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# **BVB INVESTMENT FUND I, L.P.**

a Delaware Limited Partnership

## **White Paper Discussion (Draft)**

**JUNE 2008**

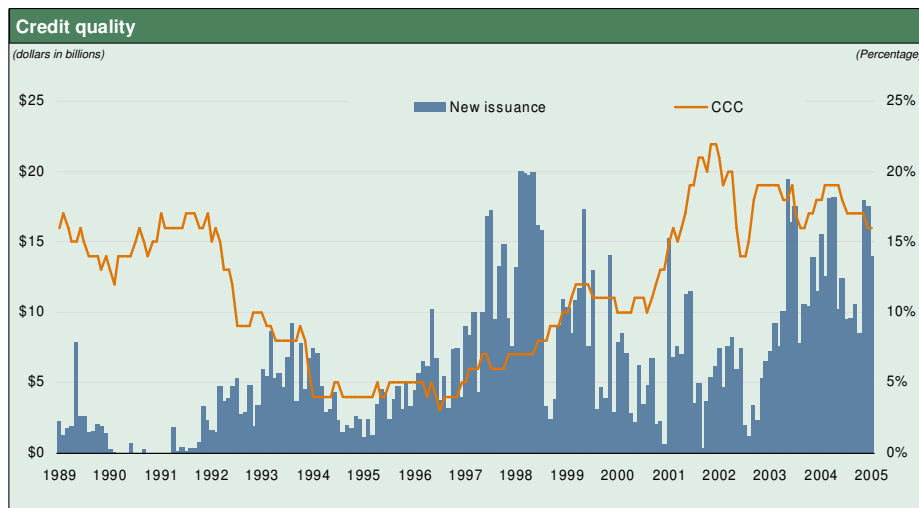
## BVB's Investment Philosophy

BVB will strive to invest over a range of economic cycles. BVB is a value-oriented private equity investor that tailors its approach to equity investments based on the current investment, economic and financing environments. BVB will strive to make control-oriented investments in undervalued franchise assets at purchase multiples substantially below those of its peers. Often these investments involve complex transactions requiring creative solutions. BVB couples its investment philosophy with deep expertise in a number of technology sectors as they apply to several industries such as chemicals, telecommunications, consumer products, financial services, manufacturing and industrial, and media.

### Market View

As BVB reviews the market today, the firm's Principals believe that the frequency of market cycles is compressing. The volume of the new-issue market in the lowest quality credits, credits rated triple C and below, has continued to build, reaching one-third of the market. Historically, 30% of triple C rated credits default within a year. The only other time the firm's Principals have seen such issuances at this level was shortly before the distressed cycle that began in 2001.

The High Yield Issuance from JP Morgan Chase cited below indicates the credit quality of the new issuances until 2005. The downturn did continue during the last years, in the opinion of BVB, when there is a credit crunch the Principals foresee opportunities for investment at more favorable valuations to the Fund. As they also expect this cycle will compress in time as compared to the previous crunch (i.e., it will not take as long as the previous cycle 1995-2000).



Source: JPMorgan Chase.

While we are now experiencing the next distressed period, the opportunities in both the U.S. and Western Europe should be significant. BVB believes that its flexible investment approach and experience in all market environments positions Fund I well to proactively capitalize on opportunities as they surface.

### **Altering the risk /reward equation**

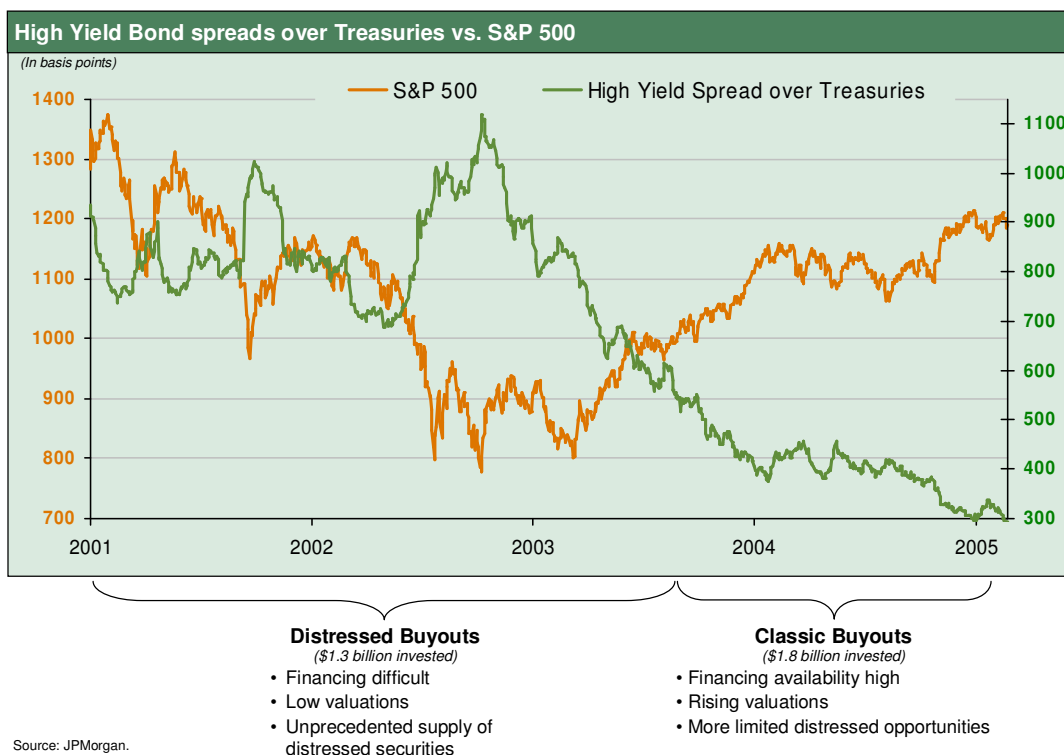
In general, BVB makes an investment only if it believes it can either alter the risk/reward profile of a transaction or play an integral role in the development of an early stage company. BVB believes that this advantage over the competition can come through a number of forms including:

1. Flexible Approach to the Investment Environment
2. Strong Capital Markets Expertise
3. Substantial Operational Value Creation
4. Focus on Downside Protection
5. Expertise Pursuing Complex Situations
6. Substantial Proprietary Deal Flow

### **Flexible Approach to the Investment Environment**

BVB will achieve a successful investment record, in great part, by quickly adapting to changing market environments. During times of economic expansion, a flexible strategy will produce superior returns from venture style equity investments as well as classic and corporate partner buyouts. Similarly, during recessionary periods of illiquidity when other private equity firms are largely inactive, BVB will use its expertise to invest significant amounts of capital in distressed buyouts, yielding equally superior results.

High Yield Spread points to what type of investment strategy one can use. As the spread narrows, as currently being experienced, it represents more opportunities at better and lower valuations to the Fund because financing is more limited.



## Strong Capital Markets Expertise

The Principals have substantial experience in the capital markets, dating back more than two decades. Active participation in the capital markets generates unique insight that benefits BVB’s investing, operating and exit activities. Importantly, without this capital markets expertise, BVB would not be able to build superior equity investment opportunities and generate the important proprietary source of deals. While operating a company, this capital markets edge enables the firm’s partners to better recognize strengths and weaknesses across a company’s capital structure so that they can optimize the balance sheet. Particularly when exiting a company, this perspective is essential to selecting the right exit path at the right time ranging from a sale to a strategic buyer, public-to-private sale or a sale to the public markets.

## Substantial Operational Value Creation

As mentioned earlier in this document, BVB is a “hands-on” investor that remains actively involved with the operations of each portfolio company post-investment. After BVB invests in a company, the investment team focuses its role on functioning as a catalyst for business-transforming events and participates in all significant decisions to develop and support the execution of each company’s business strategy.

## Expertise Pursuing Complex Situations

In the past, the Principals’ expertise in undertaking complex transactions has enabled them to minimize competition from both strategic and financial buyers. This complexity may take the form of business, regulatory or legal complexity. BVB believes that it is viewed as a particularly attractive investor in such situations, given its Principals’ proven ability to understand and add value to such businesses.

