

“There Are Six Sides to Every High-Tech Valuation: Secrets Every Professional Should Know About How to Acquire/Valuate High-Tech Companies”

By Warren S. Reid, Copyright 1997, 2005. All Rights Reserved¹

Anyone who wants to properly value a High-Tech company for purposes of the M&A team table, the negotiation table, the boardroom, or the courtroom, needs to look at all sides of the company, including the following six sides:

- I. Management/Critical Staff***
- II. Markets/Marketing***
- III. Technology/Products/Services***
- IV. Finances***
- V. Legal***
- VI. Intellectual Capital***

Knowing how a Company fares in these six interrelated areas, will give you the greatest insight as to what the Company’s long-term value and potential are, or why it finds itself a party in an Intellectual Property misappropriation or failed computer system matter.

Below, I will present the kinds of questions that you might want to ask regarding the high-tech situation. I’ve decided to make this article a series of questions, rather than a series of answers and explanations, leaving the latter to the readers who are probably very capable of inducing/analyzing the appropriate answer for his/her situation.

A major bonus is that these six areas equally apply to businessmen, lawyers, venture capitalists, corporate valuation specialists, board members on high-tech companies, investors and others who are investigating transactional opportunities, mergers and acquisitions, companies going public, for formulating net profit deals, as well as litigators whose responsibility it is to determine whether or not intellectual property has been misappropriated, or why in particular systems development effort failed. That is the power of these questions.

I. MANAGEMENT/CRITICAL STAFF --

Leadership, vision, and the staffing to bring a product from concept through maintenance is key for succeeding in an industry that effectively changes every two years.

A. BUSINESS PLAN

- **What is the Company’s business plan?** What are its cash flow and working capital needs? What Research & Development (R&D) and capitalizable costs are necessary to make their Company a powerful and successful competitor? With the lackluster performance of so many hardware and software Company stocks, why is this product, plan and management and marketing teams so spectacular?

¹ Note: Warren S. Reid and WSR Consulting Group, LLC are currently in the process of generating their updated methodology for reviewing, analyzing and valuating IT companies. WSR Consulting Group, LLC is working with Valuation Companies, who integrate WSR Consulting Group’s analyses and evaluations of high-tech/ IT operations, management, products, markets, intellectual capital, projects and plans into their own financial analyses.

- **What are the plans for going global?** (most high-tech companies whether it be IBM, Microsoft, HP, Dell, software, hardware, network, or peripheral purveyors, experience 50-55% or more of their sales from outside of the United States). What is the fastest and most prudent way to go global? How do their plans include China and India (from a market standpoint and low cost provider standpoint)? What other parts of the world are they considering? What other relationships and/operations already exist in foreign countries?

B. STRATEGY

- **What is the Company's strategy?** To what degree is it deliberate? Emergent? Accidental? Opportunistic? How is strategy linked to the pattern of action in the past?
- How openly is the strategy communicated internally within the Company and externally to relevant constituencies? To what degree do different organizational levels participate? Has a consensus been built around intended courses of action, especially the depth of CEO involvement?
- What incentives are provided for key players to negotiate a strategy for the Company?
- **What relationships and strategic alliances exist or can be developed** to give the product more credibility? More distribution resources? More manufacturing resources?
- What merger or acquisition of companies or products would better enable this Company to compete? Expand market share? Go overseas?

C. PERSONNEL/CORPORATE CULTURE

- **What is the background of key management personnel?** What has been their track record of past companies? How engaged and interested is the executive team in the company business and technology? How accessible are members of executive management? How well does the executive team listen and respond to issues and problems?
- What is the current position and status of the instant Company in the industry? To what extent can that be blamed or credited to the executive team?
- Are key employees interested in staying and motivated to stay? Why? How? Would they be willing to take shares and bonuses to tie their compensation to performance? To what extent?
- **How concentrated is the value?** To what extent is the company's technology strengths, intellectual property, trade secrets, and business expertise concentrated on one or a few individuals? To what extent are those individuals already stretched in their availability and work? To what extent can knowledge and skills of those key individuals be cultivated in others? How happy are those individuals with their current place in life? What stake do these individuals have in continuing with the company? What system is used and what level of knowledge transfer within the company has been achieved?
- **What is the loyalty of personnel?** How are the personnel organized? How are they motivated and incentivized to stay with the company? How many are contractors vs. employees? How much of the organization and business out-sourced? How motivated are the out-sourcers to stay with this business? How many analysts, programmers, testers, managers, QA & test professionals, technical, maintenance & support, trainers, etc.? are there? What is their relative level of skill(s)? What are the barriers to switch to another company? What has been the historical turnover in personnel – any particular reasons for this?

- **How educated and trained are personnel?** What is the level of education and training of personnel? How much on-going training does the company invest in? What certification programs are actively pursued by personnel? What personal growth opportunities does the company provide? What is the ability of the personnel to re-train and learn new technologies?
- **What will be/should be the mission and the corporate culture of the organization as it continues to grow?** Who will be the new leaders and how will he/she be successful? How will the Company appraise the performance of its personnel accurately and successfully? How will it budget and control costs? How will decisions be made (at what level)?
- **What is the health of Business Alliances?** What alliances and partnerships does the company have – nature, length, closeness, commitments? What benefits are (were expected), and what benefits have been realized? How consistent have been the benefits, and how easy has been the relationship? What is the balance of power and reliance between the partners in the various relationships? How cohesive and coordinated are the values and cultures of the partnerships? What is the ease of terminating and replacing the partnerships? What are the hurdles to partnering in the industry of the company? What is the strength of the partnership to weather difficult times? Will the alliances survive a merger or acquisition? How good or bad is that?

