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Information Technology Consulting

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Chapter 3

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No development has impacted management consulting more than information technology (IT), and nothing on the horizon will impact management consulting more. All management consulting presumes some degree of knowledge and use of IT in the various functions of a client's business. IT is also a major tool in many aspects of management consulting, playing a central role in such activities as scenario analysis in strategic planning consulting, customer data-mining in marketing consulting and assembly line load-balancing in operations consulting.

Nevertheless, after experiencing years of explosive growth, a traumatic shakeout among consulting firms began in 2000, resulting in the restructuring of the IT consulting industry and a repositioning among all the major firms.

The industry has been highly fragmented with hundreds of firms competing for a share of client revenue. The two top players (Accenture Consulting and IBM Global Services) together account for only a little more than 10% of industry revenues. Hyper-growth has turned to negative growth for most IT consulting firms. A significant number of these firms with revenues in the hundreds of millions, simply disappeared: Zefer, Viant, and MarchFirst.

This change process continues today and will for the foreseeable future. Just how all this turmoil sorts itself out will likely determine the future of the IT consulting industry as well as all of management consulting. To better understand how and why this

transformation is taking place, we will discuss the recent history of IT consulting, then identify a number of new developments, and conclude with some predictions.

<div align="center">**The Growth Era**</div>

Stages Theory

Consulting firms paralleled the growth of management as a profession. Initially, the development of the accounting field for transactions provided the demand to create professional services firms possessing an expertise in accounting principles, and applying the principles to reporting on the performance of business. This demand supported the creation of the Big Eight accounting firms.[1] An important, but lesser force, the increased sophistication in manufacturing and strategy, also helped drive the growth of professional consulting firms like A.D. Little, McKinsey, Booz, Allen and Hamiliton, and A. T. Kearney.

However, IT, first slowly, then exponentially seeded a level of complexity and transformational change in companies that helped create the foundation for professional consulting as we know it today. The transition from the Industrial economy to the Information economy meant that companies transformed their operations from being manual to being computer based.

During the 1970's and the 1980's, the notion of managing IT as a portfolio of applications was widely used. This was described in an early *Harvard Business Review* article on the Stages Theory of computer growth in organizations.[i] It was based on the notion that the complicated nature of computer technology produced a body of knowledge about the effective management of IT within an organization. As a result, the assimilation of computer technologies, and more broadly, information technologies,

required bold experimentation, out of which emerged four stages of organizational learning which formed an "S-shaped" curve.

Figure 1 - The Stages Theory of Computer Growth
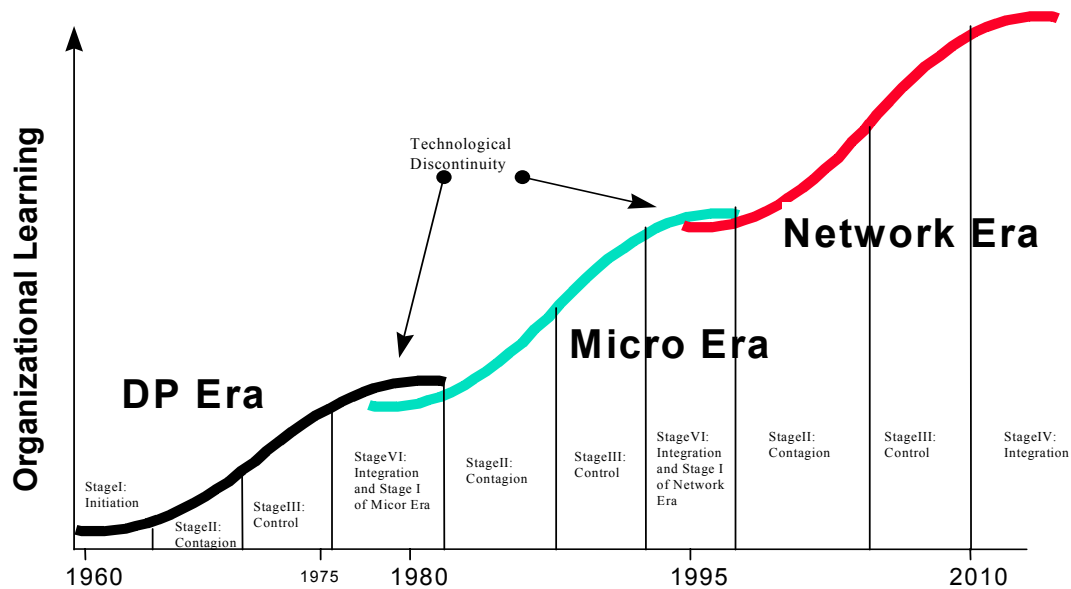
- Stage I: Initiation- Characterized by limited investment and contained experimentation for proving the value of the technology in the organization.