## **Proven Franchise in Core Technology Sectors**

While BVB is opportunistic in selecting transactions across a range of technology sectors, BVB's franchise in select technologies is a significant factor in the firm's ability to alter the risk/reward profile of an investment.

The Principals' experience in several technologies among others allows the firm to benefit from distinct advantages in terms of sourcing and evaluating new opportunities and adding value to its portfolio companies post-investment. The active participation of BVB within its targeted sectors allows the firm to benefit from: high-quality, proprietary deal flow; a well-developed knowledge base to guide strategic portfolio company decisions; access to extensive executive-level contacts; and a highly visible reputation as a preferred provider of private equity capital. BVB has paid close attention to the cycles that these industries have experienced and has been opportunistic in entering and exiting investments when the risk/reward profile is in BVB's favor. Given its industry focus, BVB has developed the experience, network and vision of a strategic investor in a number of these industries.

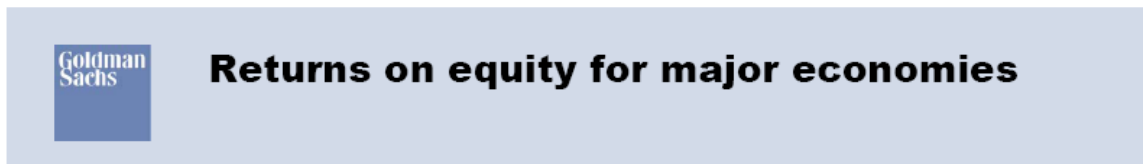
As a result of these observations, BVB began to study the industry intensely. This work included meeting with many current and former technology executives, hiring industry consultants, attending industry conferences, and working with industry analysts. Unlike many other industries the technology industry is very complex and BVB believes that it requires a significant amount of review prior to making any investment.

## BVB'S APPROACH TO PRIVATE EQUITY INVESTMENTS

The key to BVB's strategy is seeking unique and creative mechanisms to invest capital in a manner that serves to favorably alter the risk/reward profile and minimizes the risk of an investment while maintaining significant upside potential. BVB's focus on a number of core sectors in technology, including Clean Tech, is a significant factor in the firm's ability to identify and build value over time. BVB is paying close attention to the cycles that these sectors have experienced and will act opportunistically in making and exiting investments when the risk/reward profile is in BVB investors' favor. BVB's deep industry knowledge and network of contacts in the industry allows the firm to help its portfolio companies recruit top-quality management team members, mentor the management team of its portfolio companies, develop value-building strategies and identify attractive exit alternatives.

### Investments Demographics

BVB intends the majority of its technology related investments to be USA based. As compared among other geographic regions, the following chart shows the return on equity (ROE) for major economies based on a study by Goldman Sachs.



	ROE 2007(E)
United States (a)	19.7 %
Japan (b)	10.2
Europe (c)	16.6
Asia (excl. Japan) (d)	17.7

- (a) US universe is S&P500 as of 11/26/07.
- (b) Japanese universe is TSE1 as of 11/26/07.
- (c) European universe is GS coverage firms, excluding financials as of 11/26/07.
- (d) Asia excluding Japan universe is MSCI US\$ basis market index (local currency) and is based on FactSet and I/B/E/S estimates.

Source: Quantum, FactSet, Goldman Sachs Research estimates.

BVB further intends for the majority of its investors to be foreign based, with a significant focus in European investors. BVB's rationale for this strategy is founded on two key facts: first, Europe is the US largest capital provider and second, the dollar is largely undervalued versus the euro, which makes investments in the US particularly attractive for European investors. These facts are demonstrated in the next two charts.



## Capital flows into the United States

Europe remains the largest capital provider of direct investment

(\$ Billions)

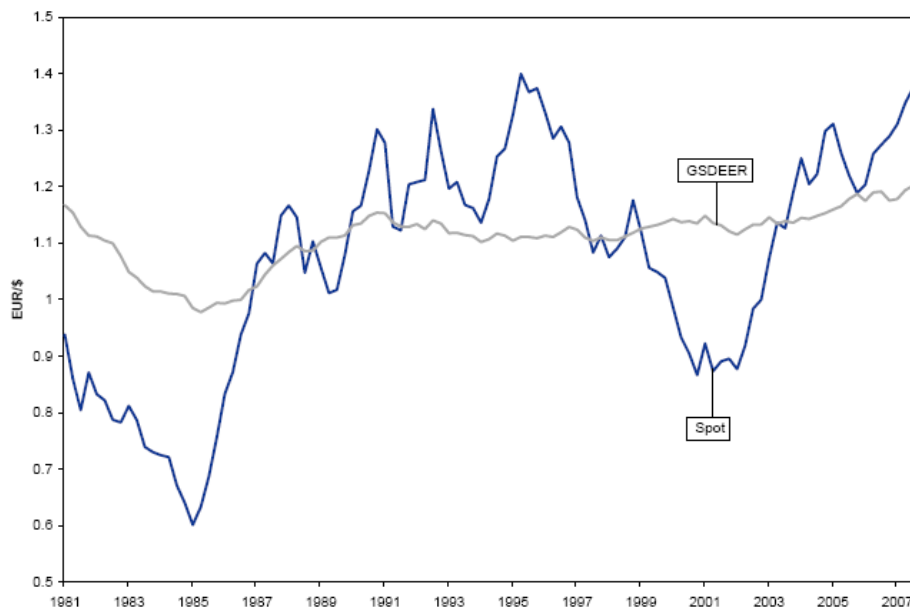
	2000	2001	2002	2003	2004	2005	2006	2007	
								Q1	Q2
All Countries	\$314.0	\$159.5	\$74.5	\$53.1	\$135.8	\$101.0	\$175.4	\$11.5	\$74.2
Canada	27.3	9.2	4.6	7.1	33.2	13.8	6.6	4.7	7.5
Europe	251.0	140.7	45.4	22.8	80.7	76.7	122.2	3.4	51.1
Latin America	12.7	8.2	10.3	9.2	(2.9)	(2.9)	9.3	(3.9)	7.3
Asia and Pacific	19.9	2.1	13.0	13.8	24.8	11.5	26.8	7.7	7.0

Source: US Department of Commerce.



## US dollar is now strongly undervalued

Spot price v. model

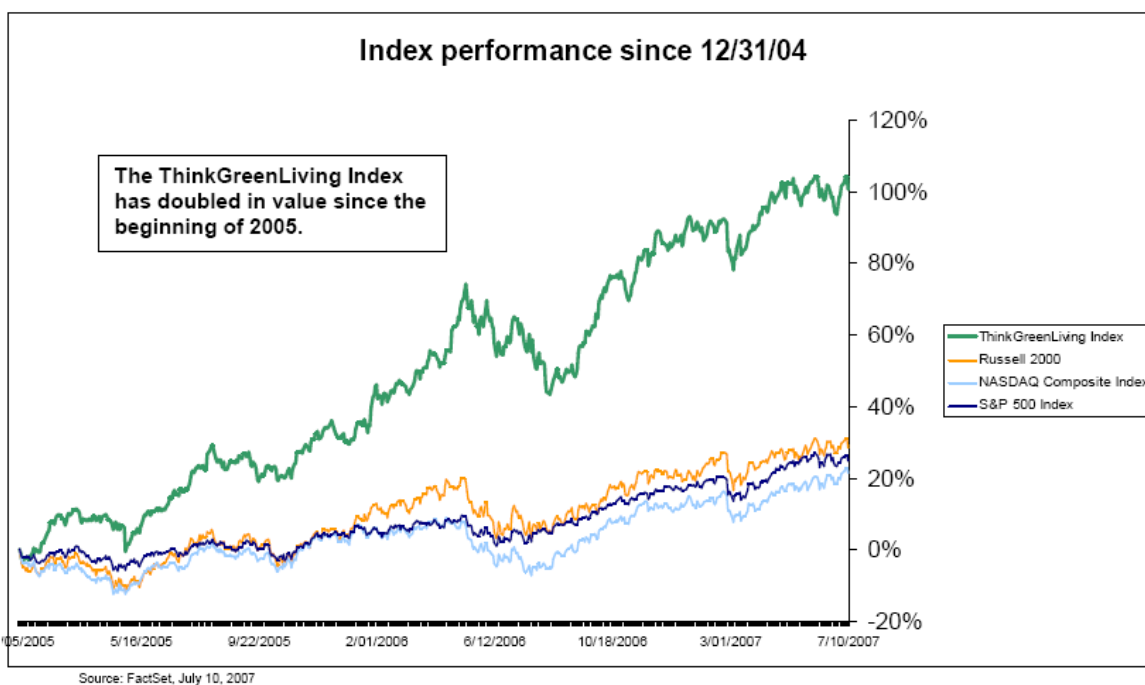


Source: Goldman Sachs Economics Research.