D. SPECIAL QUESTIONS/THOUGHTS

- **If you're looking to takeover a failed Company, what type of insurance does the failed Company have?** What indemnity will be provided to the reorganized Company? What new liabilities will the new Company carry for it? (Know what is possible)?
- **Can the Company be broken up for greater value now** than for a 2 year return on investment? If the sum is less than the total of its parts, what operations, products, assets can be sold?
- **What would be the optimum way to organize the Company for efficiency and effectiveness?** What specialized staff will be needed? Is the Company in or marketing to industries that are about to become deregulated? How will this effect the Company? How will the Company staff and recruit for its high-tech needs? How will the Company train its high-tech staff? To what extent should the Company bring in internal expertise, versus outsourcing special expert needs to consultants? What economies can be gained by a Merger or Acquisition?

II. MARKETS/MARKETING --

By my definition, selling is getting someone to buy something from you at a price that makes you a profit and at a price that the buyer can live with. There are many ways to get to that point -- but good marketing will get you there first!

A. WHAT MARKETS ARE SERVED?

- **What market(s) is the Company in?** Is this a mini-computer or main frame application requiring a multi-month educated sales presentation to sell the product? Are VAR sales and relationships critical? Or is this a micro computer-based product, where getting market shelf space in retail stores and the attention of regional and national distributors are the keys to success? How many products are sold? What is the degree of market penetration? What are the barriers to entry for potential competitors? How concentrated or dispersed is the customer base – territory and type? What potential markets exist?

- **What is the health of the marketing channel?** What channels of distribution are used? Who are the channel partners, and are they compatible? What threats from competitors exist vis-à-vis the channel partners? What are the costs of partnering and maintaining relationship and loyalty of channel partners? What is the cost of distribution? How focused or dispersed is the distribution – local, regional or national? What degree of control does the company have over the distribution and channel partners? What degree of moral suasion and negotiation/business power does the company have regarding the operation of the channel partners? What is the cost of promotion and sales? What promotional channels are used? What sales strategy is employed – and how successful has it been in maintaining or increasing market share – retail, direct market, sales staff, commissioned, etc? What is the consistency and cohesiveness of marketing approach to company’s business strategy and direction? What is the importance of branding; effectiveness of branding; cost of branding and brand protection? What are the regulatory constraints for marketing, promotional and sales efforts?

- **Product Pricing.** How was the product priced when first introduced? Today? Compared to competition, especially considering the benefits it provides to users? Is the pricing appropriate given actual and allocated costs, costs to market, competitive prices, point in the product life-cycle (i.e., maintenance costs, liability projections, support, etc.)? How elastic is the demand for the company’s products and services? How loyal are buyers? How welcoming have buyer’s been in responding to changes in technology – how keen on adopting those changes? What are the potential threats from other products, changes in technology, changes in use, changes in buyer needs and demographics?

- **What is the status of the competition?** What new markets for the companies’ products and the competitors’ have come on to the scene in the past 6 months? What announced or pre-announced changes in the markets or the products are there? What impact has price cutting by competitors had on demand for the company’s products and services?

- What impact will new technologies, complementary technologies, new competitors, markets, and standards have on your Company and the competition (i.e., next generation disk drives and data warehouses, new internet capabilities, smart phones and PDAs, wireless communications, grid computing, “digital everything” changes to the Federal Acquisition rules and rules for trading and sharing “IP” with foreign countries, etc.)? Partnering with “low cost provider” countries and entities?

- **Is the Company dependent upon one or two major suppliers?** Distributors? Industries? Markets? Customers? What would happen if that resource were to disappear? What alternatives and recovery plans exist? Have they been tested? How can they be tested?

B. WHAT ARE THE CHARACTERISTICS OF THE MARKET?

- **In what part of the market and business life-cycle is the product and Company?** Is that market stagnant, growing, consolidating, etc.? (Be aware that the technology life-cycle is different from the other product life-cycles. It is typically characterized by Jeffrey Moore’s five stages: the Pioneers; the early adapters; the early majority; the late majority; and the laggards. The first two represent 15-20% of the entire customer base that will eventually purchase the product. You need to have enough finances and marketing clout to go past the initial hungry period as purchasers become comfortable with and adopt the new product -- else there will be no profit for you.

If the Windows series of operating systems were developed by anyone other than Microsoft, it would have been a dim failure -- given the bugs, difficulty, and hardware and software enhancements required to fully take advantage of the system. Microsoft has the clout and dollars

to support that product until it really lives up to expectations. As an example, its Windows products are typically unstable until the 2nd Software Patch, sometimes 9-15 or more months after initial release. On average, typical high-tech life cycles are also getting shorter -- from about 4-5 years in the early 1990's to 3 years in 2005.

- **Health of Customer / Client Base.** What is the mix of customers and clients? How loyal are the customers and clients? What are the barriers for customers and clients to switch to other companies? How reliant is the company on those barriers, as opposed to its own good will? At what rate does the company secure new customers and clients? Lose current customers and clients? What is the length and cost of the selling/closing cycle? What is the rate of repeat business and word-of-mouth? How well has the company handled disputes with its customers and clients? What is the quality of customer service and complaint handling? What drives the buying decision – need vs. wants vs. luxury? What is the life cycle of the market - growing, slowing down, early adopters, early majority, late majority, laggards? What is the international exposure and coverage?
- **How will the Company increase its market position, and market share?** Will it obtain a 30% market share in its niche within 3-4 years (a figure many Venture Capitalist's say is the minimum for success)? How will it move from "customer acceptance" to "customer preference" to "customer demanded" (where the customer will accept **no substitute**)?
- **Do the costs and mix and effectiveness of marketing communications make sense for this Company?** i.e., Internet, radio, television, collateral materials; direct mail; telemarketing; print advertising; public relations; trade shows and giveaways -- i.e., full color posters, celebrity endorsements/appearances/CD-ROM's; seminars; user groups; bulletin board systems; infomercials; etc.? Who reviews the payback? What plans exist for the future? Do they make sense? Are these media helping to brand the company? Its product(s)? Its message? Are they protected?