- Stage II: Contagion- A period of high learning in the organization whereby the technology proliferated in a relatively uncontrolled manner.

- Stage III: Control- Uncontrolled growth eventually led to inefficiency, which created a demand for controls that slowed the growth to a more manageable rate.

- Stage IV: Integration- The accumulated learning led to a balance of managed controls and growth. Organizations mastered the dominant design of the

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technology, providing a foundation to introduce the next order of magnitude of progress that would be the next S-curve era through a major improvement in the dominant design.

The dominant designs[ii] included mainframes/minicomputers, microcomputers, and networked client/servers. Figure 1 illustrates these three eras, described as the S-shaped organizational learning curves, in which the three dominant designs of IT assimilate into organizations. The Network Era, initiated around 1995, is expected to continue until 2010. History shows that each industry experienced a few years lead or lag time in their learning of associated technologies. The senior level and IT management in each organization within an industry directly influenced the pace.[iii]

The S-shaped curves of the eras overlapped during a period of "technological discontinuity."[iv] During this period further development of the old technology's mature dominant design conflicted with the vigorous growth of the new technology's emerging dominant design. Those who mastered the old dominant design struggled to retain their knowledge and power against those who proposed replacing it with the new. With the rapid expansion of the IT industry, most management and IT workers faced "a diet of continual change."[v] And this context of change provided fertile ground for the growth of consulting services.

With the advent of the PC and associated open standards in the early 1980's, the IT consulting industry experienced its first generation of explosive growth. The second explosive growth period was triggered when the Internet began to be commercialized in the 1990's.

1990's Explosion of IT Consulting

By the 1990's, IT consulting activities in various consulting firms developed into the dominant source of growth and profits. Few firms were prepared for the impact. Arthur Andersen experienced a painful separation of its accounting and IT consulting activities. McKinsey suffered a trying experience in attempting to assimilate a rogue group of Arthur Anderson IT consultants. And, the chaos continued in the restructuring of the professional services industry through several acquisitions including the IT product firms acquiring consulting firms and grafting them onto their product structures.

The IT consulting industry's large traditional players continued to struggle to adapt to the changing IT environment of the late 1990s and early 2000s. With the surge of reengineering-led IT projects and Enterprise Resource Planning (ERP) installations, IT became a way of providing competitive advantage.

The Internet ushered in a new era, in which IT developed into an effective way for companies to communicate with customers, suppliers, and partners. A new term entered the business vocabulary: e-business (for electronic-business). Building e-business capability often meant reworking much of a company's business model. A new responsibility for e-business projects often migrated to a different group of people from the traditional IT projects. Hundreds of small consulting firms arose to help clients with new e-business opportunities. The startups, typically built by young entrepreneurs with relatively little industry experience, competed in niches. These small firms rarely possessed the scale to take on the big clients that the large firms usually pursued. Yet, collectively they presented a major force in IT consulting.

An important aspect of the new e-business environment included helping clients understand the strategic aspects of the Internet. Strategic consulting involved rethinking the business model, helping the client with structural issues, and planning the rollout of new dot com business segments. Strategy work provided higher margins, and allowed consulting firms to build relationships at the highest levels of their clients' organizations.

Many consulting firms touted their ability to help clients with both strategy and implementation. The reality was that most firms focused on one or the other. What many implementation-oriented firms called strategic consulting really amounted to gathering system requirements or reengineering particular business processes. On the other hand, what strategically oriented firms called implementation was often more like general contracting, where they relied on the skills of subcontracted firms to provide delivery capability.

Business Transformation

As we begin this new century, most companies have integrated IT into their organizations to the point that the speed and form of their organizations are more like IT-enabled networks than the slower functional hierarchies of the past.

Figure 2 illustrates the long evolution of this fundamental organizational transformation. The DP Era of the last century corresponded with a period when organizations typically did not challenge the M-Form (Multi-level) functional hierarchy and the Industrial age management model. However, as the computer became more integrated in organizations, companies used computers for more than support of efficient transaction processing. Automating many manual and clerical functions eliminated the need for many blue collar and clerical human resources. Layoffs and downsizing started

mutating the traditional pyramid organization structure, as shown in Figure 2 beginning

with the reduced numbers of workers in the base of the pyramid.