## Investment Strategy

As technology innovation continues to improve as well as the economic indicators point to sensible investments, BVB will be looking to take advantage of these trends in combination with opportunities in “Clean Tech”, which is a growing area of opportunity worldwide. It is the intent of BVB Principals’ to make a concerted effort to invest with this focus in mind where the economics are sustainable and make sound business sense. In BVB Principals’ opinion, they see potential in a number of technologies (refer to list indicated below in this section), many of which are influenced by developments and applications in other technology areas. So, it is the Principals’ intent to take a more comprehensive and holistic approach to technology investments which take full advantage of overall developments in the technology landscape. The benefit to BVB investors is this strategy will hedge investments in one technology area versus another but could also give investors an opportunity to benefit from the combination of the synergies available within each technology trend.

The basis for this strategic investment interest is based on a number of key indicators. First, environmental awareness is growing for both corporations and investors. Second, the index has double in value in the last three years. Third, as the chart below indicates the tracking of Clean Tech has outperformed the major market indices for a number of years.



This leads to some important questions, whose answers BVB’s Principals would keep in mind in the execution of its investments. For example:

- There is a large increase in ESG (environmental, social responsibility and governance) investment: Has this reached critical mass?
- Pension and other funds must focus on fiduciary responsibilities: does “green” investing generate good returns in the longer-term? What are the long-term liabilities of ignoring environmental issues in any investment?



- Corporations look to become good citizens and enhance competitive positions: Is this trend to continue in the long-term? How can BVB’s investors benefit from this trend as BVB analyzes an exit strategy for its own investments?
- Outsourcing of industrial production to nations with higher energy intensity and lower environmental standards: What are the global implications?

BVB views the answers to this type of questions as guidelines and justification to invest in the Clean Tech area, when it makes economic sense and because it takes advantage of a very broad and intense trend which BVB does understand and views as sustainable. For example, the information below shows a recent summary of investments in Clean Tech. It is another indicator of the importance these types of investments is gaining in the world market. In the first quarter of 2008, there was approximately US\$1 Billion invested in Clean Tech, the majority of it in the US.

### Funding Roundup

Approximately \$1 billion of venture capital invested in CleanTech companies in the first quarter of 2008<sup>1</sup>

- Solar: \$248 million
- Biofuels: \$193 million
- Intelligent-Grid: \$130 million

Global Venture Capital investment in CleanTech jumped 43% last year to nearly \$3 billion<sup>2</sup>

- United States: \$2.5 billion (83% of the total 2007 global VC investment)
- Europe: \$390 million
- China: \$130 million (decrease of \$300 million since 2006)

Majority of capital going into early stage U.S. CleanTech businesses

Sources: 1. Greentech Media; 2. Dow Jones VentureSource

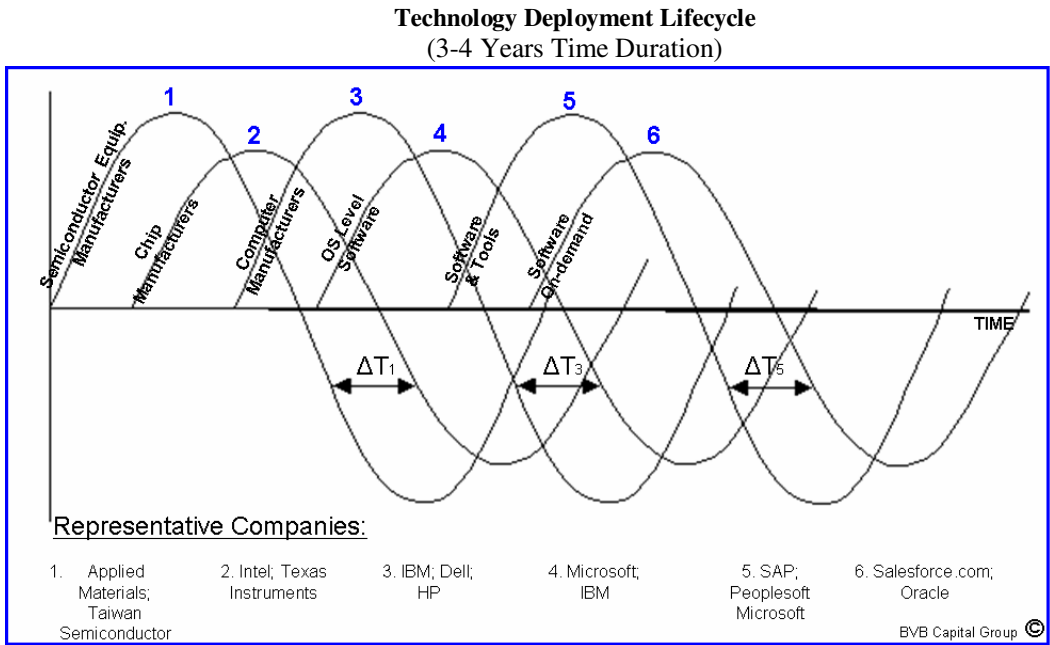
Because of BVB’s stated strategic intention to invest in Clean Tech, the following are identified as potential areas of interest for BVB’s investments (“green” comes in many colors) with particular additional focus on the software and infrastructure that manages these technologies:

- Energy Storage
- Electric and Plug-In Hybrid Vehicles
- Advanced Lighting Technologies
- Utility-Scale Solar Power Technologies
- Power Management
- Alternative/Renewable Energy

It is also BVB Principals’ strategic intent that investments be analyzed considering the following factors: first, what is the technology or company’s impact on the environment; second, can the investment benefit from potential synergies to be gained by combining Green Tech trends with other technology trends in the market. For example, where financially viable, the technology areas mentioned below will be analyzed as to their fit, in one form or another, within the selected Green Tech areas of interest listed above and vice versa.

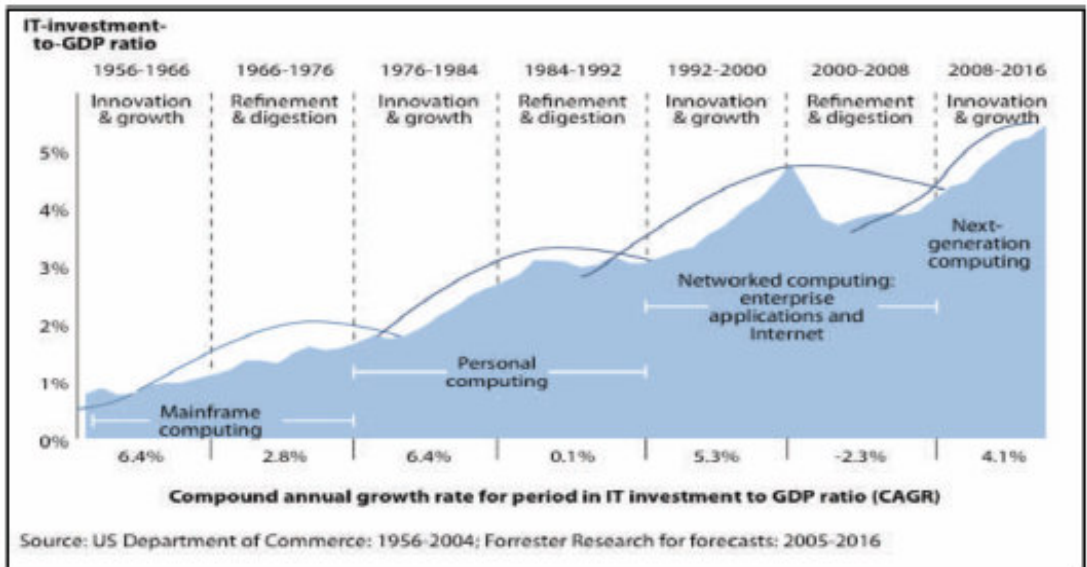
Additionally, investments in Green Tech also need to consider the developments in the overall technology space, as there might be potential interactions between them. To better understand and track developments in technology, BVB Principals developed a model over 20 years ago, which

explains developments in the tech sector and predicts with a certain level of accuracy the best time for investments in that sector. This model is shown in the chart below.



