trade at low multiples. Metricom currently trades in the middle of these two ranges (i.e. between cable and wireless voice) at a Price to Sales close to 27. We believe this level to be reasonable considering that in the future Metricom, Inc. could be a significant player with MCI WorldCom and could achieve a national presence and the benefits thereof. Ricochet is a proven and leading technology. However, the stock price has been highly volatile because of the competition and deployment risks and we expect the volatility to continue. We recommend to accumulate the stock in weakness, at price levels below \$15, and monitor closely the progress in Metricom's rollout and in the technological advances of its competitors. We thus give Metricom a neutral rating.

Metricom, Inc.
Statements of Income

(\$000, except per share data)

	1Q98	2Q98	3Q98	4Q98	FY98	1Q99	2Q99	3Q99E	4Q99E.	FY99E	FY00E
Revenues											
Service Revenues	1974	2277	2001	2167	8419	2431	2195	2750	2650	10026	13595
Product Revenues	1629	2084	2194	1553	7440	1755	2468	2600	2250	9073	9745
Total Revenues	3603	4361	4195	3700	15859	4186	4663	5350	4900	19099	23340
Cost of Revenue											
Cost of Service Revenue	5759	6419	9632	6500	28310	4433	4459	6800	6700	22392	38250
Cost of Product Revenue	1375	1416	2194	65	5050	1326	2011	3200	6000	10537	18580
Total Cost of Revenue	7134	7835	11826	7604	33360	5759	6470	9500	12700	32629	56830
Gross Profit (Loss)	(3531)	(3474)	(7631)	(3904)	(17501)	(1573)	(1807)	(4150)	(7800)	(12,830)	(34,500)
Operating Expenses											
General and Administrative	4261	4605	7872	6196	22934	4140	4529	25700	55800	80,169	180,030
Research & Development	3456	4860	6043	12954	27313	8235	8806	16800	35500	70,541	223,450
Provision for Net. Replacement	0	0	0	14392	14392	0	0	0	0	0	5000
Total Operating Expenses	7717	9465	13915	33542	64639	12375	13335	42100	89800	150610	405480
Income (Loss) from Operations	(11248)	(12939)	(21546)	(37446)	(82140)	(13948)	(15142)	(46850)	(97600)	(162540)	(461980)
Interest Income	553	671	466	225	1915	143	186	250	1550	2229	7765
Interest Expense	1012	953	965	1009	3939	1213	1601	1200	1250	5264	6506
Net Income(Loss)	(11707)	(13221)	(21006)	(38230)	(84164)	(15018)	(16557)	(47800)	(97200)	(164575)	(460221)
Basic and Diluted EPS	(0.69)	(0.71)	(1.13)	(2.04)	(4.63)	(0.80)	(0.86)	(1.77)	(2.86)	(6.82)	(9.16)
Diluted shares outstanding	16944	18512	18610	18714	18195	18873	19296	28301	34357	24206	50212