C. WHAT ARE THE PLANS FOR THE MARKET?

- **Does the marketing plan tie into the overall business plan?** Does it make sense? Does it continue to show and enhance business sales as if no competition will come into the market? Does it explain what efforts are required to make a sale in terms of people? Assets? Training? Shelf space in retail stores? Licensing agreements? VAR relationships? Etc.?
- **What have been the marketing successes in the Company and why?** What were the marketing failures and/or tougher times for the Company and why? Who were the key players in the successes and failures, then? Now? Tomorrow? (Remember, good executives can learn more from their failures than from their successes).
- **Remember, high technology companies have unique characteristics** that imply the application of different strategies than those of traditional marketing. These include the following:
 1. **Less emphasis on traditional marketing research** (especially for new products that have never been seen in the marketplace, and for which there is no connection in the consumer's mind).
 2. **High speed of change in technological developments** (where, on average, it is said that the sales price drops 50% and performance doubles every two years)

3. **Rapid market saturation** or, the other equally bad problem, **no follow-on product** (*Remember the Alamo? Remember Visicalc?*) Where what seemed like a never-ending boom has rapidly become a dead-end bust, with sales falling off to almost nothing over-and-over in the high-tech market -- e.g., CPM, dBase II [after a long awaited new release that was bug-ridden], Wang word processing systems, light-pen-operated computers, WordPerfect {after bug-ridden release of WordPerfect 5.2 and WordPerfect 6.0 for Windows).
4. **Infinitely shorter product life cycles** (get in, enhance, get out, get on with process and next product).
5. **Price competition at earlier stages** Typically, price competition: becomes a factor when a product reaches maturity; then gets really stiff in the decline stage. With high-tech products, however, price competition may start right at the introduction stage in anticipation of the fact that the product will meet price-competitive merchandise in the marketplace almost immediately.
6. **Increasing need for new products** (once a user has new technology, s/he begins to learn more about his/her business, about what is really needed and what is possible -- this leads to requiring more and more technology!)
7. **Emphasis on market creation rather than capturing market share.** In traditional marketing, it is generally considered easier to capture greater shares of the existing market than to open entirely new markets.
8. **The producibility problem.** A long-standing problem in all new product introduction efforts is that of making the prototype producible, or programmable and maintainable.
9. **High turnover among key staff**, and the fact that **dollars alone are ineffective motivators** for “brilliant techies” means that unique and even “quirky” corporate cultures must be created -- that are very different from the rest of the business world.

Due to these nine characteristics, there is more risk associated with high-tech/software marketing than with virtually any other form of marketing for products or services.

D. SPECIAL QUESTIONS/THOUGHTS

- **Is the Company’s marketing plan achievable?** Look for the following information, logically sequenced, to put the plan in operation:
 1. **SITUATION ANALYSIS:** What is the general situation for the Company? Demand for the product? Peak competitors? Environmental factors? Company resources? Legal or policy constraints?
 2. **THE SUMMARY OF MAJOR PROBLEMS AND OPPORTUNITIES:** The Company should include in this analysis answers and information collected in the Situation Analysis above. It should predict the impact of the favorable and unfavorable opportunities that will affect the Company’s ability to win market share as well as the major contracts already in the pipeline and under bid.
 3. **MARKETING STRATEGY:** Identify the objectives of the marketing strategy; the marketing mix, including the basic elements of product pricing, number and nature of products, distribution channels, and promotion. Include what is going to be done and

why, with each element, what each element will cost, and how the program will be evaluated.

Document all the financial aspects of the program, noting not only sales projections and product line profitability, in each of the markets, but the cash flow and contingency plans that exist to help assure that the cash flow projections are met (i.e., the ability to immediately cut variable and semi-variable expenses). What are the best, likely, and worst cases in each scenario? (Remember to use the 80-20 rule and concentrate on the 80!)

What are the specific plans for rolling out new products? What advertising, promotional, and marketing materials will be necessary and when? What model is being applied? Has it been used before? What are the risks inherent in this model? How accurate has it been in the past?

4. **TASKS:** State the specific tasks, responsibilities and due dates for every person and item involved in the marketing function in the support areas.

Have formal data collection, analysis, feedback, and control loops been implemented so plans and modifications can be made timely?

- **Earnings, Shmernings!** Forget the earnings, and continue to stress and look at the quality of R&D and cash flow projections -- best, likely, and worst case. Not only is cash still king, **but nothing focuses the mind like a lack of cash.**
- **Hotlines/Support Lines.** Nothing can doom a high-tech Company faster than having an inefficient, untrained, and understaffed hotline. The Wall Street Journal and other major industry publications periodically print a list of well-known high-tech companies organized and graded by the quality of their hotlines. Many of the companies received a “C” or “D” grade. Many of the otherwise successful companies are growing at rates that they simply cannot handle and support.