The next generation of semiconductor manufacturing equipment is ready and the chip manufacturers, such as Intel and Texas Instruments, will start implementing them in the next 6 months. Based on the Principals’ experience, that is the start of the complete cycle which generally lasts 3 to 4 years. For this reason, BVB believes the moment to invest in technology is now at the very beginning of the next cycle.

Interestingly, Forrester Research (one of the premier market evaluators in the world) recently published a similar model charting the Compound Annual Growth rate in technology investments to GDP ratio (indicated below). The results confirm BVB’s own investment model and shows that it is time to invest in next generation technologies now. As the chart below depicts, we are once again in a period of great innovation leading to outstanding opportunities for value investing and returns. In BVB Principals’ experience, the investments must coincide with the timing of the innovation and growth cycle to achieve its highest possible returns.



Overall, BVB investment strategy is very focused and selective. Regarding its portfolio and its investment strategy, the Principals anticipate its investments to also consider the following areas discussed below.

## **1. Enterprise Data Infrastructure and Database Solutions**

Enterprises all over the world are facing the growing challenges of using disparate sources of data managed by different applications, including problems with data integration, security, performance, availability, and quality. Business users increasingly need fast, real-time, and reliable information to make business decisions, while executive management wants to lower costs, minimize complexity, and improve operational efficiency.

This is one of the most important technology areas for any enterprise nowadays. Company information and its underlying data structure is all about maximizing a company's business value. Just imagine a world where IT is perfectly aligned with the business. Accurate, relevant information flows freely throughout the enterprise, driving timely decisions and actions. The enterprise infrastructure is flexible and designed for reuse—ensuring that companies don't just respond to changing business requirements and competitive pressures, but stay ahead of them. And in an ideal world, IT delivers real, measurable value to the business, supporting key goals such as:

- Growing revenue
- Streamlining business operations
- Ensuring regulatory compliance, etc.

The fact is this ideal world is far from being achieved. Managing information databases still needs major improvements. BVB believes a new type of database technology is needed to provide faster access to data at a lower costs. Modern enterprises are awash with data from an ever-growing multitude of sources and large databases are expensive and cumbersome to maintained. Everyone agrees that all this information is extremely useful but providing access to all the staff, customers, applications and services that need it most is anything but simple. More than ever, what busy IT and business professionals need most is an effective solution for integrating all that business-critical information and making it readily available throughout the enterprise and its customers. The challenges come in many flavors, including:

- Integrating various types of information from various types of sources and then getting it all to work together.
- Planning, deploying and supporting an integrated information network.
- Most of us now just expect the information we want, whenever and however, we want it to be readily available without any delays.
- Gaining efficiency with integrated information within a reasonable time and cost to access it.

For example, to provide superior returns to its investors, BVB is in search of the next generation in information management technology; one that provides simple architecture, unrivaled agility and flexibility, as well as less IT involvement. A solution that provides superior flexibility and simplicity; a technology that can rapidly gain market share within the database market.

In June 2007, Gartner claimed the worldwide database market (excluding services) was a \$15 billion dollar market for year 2006. Better than 90% of that market was shared between 5 database vendors. As shown below, this represented 14.2 percent increase from the previous year revenue.

**Worldwide Vendor Revenue Estimates from RDBMS Software**

(Based on Total Software Revenue)

<b>Company</b>	<b>2006 (Millions of Dollars)</b>	<b>2006 Market Share (%)</b>	<b>Annual Growth (%)</b>
Oracle	7,168.0	47.1	14.9
IBM	3,204.1	21.1	8.8
Microsoft	2,654.4	17.4	28.0
Teradata	494.2	3.2	5.7
Sybase	486.7	3.2	8.2
Other Vendors	1,206.3	7.9	5.0
<b>Total</b>	<b>15,213.7</b>	<b>100.0</b>	<b>14.2</b>

Source: Gartner Dataquest (June 2007)

Today, the overall relational database management system (RDBMS) market continues to be dominated by the five top-tier vendors, and the top three vendors (Oracle, IBM and Microsoft) represent approximately 85% of the total market. More recently, according to figures released by IDC, InformationWeek reported in April, 2008 that the database market grew again at a healthy annual rate (12.1% from \$16.6 billion in 2006 to \$18.6 billion in 2007). Oracle's relational database revenue grew at 13% to \$8.2 billion, giving Oracle 44.1% of the total database market.

Further, IBM's revenue grew at a rate of 13.3%, a slightly faster clip than Oracle's, shoring up IBM's second-place position. It's DB2 and Informix systems produced \$3.95 billion in revenue, or 21.3% of the 2007 market. However, Microsoft was the only member of the big three to grow at a rate under the market average, 11.2%, for revenue of \$3.4 billion and an 18.3% market share.

It is known that Microsoft and Oracle for the past three years have been competing to gain database users in the Windows Server market, and Oracle has lowered prices and offered an entry-level, free version, Oracle Express, to aggressively compete against Microsoft's SQL Server. In its report, IDC noted that some Oracle features such as Database Vault, and Real Application Cluster, are winning over database customers.

IBM has continued on a steady course with its DB2 system and gained new customers by putting it on Linux, Windows, and Unix as well as the mainframe. Microsoft's SQL Server revenues seemed to have slowed, reported IDC. Teradata grew its core database system used by Wal-Mart and other large retailers by 10.4% and its overall data warehouse,

database, and business intelligence set of products by 10%, the report said. Sybase, which had revenue growth of 9% in 2007. Sybase's column-oriented system, Sybase IQ, accounted for a significant share of the growth, IDC claimed. IDC also reported: "This market is likely to settle into a pattern of gradual long-term growth, though specific segments, such as the midmarket, and embedded database management systems (DBMS) should grow well ahead of the overall market. In addition, capabilities such as Web service support, XML data support, and support for blended management of unstructured and structured data should give vendors of such capabilities a competitive advantage." Overall, this is a market of significant volume and growth.

Additionally, open source databases are showing the highest growth rate in the database market, according to a study by analyst firm Gartner. "The combined category of open source database management systems vendors, which includes MySQL and Ingres, showed the strongest growth, although it was one of the smallest revenue bases," said Gartner. These open source database management system products continue to improve in terms of functionality and scalability.

For all these reasons, BVB Principals are aware of the potential of this segment as it continues to exhibit a healthy growth rate, despite predictions in recent years ago that it was saturated, "mature," and about to level off as a revenue generator. BVB also believes to have access to unique solutions, including one company which holds important patents in management of unstructured and structured data. BVB's Principals claim this sector can represent significant growth potential over the next 3 to 5 years for its investors.

## **2. Data Mining Solutions**

Data mining (also called data or knowledge discovery) is the process of analyzing data from different perspectives and summarizing it into useful information. Data mining software allows users to analyze data in large databases from many different dimensions, categorize it, and summarize the relationships identified. An enterprise can use data mining for many reasons. Here are some examples of successful data mining initiatives:

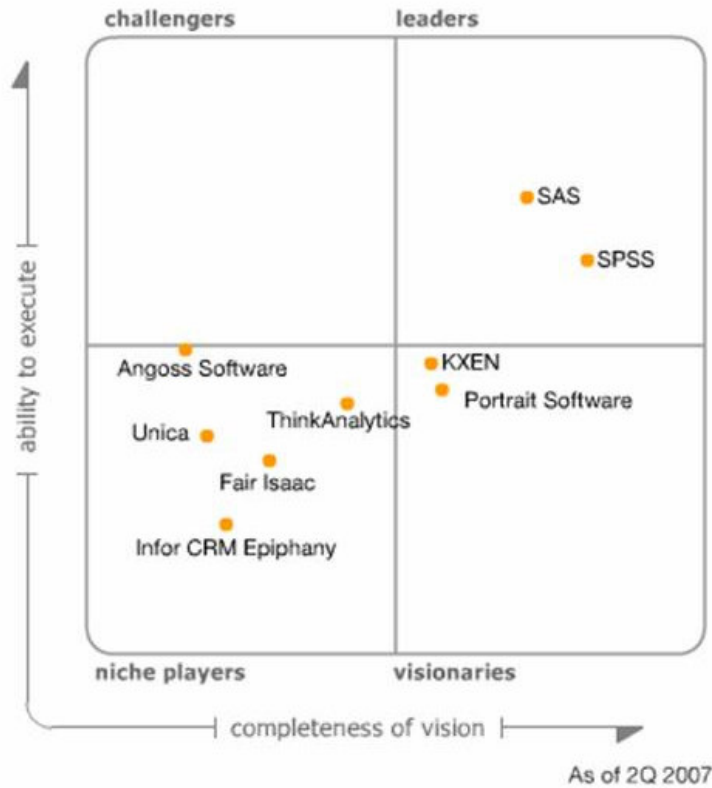
- Blockbuster mines its video rental history database to recommend rentals to customers.
- American Express can suggest products to its cardholders based on analysis of monthly expenditures.
- WalMart is pioneering massive data mining to transform its supplier relationships. WalMart captures point-of-sale transactions from over 2,900 stores in 6 countries and continuously transmits this data to its massive data warehouse. WalMart allows more than 3,500 suppliers, to access data on their products and perform data analyses. These suppliers use this data to identify customer buying patterns at the store display level. They use this information to manage local store inventory and identify new merchandising opportunities.
- The National Basketball Association (NBA) in the United States is exploring a data mining application that can be used in conjunction with image recordings of basketball games. The Advanced Scout software analyzes the movements of players to help coaches orchestrate plays and strategies.

BVB Principals have chosen this as one of the sectors that offers many opportunities to its investors. Many of these opportunities could be generated as a result of a growing demand as well as solving the existing issues, which are present in today's data mining solutions. Such as:

- Data integrity – Clearly, data analysis can only be as good as the data that is being analyzed.
- Integrating conflicting or redundant data from different sources – This is a significant challenge in today's environment of distributed data across the enterprise.
- Whether setting up a relational or multidimensional database structure – One must consider that relational structures thus far have performed better in client/server environments. This may be relatively important because with the explosion of the Internet the world has become a big client/server environment.
- Costs – Hardware prices continues to decrease but data mining and data warehousing tend to be self-reinforcing. More powerful data mining queries lead to a greater utility of the information being gleaned from it and to greater pressures to increase the amount of data being collected. In turn, this increases pressure for larger and faster systems, which are more expensive. It becomes a self-fulfilling cycle.

Data mining capabilities are also directly related to database solutions and data structures, which were discussed in the above section. For years, customers have been asking for new solutions which are more flexible and adaptable to the new business environment. For example, relative to customer data mining, most enterprises rely on a combination of vendors to enable it. In this space, key vendors include SAS and SPSS, which have solutions that will serve the requirements of many customer relationship management (CRM) initiatives. On the other hand, Angoss Software has broad data mining capabilities, however, offers limited drill-down expertise. KXEN's and Portrait Software's solutions focus on increasing analyst productivity, while ThinkAnalytics focuses on embedding predictive analytics into multichannel deployments. Fair Isaac and Unica offer data mining solutions that are valuable complements to other applications in their portfolios.

These key vendors are ranked as follows in Gartner's last Magic Quadrant completed in the second quarter of 2007.



Source: Gartner (May 2007)

There is plenty of room for growth. Although the core data mining technology is here today, developers need to take what already exists and turn it into something that more business users can work with. The next generation of successful applications will combine data mining technology with a thorough understanding of business problems and present the results in a way that the user can understand. At that point the knowledge contained in a database will be understood by people who can turn what is known into what can be done. Additionally, data mining powered by artificial intelligent algorithms is proving to be a great tool for exploring new avenues to automatically examine, visualize, and uncover patterns in data that facilitate the decision-making process. It simplifies the task of inferring information and patterns from data that might run into hundreds of pages.

In summary, this is a large but fragmented market with many growth opportunities. It is a sector where continuing innovation is required. A new paradigm should be emerging to dramatically increase the speed of analysis while driving down the costs. BVB Principals think data mining applications will continue to have tremendous impact on how business is done in the future. They also believe to have the knowledge and network to identify the right companies to invest in.

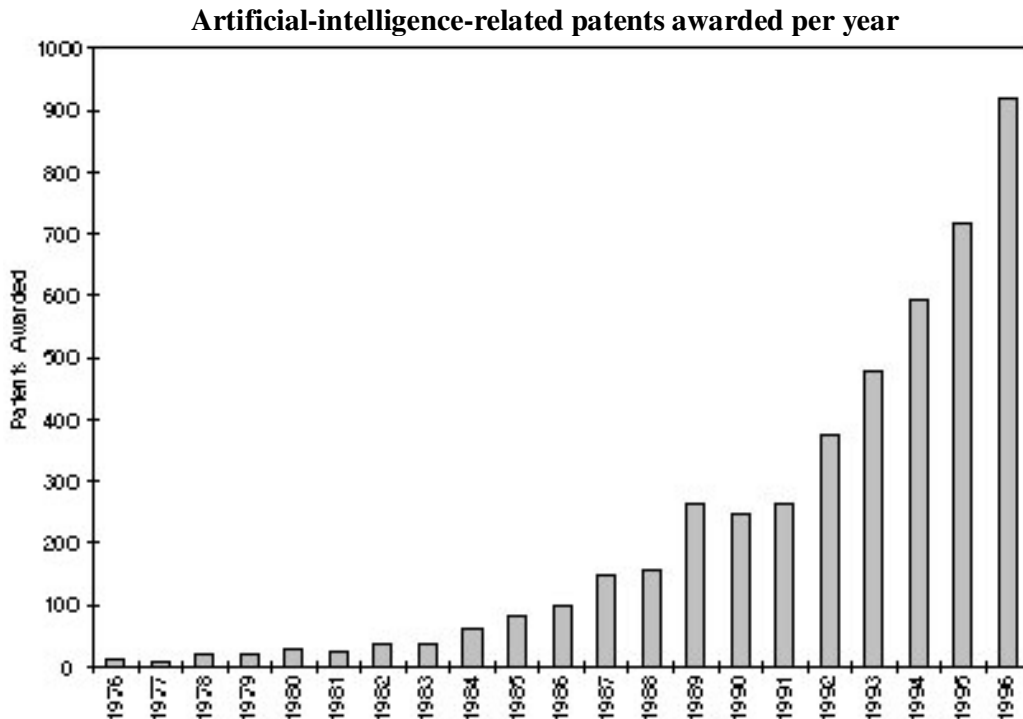
### 3. Artificial Intelligence

Artificial intelligence (AI) is both the intelligence of machines and the branch of computer science which aims to create it. Artificial intelligence is generally described as the study and design of intelligent agents. John McCarthy, who coined the term in 1956, defines it as "the science and engineering of making intelligent machines." When artificial intelligence (AI) was originally developed to emulate human intelligence, scientists hoped it would be a blockbuster technology. Instead, the inability of end users to deal with its

complexity and expensiveness and their lack of understanding of its potential caused these expectations to dwindle.

Starting in the mid-1980s, numerous start-up AI companies began to appear. Many such companies came and went, but some did flourish. For example, Gensym Corporation, founded in 1986 by an alumnus of the MIT's Artificial Intelligence Laboratory, and Trilogy Development Group, Inc., which went public, selling both software and services that apply rule-based reasoning and other AI methods to marketing operations. Many corporations committed substantial capital and human resources to the development of expert systems, and many reported substantial returns on these investments. Others found that, as AI pioneer John McCarthy had argued, these expert systems were extremely "brittle" in that a small development in knowledge or change in practice rendered such programs obsolete or too narrow to use. In one study of AI (Office of Technology Assessment, 1985), expert systems were singled out as evidence of "the first real commercial products of about 25 years of AI research" but were also criticized for "several serious weaknesses" that demanded "fundamental breakthroughs" to overcome. However, they provided valuable help for users.

