Overcoming the Limitations of Today's Computing Architectures

The Vision

Be offers an exciting alternative to the current evolutionary approach to advancing personal computing platforms.

Be targets this new approach at the very markets where customers and developers are most in need of innovative technology, and where the limitations of older architectures are the most visible: Media and compute-intensive applications.

Today's platforms are immensely successful in the office market because they wisely adopted an approach of continuous incremental improvements, thus developing a huge legacy of office automation applications. But that approach has its downside. Today, architectures are mind-numbingly complex, large, and fragile—the result of more than a decade of patches and extensions. The interval between major revisions is usually measured in years (Windows 95 was launched five years after Windows 3.0, and more years will elapse between System 7 and Copland). New technology is becoming harder and harder to integrate. The most glaring of many examples is multiprocessing. Multiprocessing is an inexpensive way to increase computing power, yet evolutionary platforms cannot support it.

Be, Inc. was founded in 1990 by Jean-Louis Gassée, former president of Apple's product division, to break the boundaries imposed by the evolutionary approach. The first member of the Be product family, the BeBox[™], was launched on October 3, 1995. This system, with its combination of powerful hardware, a portable, objectoriented operating system, and a host of advanced sound, graphics, video, and communications capabilities, is poised to become a significant alternative for next-generation applications.

The Team

To achieve an ambitious vision in today's competitive business environment requires the right team above all else. We have assembled an outstanding management and operations team, complemented by hardware and software engineers who are among the best and brightest in their fields. Equally important, our team is small, focused, and tight-knit—a key success factor for tackling complex architectural challenges.

Chairman and CEO Jean-Louis Gassée

Mr. Gassée has overall responsibility for Be's operations. Prior to forming Be, he was associated with Apple Computer for ten years. He served as president of Apple products, the R&D and manufacturing division of Apple, from 1988–1990. Before that, he was Apple's senior vice president of research and development (1987–1988), and vice president of product development (1985–1987). In 1982,Mr. Gassée founded and ran Apple's French operation, Apple Computer France SARL.

Prior to joining Apple, Mr. Gassée was president and general manager of the French subsidiary of Exxon Corp. He also held several management positions with Data General Corp., including general manager for France, area manager for Latin countries, and marketing manager for Europe. He spent six years at Hewlett Packard, serving in several positions, including sales manager of Europe.

Vice President, Engineering Erich Ringewald

Mr. Ringewald oversees software and hardware engineering. He joined Be after more than six years at Apple Computer, where he held several software engineering and R&D management positions. He was the manager of special projects software (1989–1991), assistant to the director of European R&D at Apple Computer Europe (1988–1989), manager of the next generation system software group (1987–1988), author of Multifinder and manager of the MacOS group (1986–1987), and a member of the Mac Plus ROM team (1985–1986). From 1983 to 1985, Mr. Ringewald was a senior software architect for Tecmar, a manufacturer of expansion cards, hard disks, network hardware, and software for the IBM PC and the Macintosh.

Vice President, Finance, and CFO Wes Saia

Mr. Saia is responsible for all areas of finance and control, including relationships with outside investors and legal counsel. He also manages personnel and general administration. Mr. Saia joined Be from Asante, a company that specializes in networking products for the computer industry. As Asante's vice president of finance and CFO from 1993–1994, he completed an initial public offering that raised \$25 million in cash. Mr. Saia also served as vice president of finance and CFO at Bimillenium, a startup software company, from



1992–1993, and as vice president of finance and CFO for Vitalink, a public company specializing in data communications, from 1987–1991. While at Vitalink he also completed an initial public offering and a secondary round of public financing, raising a total of \$45 million.

Mr. Saia has also worked as a controller at Intel (1983–1987), vice president of finance at Fox & Carskadon (1981–1983), and controller with Sprint and Southern Pacific (1971–1981).

Vice President, Operations Tadek Margulewicz

Mr. Margulewicz handles all aspects of operations for Be, including manufacturing. He joined Be in 1993 after five years at Sun Microsystems, where he focused on improving operational efficiencies in manufacturing. While at Sun he managed the risks and benefits associated with outsourcing manufacturing and implemented a worldwide inventory management system, resulting in significantly improved asset management. From 1982–1988 he was director of manufacturing and distribution for Friden Alcatel, and was responsible for transitioning new products from design engineering into volume production.