III. TECHNOLOGY PRODUCTS/SERVICES –

Success in the high-tech industries is less about technology than it is about quality, creating/meeting customer needs, and delivering on time

A. THE COMPANY'S CURRENT GREAT PRODUCT(S)

- **What is the current product/services mix?** What products/services? How many? What nature? Concentration/relatedness / complementarities of products and services? How long in the market? How easy to penetrate the markets – i.e. how protected from competition? What are the service level commitments of the company? Have those commitments been met in the past? To what extent and at what rate have the commitments grown in amount and type? How well has the company grown to continue to meet those commitments? Are the services “productizable”? Are the products and services affected by seasonality – and if yes, how consistently has the demand for those products and services modulated?
- **What is the quality of the Company's products/software?** Who were the developers? Who owns the intellectual property? How protectable is the intellectual property? What is the value of the intellectual property on the market and to competitors? What standards were used and incorporated? Who has the rights to the product? Who has the legal and technical ability to upgrade the product? To interface the product? Will the product work with different hardware?

- **To what extent are they “en-abled”?** (i.e., Portable? Testable? Scalable? Maintainable? Extensible? Usable? Reliable? Securable? etc.?)
- **What is the status and quality of the testing of the product?** What automated testing tools and techniques are employed? What error capture and management systems are used? What is the status and quality of the documentation? What is the status of errors and cost of fixes before release? After release?
- **How well supported, funded, educated and tooled are the maintenance organization/operations within the company?** How do they compare in these areas to the development teams?
- **What is the quality, training, systems support, escalation procedure for the “Help Desk”?** Have their service level promises and goals been met or exceeded? If not, what will it take to fix it? What has been the impact on the Company and the branded products/services?
- **What is the warranty service track-record?** What is the history of upgrades and success/failure of patches and fixes? How well documented are the upgrades, patches and fixes? How well have they been received by customers/clients? What disaster recovery procedures and techniques are in place – and have they been tested?
- **What is the status, standard-ness, and quality of the user interface?**
- **What follow-up products and complementary products are available?** When will they be released? Is this product already obsolete? When will it be obsolete?
- **Is the product or service customized or standard?** If it is customized, can it be expanded to be usable by other users and markets? If it is standardized, can it be tailored to gain increased market share in vertical industries? What customization has been done? What degree of configuration is required for the product and service? What degree of specialized knowledge is required to perform configuration and customization – i.e. to what extent must buyer relies on others to do it? What is the cost of customization – internal to selling company, or to be absorbed by buyer? Amount of effort and time required for customization and configuration? What support, maintenance, documentation, training, upgrades, warranty work, and enhancements does the Company provide? What has been the revenue stream from such services? What on-going liability exists for such services? What is the future revenue potential of upgrades, enhancements etc.? What is the cost of purchase servicing and maintenance?
- **What is the status of the particular product/service that you are interested in acquiring?** (Note: I have worked with some organizations that buy a whole Company to really get only one or two particular contracts in process that enable the former to bootstrap into a new vertical industry, market, or product line. All of the questions included in this article should be particularly applied to the critical project/contracts and not just the whole acquisition -- especially if breakup after acquisition is expected. Although general knowledge about the Company as a whole may change the divestment strategy and price/value)

B. THE COMPANY'S NEXT GREAT PRODUCT(S)

- **Have “mid-life kickers” or user demanded enhancements been identified** to continue to boost sales as the product enters the inevitable decline part of its life-cycle? Who will produce them? What will it cost? How and when will it be marketed and released?
- **What is the stage of the next generation product?** Is the product a prototype; proof of principle; or customer tested user-satisfied product?
- **What is the status of the in-progress products/projects?** Are they in trouble? Are they behind schedule, over budget, ridden with overwhelming scope creep, losing staff? What are the risks? Have appropriate budgets, steps and staff been assign to mitigate those risks? What is the cost to complete? What is the cost to get the products or services to market? What is the business case for new products and services? What is the demand for these products and potential return?
- **What has been the success of the R&D efforts and new product development investments?** What was its budget over the last 12-24 months? What should the R&D budget be for the next 12-24 months? How critical is R&D to the Company's success? Survival? Who is the Company dependent upon for new break-throughs, innovations and enhancements? What would happen if that resource disappeared?
- **Can/should R&D be outsourced?** Are the Company's rights protected re employee, consultant, sub-contractor and independent-contractor discoveries?
- **How will the Company choose among alternatives for new product development?** What are the critical success factors, how will they be managed, and what contingency plans will be made?

Evaluation of new product development and new product strategies should include an analysis of:

1. **Demand - Strength:** anticipated period; importance and need to be satisfied by the product; Upcoming changes to the targeted markets.
2. **Market - Size:** location; political and economic competition within the market.
3. **Product Compatibility with the current product line:** special features or performance capabilities; protection against changes within the product line; complimentary products and competitors.
4. **Company - Engineering advantages:** production advantages; location advantages; facility advantages.
5. **Financial considerations:** Budgeting analysis; ROI analysis; payback analysis; life-cycle cash flow.
6. **Product Development - Technical risks:** producibility; development scheduling.

C. QUALITY AND DEPTH

- **How many products and product lines does the Company provide?** What is their nature? How much more investment cost will be required to complete and market **all** of these products? What will be the expected payback period and profitability of these products? How should the development and roll-out of these products be de-prioritized and scheduled -- knowing you can't introduce and support everything at the same time?
- **Are there too few or too many products/product lines?** Which products should/can be dropped? Why? Relative costs and savings? What complementary products should be pursued? Why? Relative costs and savings?
- **What is the reliance on other (complimentary) products?** (For instance, Microsoft constantly adds new life and revenue to its already successful operating systems and Microsoft Office suite in that (current) users will have to upgrade and pay serious dollars for new application versions that operate correctly and take advantage of the new capabilities of each new release. Note carefully however, that companies with low cash that cannot port their product over to each new release will find their otherwise loyal customer base erode as their customers rally to competitive applications that are compatible with new releases of the Microsoft OS.
- **How well are quality standards implemented?** At a recent seminar called "Guerrilla Marketing," ten people submitted what they thought were outstanding statements of what makes their Companies unique. The list included the following: quality customer service; excellent service; care for the customer; customer comes first; superb customer service; etc. You get the picture! Everyone boasts quality customer service, and quality being built in to the development and manufacture and testing of the new high-tech products and services brought out.