In the 1990s, patent trends suggested AI technology was being incorporated into growing numbers of commercial products. The number of patents in AI, expert systems, and neural networks jumped from fewer than 20 in 1988 to more than 120 in 1996, and the number of patents citing patents in these areas grew from about 140 to almost 800. The number of AI-related patents (including patents in AI, expert systems, neural networks, intelligent systems, adaptive agents, and adaptive systems) issued annually in the United States increased exponentially from approximately 100 in 1985 to more than 900 in 1996, as shown in the following figure.



Source: Compiled from data in the U.S. Patent and Trademark Office's U.S. Patent Bibliographic Database and the IBM Patent Server, both available online.



But AI development has long been extended beyond the USA to other parts of the world. European researchers and companies are developing some promising solutions as well. For example, recently ScienceDaily, April 22, 2008 published an article titled “Computer System Can Carry On Conversations With Humans By Reacting To Voice, Facial Signals”. An international team known as SEMAINE, with the participation of Queen’s University Belfast; DFKI, the German centre for research on Artificial Intelligence; Imperial College, London; the University of Paris 8; the University of Twente in Holland; and the Technical University of Munich, is building a Sensitive Artificial Listener (SAL) system, which will engage with a human and be able to adapt its own performance and pursue different actions, depending on the non-verbal behaviour of the user.

In the 2000s, work on expert systems has continued at an accelerated pace; some corporations with strong knowledge-engineering capabilities continue to report substantial savings from expert systems and have demonstrated a continued commitment to expanding their use. Expert-system shell programs continue to be developed, improved, and sold. More than ever, researchers hope machines using AI will exhibit the following traits: reasoning, knowledge, planning, learning, communication, perception and the ability to move and manipulate objects.

After a few decades, now in the form of applications, AI is finally making its way out of laboratories into the mainstream market. This represents a brilliant opportunity for BVB investors. Some technologies such as case-based reasoning solutions already are creating a buzz in the market with multi-applications in the fields of drug discovery, medical diagnosis, fraud detection, data mining, and knowledge discovery. Another promising commercial avenue for AI is in enabling radiation-based food and water sterilization technologies with sensing systems.

Furthermore, according to some experts, there are some very advanced applications to support certain tasks, where models can be prepared and used. They will tend to be in high value low volume applications. The internet and its demands for improved task and information management will be a driver where many people outside of these specialist industries are already making use of AI methods. Progressively greater integration via the use of more far reaching models. Expert advisory systems that can be personally tailored. Major impact on many "middle-men" type industries such as travel agents, general practitioner doctors, etc. When it comes to AI, the future is most certainly already here. “AI is likely to be incorporated in several products to make users’ lives easier,” says Technical Insights Research Analyst Amreetha Vijayakumar. “However, it cannot be depended on to replace human intelligence and can serve only as an enabling technology.” As mentioned in the section above, data mining powered by AI algorithms is proving to be a great tool for exploring new avenues to automatically examine, visualize, and uncover patterns in data that facilitate the decision-making process. It simplifies the task of inferring information and patterns from data that might run into hundreds of pages.

AI vendors have also ventured into the customer relationship management (CRM) market to help users recognize client-related opportunities and means to effectively utilize them. A personalized approach toward addressing clientele needs is definitely a smart move when there are numerous callers. According to Amreetha Vijayakumar, who says “better customer management and improved product cross-selling are the objectives that AI-based CRM is moving toward.” Apart from enhancing current offerings, AI vendors could try to develop a standardized approach to market their products. Additionally, vendors can use

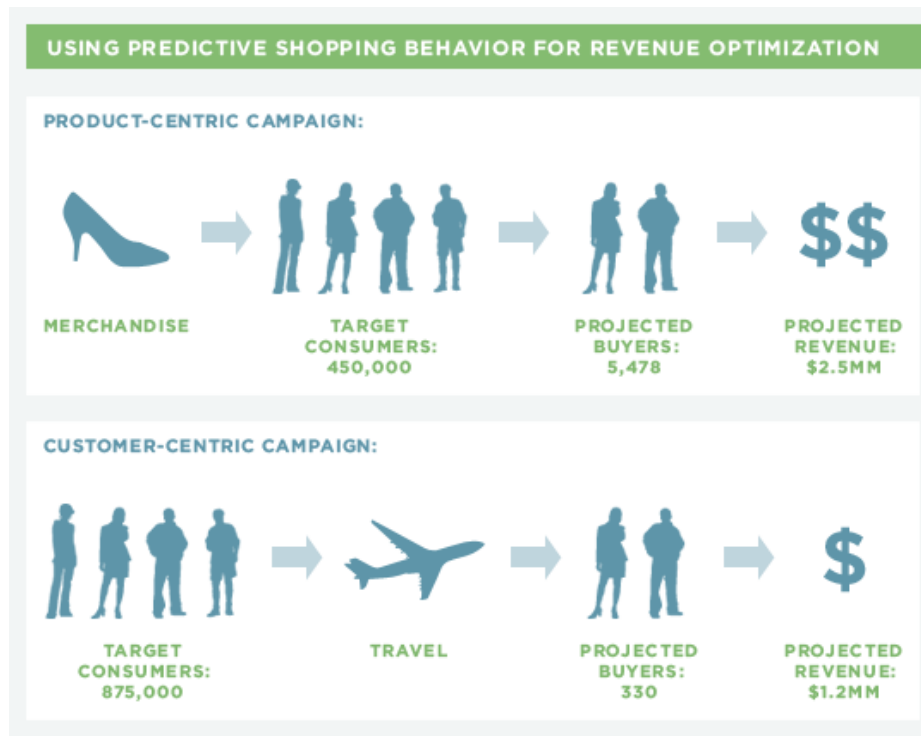
novel strategies to promote themselves – be it providing superior products or using innovative marketing methods to attract clients in an intensely competitive market.

#### 4. eCommerce Acceleration Solutions

This solutions enable companies to: improve their relationships with their customers by providing highly actionable insight into the dynamic preferences in relation to products and service offerings; helps clients to achieve their overall business objectives; create a revenue optimization platform; provide clients a new corporate asset: the consumer behavior bank. This bank provides clients with profound knowledge about their customers' shopping interests, purchasing likelihoods and level of expenditure for any potential offer, helping them to make critical business decisions while also providing the mechanism to immediately target across various channels and maximize potential revenue. Capitalizing on the consumer behavior bank's intelligence to accurately forecast consumer purchasing behavior around targeted email campaigns can accelerate the buying patterns and increase eCommerce.

Online marketers, and the customers they target, share a common complaint: how to make sense of the enormous amounts of information they are presented with on a daily basis. Central revenue optimization platforms can collect and automatically mine all of the customer data online retailers have in their possession to support high-performance, targeted marketing and merchandising would accelerate the purchasing process.

The customized consumer behavior bank which quickly emerges can then be used to inform any marketing program, across any channel. Marketers should be using such a platform to email customers what they want, when, and at what price point. In doing so, companies can exceed revenue goals for every email campaign they send. The diagram below shows a model used for predicting shopping behavior across a customer base.



Another area is Web acceleration which began as a method to speed online commerce sites. The idea was that if you could reduce the time to download a Web page, users would view more pages, have a more pleasant experience and, in theory, spend more money.

The bulk of the Web acceleration marketplace in the e-commerce space focused on two approaches: speeding up Secure Sockets Layer (SSL) sessions and accelerating the delivery of static content (e.g., image files of merchandise). But as e-commerce shifted from "the" killer Web application to just one of many features of today's Web experience, the issue of accelerating commerce sites lost a bit of its panache.

Companies still spend large amounts of cash on products and services to improve site performance, but as with any new market, once enterprises discovered the performance issues and chose solutions, the hype about and interest in Web acceleration tools have been reduced to background-noise level.

At the same time, a new use for Web acceleration technology has emerged. CIOs are taking a second look at Web acceleration products and services, and this time, it's in regard to the delivery of Web services.

As general interest in Web services grows, some believe corporate efforts will quickly turn from determining which Web service architecture to use (e.g., Microsoft's .NET, Sun's Java Web Services, or simply distributed XML-based applications) to deploying business-class services.