Vice President and General Manager, Europe Jean Calmon

Mr. Calmon represents Be's interests in Europe. He has more than 24 years of operational experience with major companies in Europe, and has specialized in developing the operations of U.S. high-technology companies in Europe. Mr. Calmon was most recently vice president, Europe, of EO, Inc., a subsidiary of AT&T, from 1992-1994. Prior to that, he was president of EDS French operations. Previously, he was associated with Apple Computer from 1981–1990. As sales manager and then general manager (France), he built Apple's largest subsidiary and most successful network of resellers from inception to \$270 million in revenues in five years. He also developed and implemented new distribution strategies while managing channels of distribution as well as the large account and education business as director of Apple Europe. Before Apple, Mr. Calmon spent ten years with IBM as marketing representative and district manager in the computer division.

The Market

The BeBox enables users to run multiple compute-intensive programs simultaneously at blazing speed, synchronize music and sound, view and edit videos, take advantage of telecommunications applications, and access the Internet—all at the same time. Its built-in database is accessible at all times, so users can continually store, retrieve, and update key information from multiple sources. The combination of these features makes the BeBox particularly attractive to the fast-growing A/V market—currently valued at more than \$7.3 billion by Dataquest—as well as to technology enthusiasts and hobbyists.

The BeBox is also an excellent system for programming, for compute-intensive applications, for video games, and for personal productivity tools.

The Product

The BeBox is the first true real-time, portable, objectoriented system that features multiple PowerPC processors, true preemptive multitasking, an integrated database, fast I/O, and a wide range of expansion options—all at an extremely aggressive price that is well below that of any competitive offering.

The hardware features two PowerPC 603 processors running at 66 MHz, room for 256 MB of RAM, and 16bit CD-quality sound. It provides a broad spectrum of expansion and I/O options, including three expansion slots on the very fast (132 Mbits/sec) PCI bus for highspeed add-on cards; five expansion slots on the ISA bus for low-cost, lower-bandwidth cards; four MIDI ports, a high-speed SCSI-II port, and four serial ports.

Be's system software is small, fast, and real-time. It provides multithreading, multitasking, and memory protection. On top of its proprietary kernel, Be has designed a graphics server that delivers ultra-responsive, continuously updated windows; a database server that supports live queries of user- or developer-defined collections of data; and a digital media toolkit that allows for manipulation of real-time streams of audio/video data. All of this is accessible from an objectoriented C++ application framework. Be also ships a graphical browser with every machine, which shows off many features of the OS and allows the user to manipulate all of the files and database objects on the computer.

For application development, Be offers the CodeWarrior[™] PowerPC development environment from Metrowerks, along with full technical and user documentation. Developers can use the current version of CodeWarrior hosted on the Macintosh for application development, and soon Be will offer the entire CodeWarrior Integrated Development Environment including a high-speed linker, compiler, and debugger native on the BeBox.

The BeBox also allows users to customize their systems with standard components from the "PC clone organ bank," including monitors, keyboards, memory, hard disks, CD-ROM drives, and modems.



The Partnership Model

Be is already working with and actively recruiting software development partners, value-added resellers, systems integrators, and manufacturers whose products or services will add value to the BeBox.

Be offers independent software developers a compelling alternative to traditional computer platforms. The BeBox provides hardware and software that are powerful enough to show off advanced software capabilities, and the CodeWarrior for Be development toolset gives developers everything they need to begin developing applications for the BeBox immediately.

In addition, Be offers an innovative and effective electronic distribution model designed to maximize the exposure and profits of software developers. As opposed to the traditional distribution model, which requires developers to provide significant cash up front for catalog advertising and to support costs of distributors and dealers, the Be distribution model requires minimal upfront investment and eliminates the middleman completely.

Be provides developers with market access through a combination of e-mail and Internet communications. Be systems have Internet connectivity built in, and Be will register every customer's telephone number and Internet address, so the company can supply developers with upto-the-minute information about each and every one of its customers, giving developers an opportunity for repeat sales and easy distribution of software updates. By eliminating the middleman, Be enables developers to offer software at a significantly lower price and avoid the common problems of piracy associated with high-priced software. This increases developers' profit margins.

In addition, Be is licensing its hardware and software technologies to value-added resellers, manufacturers, and systems integrators, further expanding the reach and capabilities of its products.

Future Directions

Be has created an architecture that can be broadly expanded to meet evolving customer requirements and technological capabilities. The BeBox is the first member of the Be product line, which is already being expanded to include four-processor and portable configurations. Future Be products will also incorporate other versions of the PowerPC processor.



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