In my experience much of that is ***MBS*** or ***MBBS*** (two terms created by the author meaning, "Management By Slogan" and "Management By Best Seller" or even "Management By Bumper Sticker")! Simply stating that you have quality built in to your product doesn't make it so. You must ask the appropriate questions and look for the appropriate proofs to determine the level of quality in the companies being evaluated.

What is the public perception of the quality of your products and services? What is management's perception? What is the perception of your engineers/developers? What is the perception of your sales and support staff?

While this is not intended to be a check list on total quality control in any way, consider asking these important following questions. (Note: industry and government seem to have opposing definitions of words used in the following questions -- just be consistent!

Do you have a separate Quality Assurance (QA) group? What is its role (to assure that R & D and project teams to conform to quality standards overall)? Where does QA report (should be independent from project team and Quality Control [QC])?

Do you have a QC group? How many people? Who does it report to (could report to same person as project team leader as QC is essentially a part of the project team)?

Does your Company have published QA and QC standards? Testing procedures? Automated tools to audit quality and defects? A formal defect prevention process?

How much time is allotted for developing new standards and metrics, and training staff? Who is responsible? How often is this done? How much is budgeted for these tasks?

- **What is the level of embedded process in your Company in the areas of defect prevention and defect detection and correction?** Microsoft develops new product with 50% of the staff being testers (i.e., 1:1 ratio between developers and testers), who come on to the project the very first day the project begins. I know of no other Company that professes that ratio. Bringing on testers early on in the project, in fact, is smart in that testers can begin to test the requirements for completeness and programmability before the overall architecture is developed; and then they can test the overall architecture of the system for flexibility, portability, fault tolerance, and more before design is commenced; then they can test the design for performance, efficiency, and maintainability before coding is begun; then they can test the code for understandability, comments, and maintainability before formalized end of code testing is begun; and so on.

Your Company should be learning from the masters in these areas. What percentage of defects does your Company find before the product is released? What percentage and severity of defects are found after it is released in the field? What is the comparative cost of finding a defect early on in the development life-cycle versus after it is released in the market? (The answer to the last one is can be as much of a factor of 1000 times).

D. TECHNOLOGY USED BY THE COMPANY TO CONDUCT ITS BUSINESS

- **What is the status of company infrastructure?** What kind of IT and IS infrastructure does the company have and rely upon? What technology does the company run in terms of hardware, software, communications, security, building, office equipment? What technology does the company use for production, administration, marketing and distribution? What is the lifecycle stage of the infrastructure technology? How much does it cost to maintain and update the infrastructure technology? What is the undepreciated cost? What is the compatibility of the infrastructure technology with other technology in the company and with technology trends in the market? How portable and modifiable? Is the mix of technology in terms of open-source, custom, standard or proprietary? How crucial is the technology to the products and services provided? How easy is it for competitors to replicate the technology and procedures? What is the ability to interface with or switch to newer and up-to-date technology?

- **How reliant is the company on suppliers?** What is the mix of suppliers relied upon by the company? Production inputs, material, services, infrastructure, co-marketing, servicing of products and services, partnerships, alliances, etc.? How much of the company's technology is owned vs. out-sourced? What is the stability and staying power of the suppliers? What is the degree of dependence on suppliers – and to what degree can the suppliers be replaced by others? What long-term commitments are in place – and what is the cost of buying them out if necessary? How many alternate suppliers exist? How is the supply chain integrated – just-in-time, inventory, seasonality? Cost and ease of maintaining relationships? Threats to supply chain?

- **What is the fit between the technology and the companies on-going operations?** Is the technology useful in the acquiring company's current or new business lines? Is the technology of the acquired (potentially acquired) company compatible with the technology of the acquiring company? Are the employees and personnel of the acquiring company familiar with, trained and capable in using the acquired technology? What current or future requirements of the acquiring company do the acquired technology and procedures meet? What changes would be required within the acquiring company's business processes, and what associated training would be required to make use of the acquired technology and procedures?

- **Is the technology redundant?** Do the acquired technology and associated procedures perform functions that are already performed by technology and procedures in the acquired company? What is the degree of overlap? Are the acquired technology and procedures more up-to-date or efficient than the the technology and procedures currently used? Do the acquired technology and procedures fill-in a gap in the functionality currently provided within the company, vis-à-vis current or new business lines? How much of the acquired technology is useful after setting aside what is redundant? Can the new technology and procedures be productized or otherwise sold to another user – and if so, for how much?
- **How does the technology compare with current or contemplated initiatives?** Is the acquiring company in the process of procuring new technology for its business, covering the same functionality as the acquired technology? Is the acquiring company contemplating such initiative? How does the acquired technology compare to technology that is being procured, or that is available to be procured at the present time? Compare in terms of lifecycle stage, ease of use, functionality, compatibility, flexibility, maintainability, portability, modularity.

IV. FINANCIAL --

Having appropriate cash reserves and ready access to liquid funds for working capital and for expansion and capitalization on new markets and opportunities -- in an industry where getting there first can make the difference between a winner and an “also-ran.”