Rather than simply delivering static content like image files or Web pages, these new Web service acceleration services focus on improving application performance. For instance, a network designed for a Web services-enabled application would act as the underlying transport mechanism that links the distributed elements of the application itself. Basically, a company would use the network to distribute small chunks of an application's code to the edge of the provider's network. Customers and remote internal employees would interact with the distributed objects, which in turn would communicate over the provider's backbone. The processes on the edge of the provider's network could include supporting Java processing or XML caching.

This distributed approach to delivering Web service-enabled applications has a couple of advantages. First, much of the interaction between a user and an application is done closer to the user, avoiding Internet latency problems. Second, the distributed nature of this approach means that it may not be necessary to significantly increase the infrastructure or computing systems in a corporate data center as more Web services applications are rolled out.

CIOs seeking help with Web services acceleration, however, will face a persistent problem with the technology—while there are many products, no one solution is best for every application or enterprise. Dozens of vendors offer Web acceleration hardware and software solutions, many of which focus on a niche aspect of accelerating content delivery. For example, at one level, there are the hardware vendors offering load-balancing switches and caching appliances. At another level, there are software vendors whose products optimize TCP and HTTP sessions to improve page download times. Add to that the content delivery networks designed specifically to accelerate the delivery of static or infrequently changing information, and the traditional service providers who use their

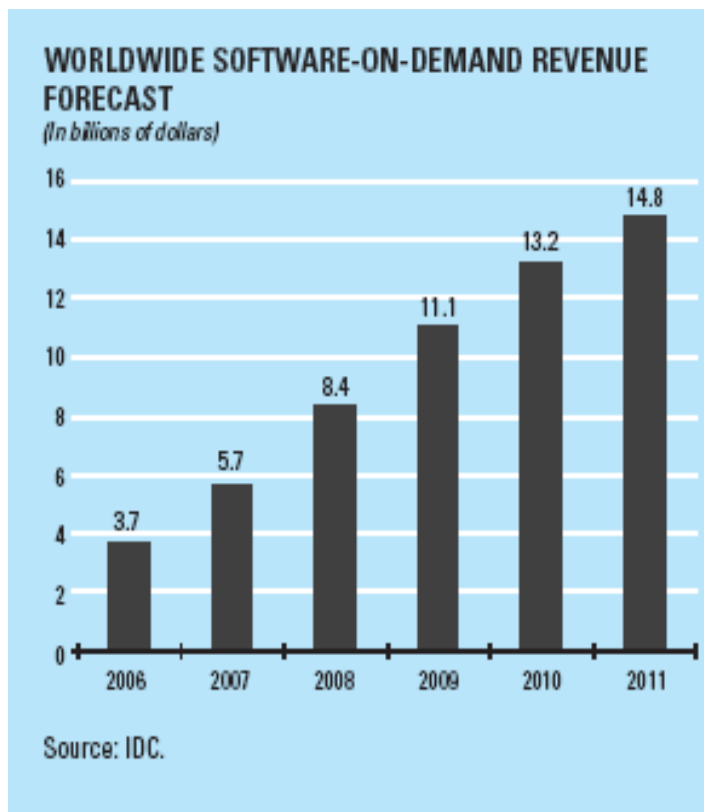
network's high capacity or improved routing techniques to guarantee delivery of quality streaming media.

It is the software side of these solutions that BVB will look to invest in.

## 5. On-Demand Software and Services (SaaS)

International Data Corporation (IDC) forecasts that the on-demand market will grow at 32% compound annual rate to \$14.8 billion through 2011.

While the package software industry is a mature industry and has gone through a phase of consolidations (e.g., Oracle bought Siebel, JD Edwards and Peoplesoft, etc.), the web-based application delivery (software On-demand) is a relatively new industry by comparison. It is still highly innovative and driven by the continuing growth of internet usage. Industry experts in IDC predict the compound annual growth rate (CAGR) in this new sector to be 4 times larger than in the traditional package software. Examples of on-demand software or web-based application delivery services via the internet are many. Probably one of the best known examples of this type of services is Salesforce.com, which was founded in 1999 and specializes in on-demand CRM services. Today it has 43,600 customers worldwide using 800+ applications over the web in 15 Languages.



Gartner Group expects the SaaS market to be \$19.3 billion by 2011, representing a CAGR of 25%. Of the total, the enterprise market alone would contribute \$11.5 billion, representing a CAGR of 22%. Access Markets International (AMI) Partners also believes SaaS adoption is rising steadily in the United States among small (1-99 employees) and midsize businesses (100-999 employees). According to its estimates, 21% and 31% of

respective small and midsize businesses use SaaS solutions, double the percentage of adoption in 2004.

IDC surveyed 412 midsize businesses (100-9,999 employees) in 2007: 9.0% already used a SaaS solution, 15.2% were planning to use a SaaS solution within the next 12 months, 17.3% were interested in SaaS solutions, 33.6% indicated no interest in SaaS applications, and 24.9% did not know or had no opinion on the topic.

IDC also polled 611 small businesses (less than 100 employees) in 2007: 1.3% already used a SaaS solution, 5.1% were planning to use a SaaS solution within the next 12 months, 16.2% were interested in SaaS solutions, 41.2% indicated no interest in SaaS applications, and 36.2% did not know or had no opinion on the topic. BVB Principals' expect the "no interest" and "do not know/no opinion" categories will decrease over time as SaaS applications move into new markets and verticals.

There are many benefits to SaaS offering, including:

- **Customer Benefits**
  - Lower initial costs.
  - More-predictable expenses.
  - Reduced risks.
  - Quicker implementations.
  - Minimal IT support.
  - More frequent upgrades.
  - Better customer care.
  - Improved security.
  - More relevant product enhancements.
  
- **Vendor Benefits**
  - Better revenue and earnings visibility.
  - Lower cost of development.
  - Longer corporate life.
  - Recognition of revenue matching the life of the service.

As shown in the chart below this market has growing across multiple segments and as such is both strong and broad.

**SaaS Momentum = Strong + Broad-Based**

- **Customer Acquisition** – Google ads
- **Commerce** – Amazon.com, eBay, Blue Nile, Zappos, CafePress, HomeAway, OpenTable, smarter.com, Zillow
- **Payments** – PayPal, Bill Me Later
- **VoIP** – Skype
- **Customer Management** – salesforce.com, RightNow
- **Life Management** – MySpace, Facebook, orkut, hi5, Bebo, Cyworld, Skyrock
- **Information Management** – Wikipedia, Endeca
- **Content Management** – iTunes, YouTube, Yahoo! My Yahoo!, Facebook News Feed, iGoogle, veoh
- **Content Distribution** – Adobe, demand | MEDIA
- **Human Resources** – Taleo, Kanexa, Success Factors, WorkDay
- **Resource Management** – NetSuite, Intuit
- **Web Analytics** – Omniture, Visual Sciences, WebTrends, CoreMetrics
- **Merchandise / Marketing** – DemandTec, Aprimo

Morgan Stanley 44

## 6. Security Infrastructure Software Solutions and Services

Software and information technology security are bigger issues today than ever before. This is true whether one using Clean Tech or standard technologies. It is certainly no news that attackers are after an enterprise’s software and key customer data. Some may be targeting directly, trying to leverage weaknesses in a software stack to steal goods and services, grab identities and credit-card information, or conduct industrial espionage. Some attackers don’t even know specific software exists but use broad sweeps of the Internet to destroy assets for fun or profit. And of course, there are insiders with a variety of motivations.

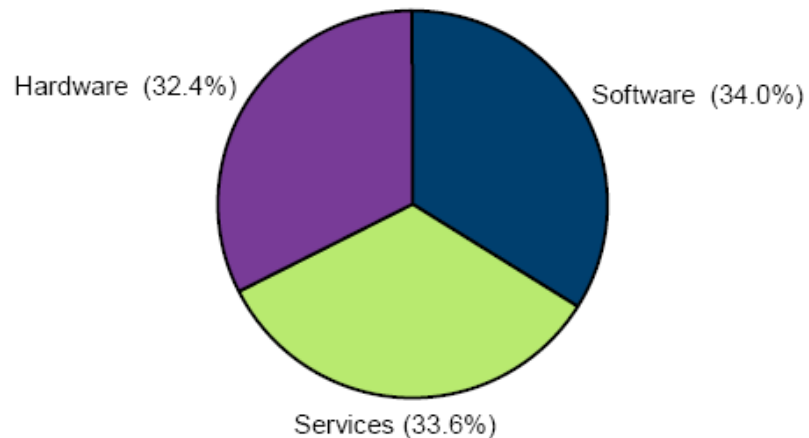
Protecting software against attack, data against corruption and Web sites against vandals is a huge job, and a big responsibility. The operating systems that are in use, the applications and utilities that are purchased, and the custom code that developers write can all be exploited by taking advantage of known bugs, design flaws, weaknesses in platforms, unsecured communications paths and poor programming techniques.

Technology trends over the last five years indicate information security is approaching an all-time high. Out of every IT dollar spent, 15 cents goes to security. Security staff is being hired at an increasing rate. Over that period, the “Global State of Information Security 2007” survey done by PWC and CIO magazine, has confirmed this trend as well as other important conclusions, which include: companies reported some level of integration between IT and physical security; IT security spending increased, as a percentage of the overall IT budget, since 2003; and IT is dominating security reporting structures and budgets. Five years ago, 36 percent of respondents to the “Global State of Information Security” survey reported that they had suffered zero security incidents. In 2007, that number was down to 22 percent. PWC and CIO Magazine believe this means that more companies are aware of the incidents that they’ve always suffered but into which, until recently, they had no visibility. Awareness is higher, and that’s because companies have

spent the past five years building an infrastructure that creates visibility into their security posture. However, it seems that after years of buying and installing systems and processes to improve security, close to half of the respondents didn't have a clue as to what was going on in their own enterprises. The security discipline has so far been skewed toward installing firewalls, ID management, intrusion detection instead of risk analysis and proactive intelligence gathering.

Research analysts from IDC, one of the premier global market intelligence firms, predicted the worldwide information technology security and business continuity market, which grew a healthy 11% in 2002, would be reaching at least 15% annual growth rate in the second half of the decade. This growth would allow this sector to reach \$118.8 billion in spending by 2007. All segments (hardware, software, and services) will lead growth uniformly as enterprises seek to improve their infrastructures to manage organizational risk more effectively, claimed IDC. The following chart shows the forecasted distributions among its three categories.

WORLDWIDE SECURITY AND BUSINESS CONTINUITY SPENDING SHARE BY PRODUCT SEGMENT, 2007



**Total = \$118.8B**

Source IDC

With threats and those perpetrating the attacks getting more sophisticated each year, enterprises must now do something to avoid losing important data as well as capturing the "hackers" who are constantly trying to break their systems.

For example, many corporations now consider spyware to be the second-greatest threat to enterprise network security. IDC believes more than three-quarters of all corporate machines are infected with various forms of spyware. Survey results indicate that 84% of organizations have implemented antispyware solutions. Although the consequences of

spyware may be minor, spyware has the potential to do significant damage to computers and also to the entire network. It has the ability to capture virtually all online activity.

On the other hand, spam moved from a nuisance in 2002 to a full-blown IT nightmare. Many organizations have had to implement anti-spam technologies; spam continues to be considered a major security threat. Additionally, email phishing attacks are now daily occurrences for any organization, and especially for the largest financial institutions and their customers. More sophisticated attackers, often from organized crime, do increasingly use phishing techniques to obtain personal information to perpetrate identity theft. The number of phishing scams is rocketing, and the sophistication and scale of online frauds and identity thefts continues to increase at a rapid pace.

For years, many focused security efforts on external threats posed by the explosive growth of viruses, spam, blended threats, and spyware. In light of intensive government, regulatory (e.g., Sarbanes Oxley) and industry regulations that require organizations to protect the integrity of customer and employee personal information and corporate digital assets, companies are now also focusing in internal threats as well. Because noncompliance may result in substantial fines and executive liability, organizations are realizing that information leakage by insiders is a threat that can no longer be underestimated. Addressing the insider threat, however, is turning out to be a complex challenge. The increasing use of corporate email, web-mail, instant messaging, peer-to-peer, and other channels for distributing data and the proliferation of mobile devices that allow employees to carry sensitive information outside the organization's boundaries make the control of outbound content, generated from internal sources, a substantial challenge.

For all the above mentioned reasons, BVB believes this area represents a major area of opportunity for investment.

## **7. Mobility**

Mobility is one of the most prolific and fast growing technology areas in today's marketplace. Whether investing in Clean Tech or other technologies, BVB anticipates there will be a need for mobile applications (i.e., investment opportunities) serving customers and enterprises alike. There are some clear trends in the mobility space which warrant a focused investment strategy on part of BVB. The charts below indicate the importance of this sector and depict the following key information:

- Number of mobile phone users worldwide and the expected growth compared with internet users (clearly showing that mobile devices are the device of choice)



### Leading TMT Markets by Category

Category	2006 Growth Rate	Market Size
Mobile Subscribers	24%	2,693MM
Internet Users	15	1,120MM
Credit/Debit Cards in Use	11	4,881MM
Installed PCs	8	818MM
GDP per Capita (PPP)	7	\$10,426
Telephone Lines	6	1,362MM
Cable / Satellite TV Subscriptions	6	664MM
Population	1	6,446MM

Source: Morgan Stanley Research TMT database 58

- The uses of mobile phones by age group indicating the size (percentage) of various segments of the technology, media and telecommunications markets, which shows the new generations are more rapidly adapting the mobile technology across different media than older people. The mobility area also responds to the new generation’s demand for more instant information and access to on-line services “anywhere and any time”.

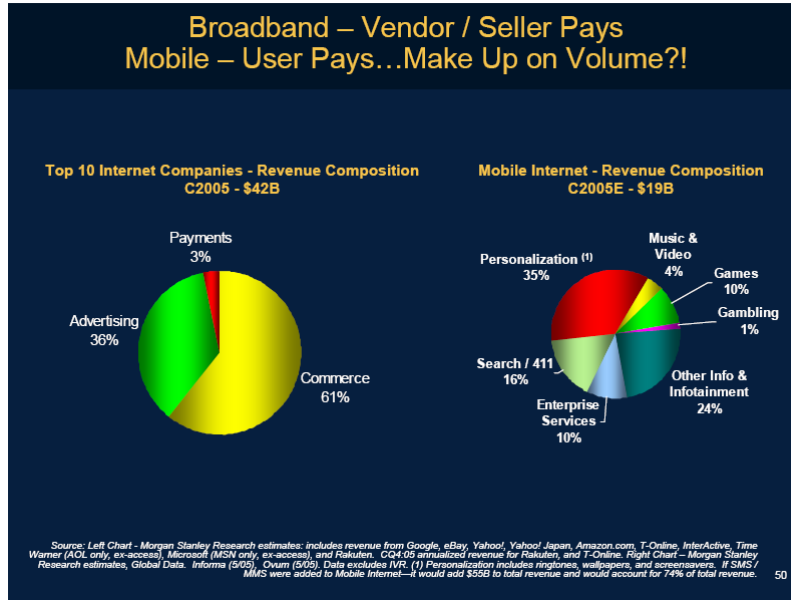
### Anywhere, any time

Use of mobile phone or PDA to do the following by age group, %, 2007

	18-29	30-49	50-64	65+
Send or receive text messages	85	65	38	11
Take a picture	82	64	42	22
Play a game	47	29	13	6
Play music	38	16	5	2
Record a video	34	19	8	3
Access the internet	31	22	10	6
Send or receive e-mail	28	21	12	6
Send or receive instant messages	26	18	11	7
Watch a video	19	11	4	2
At least one of these activities	96	85	63	36

Source: Pew Research Centre

- The spread of internet revenue opportunities for mobile versus those indicated for Top 10 internet providers, shows this area has more diversity which translates into more opportunities for revenue in the long-term. The business model of the mobile internet is more flexible and more often services are paid by the users.



All this data leads one to a clear conclusion that both the size of the market and longer term growth rates are clearly directed to mobile devices. It is where the market is moving so that the user can be anywhere to access information while the advertisers can focus on this segment to develop revenue opportunities at the same time in the other direction.

The mobile services infrastructure and how the mobile services have come together indicates a move towards providing real-time and secure services over the internet. BVB believes the play in this space is a combination of content delivery and services. The number of devices is far too large to ignore and the style of use by a very large cross section of the population is demographically diverse enough to make content and services appeal in a variety of forms.