A. ASSETS

- **What are the Company assets?** How liquid are they? How liquid can they be made to be? What is the ratio of the tangible to intangible assets? How can intangible assets be converted to cash if and when needed? What is the current inventory value of the product? Is inventory in warehouses or with distributors/others? Must the Company buy back unsold products? What is the net worth of the company?
- **How would/will today’s assets be distributed in an emergency situation?** What are the priorities in such distribution? Who has the most secured assets? Is there one big creditor? Is there one big supplier? What are employees’ rights? Does the government provide any protection for employees in the solution of the Companies?

B. LIABILITIES AND WARRANTIES

- **What liabilities and warranties must a Company stand behind?** What is the expected cost of these liabilities and warranties? How will they impact cash flow?

C. CASH AND CASH FLOW

- **What level of cash exists for new product development?** For upgrading and maintaining for products released? What is the plan to allocate this cash over the next 24 months? What are the margins and profits of the products and services? How consistent are the earnings, margins and profits?
- I noted earlier in “Earnings Shmernings” that **profits are important, but cash flow is king**. Profits are fine, actually critical for the longer term; but especially in the new stages of product development and creating and breaking into new markets, it’s not everything! Nevertheless, the health of companies and the ability to raise capital for growth will depend in part on certain standard financial measurements, including, earnings ratios and expense ratios of various kinds. In addition, a companies financial well being will be evaluated in terms of insurance coverage, replacement costs, financial contingency, and track record in difficult markets and with past financial crises.

- **Can the Company raise money by licensing its products** to other distributors OEMs (Original Equipment Manufacturers), software developers, etc. At this time? In the future? I recall the meeting when the developers and manufacturers of the VideoPlus product - which lets you program your video to record a program by entering 5 unique numbers they decided to expand and fund future development efforts by licensing the product directly to television and video player manufacturers. This made particular sense in that the key execs and staff were all scientists whose expertise and passion was inventing new products. Comparatively, they were not great manufacturers and distributors. The decision to license their inventions allowed them to continue doing what they did better than almost anyone else and enjoyed the most. PS: they are all multi-multi-millionaires today!

D. CONTROLS

- **What computer systems are in place to help control the Company's processes?** To inform management? Asked for by the board of directors?

- **How are cost estimates and budgets developed?** How have actual results compared to budget over the last 3-5 years? How has the budget/estimate process been changed over that time period?

- In addition to reviewing audited financial statements, **what has management done to improve control weaknesses and risks** presented in the auditor's "management letters"

- **Have there been any embezzlements?** Large losses of inventory? Increases in waste? Losses of trade secrets? When? How? Why? What has been done to prevent this from occurring or reoccurring?

- **Is the company ready for Sarbanes-Oxley reporting and audits?**

- **What have the internal and external auditors reported?**

V. LEGAL --

Changing law, new judgments, and the inherent difficulty dealing with intangible, intellectual and oftentimes buggy and less than perfect hardware, software, and systems [remember the Pentium watershed -- which somehow leads consumers to believe that their new high-tech purchases must be flawless] requires great legal planning, contracting, execution, and advice/assistance.

A. INTELLECTUAL PROPERTY

- **What intellectual property rights does this Company have?** Have any licenses been given/obtained (or territorial royalty agreements signed) and what products have been signed? When do the Company's rights come back to the Company? Under what circumstances does the Company lose its rights? What is the real value of the intellectual property rights? Is it best to hold on to them, or is it best to have them sold? What is the lifespan of the intellectual property?

- **Have employees and outside consultants and independent contractors signed the appropriate contracts,** non-disclosure agreements, assignments of rights, and other documents to protect new developments and properties?

- **Is a formal system in place to protect Trademarks and other intellectual properties?** Is it followed? Presented to Employees and appropriate other parties? Are punishments given out for deviance and misappropriations? Is it periodically reviewed with staff? Is it part of orientation and included periodically in internal newsletters? Are confidential documents “appropriately” marked? Are processes and procedures in place, adequate, and followed for dismissing employees? Is there adequate protection from disgruntled employees and ex-employees?
- **Is an appropriate trade secret and confidentiality program implemented in the Company?** How is the Company protecting its IP in those countries that do not abide by rational IP law?

B. LITIGATION SITUATION

- **Are there any infringements of any other intellectual properties?** What is being done to get around those alleged or actual infringements?
- **What have been the results of lawsuits in the previous five years?** Which files or attorneys should be reviewed or met? What systems, processes, and controls has the Company implemented to minimize the risks of reoccurrence or mitigate damages? Are these systems, processes, and controls adequate and effective for the situation?
- **Are there any pending law suits?** What is the likely result and the associated risks? If they are lost, what is the impact (that’s the risk multiplied by the probability of its occurrence) on the Company short-term? Mid-term? Long-term?
- **What new protection can be put into place** to protect the Company from abuse and litigation?

VI. INTELLECTUAL CAPITAL --

Though it is not reflected in your financial statements, Intellectual Capital is of great value to high-tech companies. Intellectual Capital could mean the difference between growth and stagnation, stagnation and decline, and decline and bankruptcy! Among other things, it represents the know-how of the people, and the embodiment of such know-how in reusable processes and methodologies, templates, checklists, training, automated aids, and the unique and valuable intellect and focus it brings to projects, products, and the supply, manufacturing, and customer chains.

Note: This is different from intellectual property and goodwill that typically emphasizes unusual but real assets such as trademarks, copyrights, patents, and trade secrets. Intellectual capital looks far beyond these things to more elusive holdings and advantages such as the ability of the Company to learn, adapt, re-focus, etc.

A. VALUING INTELLECTUAL CAPITAL

- **How would you measure and characterize the companies' momentum in terms of market position, customer loyalty, quality, etc.?** (Note: there is a move to be able to account for such intellectual capital, and several, aggressive firms and national research laboratories in the US and worldwide are beginning to account for it. It is up to the accounting profession in various parts of the world to begin to support and mandate such accounting).
- **How will market position be maintained** along with momentum and customer loyalty in terms of each of the following: Quality? Serviceability? Out-of-box experience? Ability to keep informed regarding competition and markets in a changing world?
- **How able is the company to adapt and change?** How flexible is the company to learn, adapt and re-focus to keep its intellectual capital current with developments in the market, buyer's demands, and technology trends? Does the company lead the technology landscape or does the company follow other leaders – and if the latter, how well?
- **How does your Company/Product rate** in the following areas: Programmability? Manufacturability? Usability? Re-usability? Portability? Testability? Upgrade ability? Reliability? Deliverability? Security? Privacy? Dollar investment in such areas and know-how yesterday is needed to protect Companies from turnover and monumental cash drains to cover such areas on current and new products in the future!

B. OTHER CONSIDERATIONS

- **What “systems development methodologies” are used?** Product development method used? Were they developed internally or licensed from external sources? Are they consistently applied? Flexible? Able to withstand turnover of key personnel? Other internal practice and process standards, training programs & manuals? Who owns the methodology? How comprehensive is the methodology across the company's business units and activities? How clear, cohesive and internally consistent is the methodology? How well documented is the methodology? How well has it been updated and modified to fit the company's particular circumstances and needs? How consistently has it been followed and applied? How has compliance been monitored? How easy is it to learn and utilize? What tools are used to learn, comply with and enforce methodology? What are the impacts of not adhering to the methodology?

What other tools and standards are utilized to assure that the Company can realize growth, and experience the loss of critical people (including: estimation standards; standard hiring practices; various applications developing, design, programming, testing, and documentation tools for both hardware and software; standard employee evaluation system; on-going employee training; on-going process improvements; implementation of employee suggestions/recommendations; project management tools and standards; process for escalating troubled projects or developments; etc.

- **What Project Practices are used?** If the company undertakes software development projects on a regular basis either for internal development or as a service to its customers, it is important to understand the quality and robustness of its project practices. Does the company subscribe to or belong to project practices organizations? Any certificates – how up-to-date? Any evaluation based on accepted standards, such as, SEI's Capability Maturity Model (CMM or CMMi) or ISO9000? What is the degree of project planning? How appropriate and correct is planning, estimates Function Points, COCOMO II), monitoring (CPM)? How well understood and how widely used are the project practices? How well documented and enforced are the project

practices? What metrics are used to gauge adherence to project practices – how effective are those metrics? What is the frequency of feedback and updating of the project practices? What is the use and reliance on internal quality process reviews and self improvement techniques? Independent Verification & Validation? What is the frequency of quality control – how are they documented? What is the track record of quality improvement initiatives – and what are the tangible results? Does the company have dedicated QM staff?

- **How are key employees tied to the organization?** (Always worth repeating) Are there separation and standard severance agreements? What rights do key employees have? What rights does the Company have?

SOME FINAL THOUGHTS

As you can see, several questions of a similar type do appear in more than one category -- that's O.K.! What's important is that you look at each of the six categories on its own and then in total relationship. For instance, understanding that a Company has great a R&D effort and produces quality and tested products, is not enough if the Company doesn't have funds to continue such efforts. A good management team, but with diminishing intellectual capital, eventually will falter and fail. Great products and poor marketing will ultimately cause loss of market share and Company decline. All six factors need to be weighed together in their interactions and impact on one another in their given niche and at a particular point in time.

The ability and value of transferring these questions and overall analysis to different situations is very powerful! These same six factors are ones that I use or have used in successfully uncovering the real causes of problems involved in the development of custom sophisticated applications and turnkey solutions for large companies. Evaluating these factors can or already have brought incredible insight and focus to why such systems implementations have failed such as: 2005 FBI computer system debacle, the Northeast US blackout of 2003, the 2004 UK pension system crash, the recent student loan interest foul-up, and many more.

In addition to these very important questions above, you must also ask about the project management techniques and methodologies used, and the processes and quality of the communications and decision-making between the parties during new systems development, and the quality of the contract (the last two areas are beyond the scope of this article).

Knowing the business plans, management structure, legal position, marketing focus, financial status, and intellectual capital positions of the firm will give great insight as to the current and future causes of problems and the likelihood of success? Without this insight, exit strategies and profit projections are simply wishful thinking!

For instance, I've seen several situations where major systems development and/or systems integration companies have low-balled or under-budgeted complex systems developments to break into a particular industry whether it be fast food, university grants and developments systems, dispatching systems, etc. However, shortly into the project, management decided to focus on different vertical industries and markets, leaving the under-budgeted project in jeopardy, as management was no longer committed to the success of that project as a launching pad for its breakthrough into that industry as a strategic target.

Understanding the motivations and de-motivations of others is critical in transactions and deal making as well as litigation. If you want to be the master at the M&A watering hole, at the negotiation table, in the Boardroom, or in the Courtroom, you will roar much louder knowing these six components which, together, help assure "the survival of the fittest".

The ‘DIGITAL DISCUS’
Evaluating a High-Tech Business Situation at a Glance
By Warren S. Reid, Copyright 1997, 2005. All Rights Reserved

While we can't provide a crystal ball for attorneys, executives, and investors that will eliminate all risks associated with acquiring and/or valuating high tech companies and their products and services, here's the next best thing -- the *digital discus* -- a tool (in Kiviat diagram form) that lets users evaluate/easily compare high tech opportunities at a glance!

WHAT IT TELLS YOU

On the digital discus (see Fig 1), note the six criteria discussed in the accompanying article: Management/Critical Staff; Markets/Marketing; Technology/Products/Services; Finances; Legal; Intellectual Capital.

The discus gives users a quick, visual snapshot of where his/her client/company falls against a "normal" range. It forces users to focus on areas above or below normal.

- Between Levels 4 & 3 shows strong accomplishments and recommends the Users **Go!** -- with vigor.
- The central white donut, between Levels 3 & 2 -- is **Normal!**
- Between Levels 2 & 1 tells users to proceed with **Caution!**
- A grade between Levels 1 & 0 is a **Stop!** (something is wrong).
- An **arrow** shows likely direction if Company stays present course.

SOME SUBJECTIVITY

Determining the exact Levels for a Company is much *more art than science* and still somewhat subjectively prepared. It reminds me of when actor Morgan Freeman complained of the Academy Awards "... the whole concept of saying, '...and the winner is...' is silly as there are no definitive criteria for making that choice."

However, if the preparers and users understand the assumptions and definitions applied, its a very powerful tool! Preparers and users determine the ultimate weight of each question and each axis based upon the: answers to the accompanying questions; stage in the Company's life cycle; needs of the users and resources they expect to bring to the situation. Comparisons across multiple opportunities especially require equal and agreed to weights. Also, preparers must consider the *quality* of achievements (and their repeatability) in allotting points..

HOW IT WORKS

For example, if the Management/Critical Staff axis is a one-man-band, say the engineer-founder, I would rank it as **Stop!** A partly staffed, appropriately experienced management team would raise the Level to a high **Proceed with Caution!** or perhaps **Normal!** A fully staffed, experienced management team might bring it into **Go!** However, from a quality standpoint, a fully staffed management team of inexperienced persons, or execs with divergent personal objectives/styles should be downgraded. Also remember, there are many questions to be answered along each axis (criteria), so the previous example is clearly an over-simplification.

On the Marketing/Markets axis, low points are awarded to ventures that have only *theorized* their market. If the Company has *studied* its targeted markets, *tested* its products, and *developed* some satisfied customers through successful prototypes, its score would increase; better yet, *having satisfied customers in an established market*, would result in an even higher score. On the Technology/Products/Services axis (Shown in the diagram simply as "Technology") organizations earn more points as they move from the R&D stage, to the fully developed commercial stage, and better, to the quality engineered phase (where products are such high quality that warranty liability, support, and maintenance are minimal).

Also, scores for startup companies may be different from similarly situated companies in their growth or decline phases.

ILLUSTRATIVE EXAMPLES

Consider a company with the following characteristics.

- shrinking market share
- operational/management gaffes
- struggle with competitor onslaught

- status-quo Chief Executive in a changing world
- just lost key visionary CFO
- rejected buyout by another large firm
- Board of Directors dissension on future direction
- \$1 billion chronic order backlog from management's underestimates
- Can do better if it outsources manufacturing and focuses on software and cross-platform operating systems
- Can grow with the Internet because of innovative and superior networking software approaches
- Best operating system and networking software available

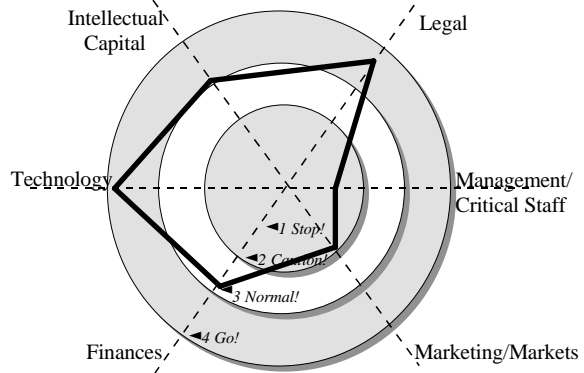


Figure 1

The situation for such a company can be captured in the digital discus (Fig 1). Notice how it summarizes the situation clearly and concisely, and focuses further exploration and decision-making!

Next, consider how the digital diagram can focus attention on areas of improvement. (Fig. 2 and Fig. 3 below). Notice how it forces you to think about the distinct -- but inexorably related issues (arrows indicate trend)

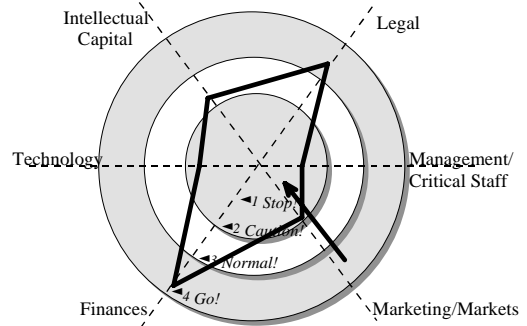


Figure 2

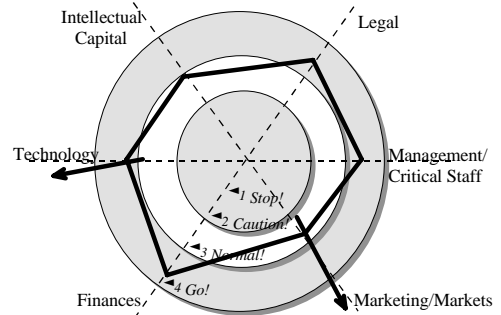


Figure 3