Figure 2: Business Transformation Summary
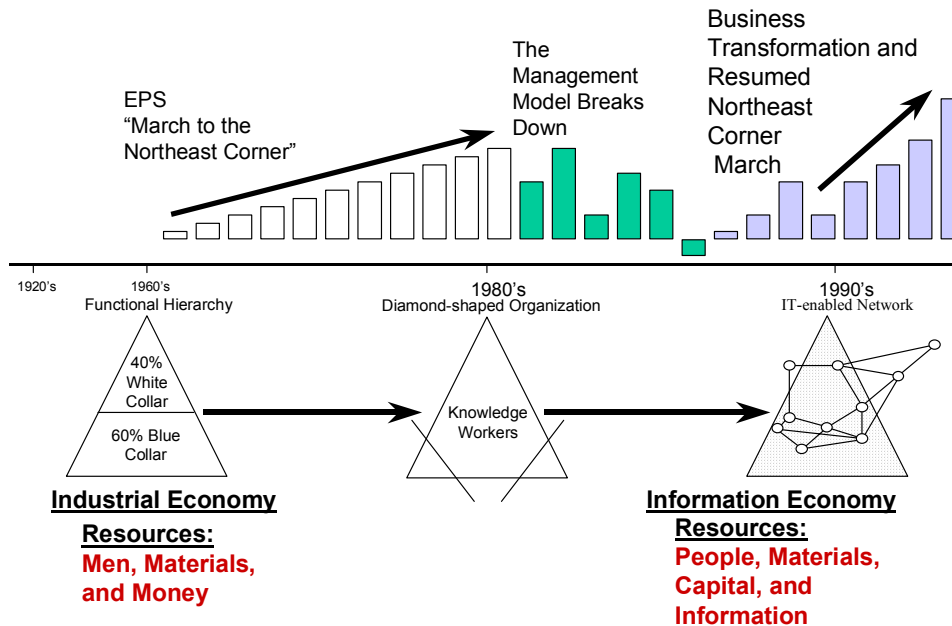
The PCs of the Micro Era enabled workers to rapidly obtain and manipulate

figures, previously available to only select individuals in the firm. As illustrated in the

middle of Figure 2, the incremental business model showed more erratic business

performance than the incremental EPS "march to the Northeast corner" of the earlier

model.

The development of intranets during the Network era required more coordination

and promulgation of open standards than traditional use of controls and fixed, long-range

plans. Organizations maintained focus by basing key IT decisions on delivering value to

customers. The CIO faced building an IT architecture that consisted of many partners,

strategic alliances and outsourcers. Informal shadow networks took form and floated over the formal hierarchies to speed up the pace of performing work. In the Network era of this century, the CIO manages a more formal permeable network organization, constantly changing, characterized as the "extended organization" consisting of many partners and customer groups.

IT Consulting's Implosion in 2000

The total market for IT services reached $250 billion by 1999, with the global IT Consulting/Systems Integration industry accounting for about half of the that market at over $135 billion. Between 1996 and 2000, more than $1.7 trillion was spent on IT, and IT spending in the U.S. accounts for more than half of all companies' capital spending. By April 2000, the Internet frenzy had run its course. The dot com bubble burst, rapidly plunging most of the dot com companies into bankruptcy and sending IT consulting into a tailspin, seriously stagnating growth. The hyped economy ground to a near halt. The 30 percent annual earnings per share growth rates commonly experienced in the 1990's dropped to 10-15 percent. The number of U.S. companies with 5 percent revenue growth, 10 percent earnings growth, and a market capitalization in excess of $1 billion, dropped from 156 in 2000 to 71 in 2001.

In 2003, we could identify six types of companies that provided IT consulting services:

Type/Examples	Focus	Misc.
Systems Integrators Accenture, PriceWaterhouseCoopers (now a part of IBM), Cambridge Technology Partners (now a part of Novell), and IBM.	Large system implementation and integration projects. Tend to conduct higher-priced projects, where they could leverage their scale. Individual firms usually specialize in either technology or strategy.	Reinvent themselves by spinning off separate e-business consulting divisions, acquiring smaller firms that had e-business experience, and using aggressive hiring programs to build Internet capabilities.
Web design firms	Smaller undifferentiated firms that emphasize technical delivery with little focus on business strategy.	An estimated 4,500 firms in this category launched specifically for the delivery of web-enabled applications. The number now is considerably less—probably less than 500 survived to the present.
Interactive agencies Agency.com, Razorfish, and Modem Media	Enter the industry from advertising. They tout their creative design, branding, and marketing expertise.	To these firms, web-site design and development was a natural extension of the services they already offered to their clients.
Management consultants McKinsey Boston Consulting Group	View web strategy as an extension of their traditional business strategy roles. They used their powerful brands and high-level client relationships to move into the e-business space, but rarely go beyond strategy into actual application development.	These companies continue to lead with strategy and organization consulting. IT consulting remains secondary to strategy.
Pure e-Business Players Scient, Dimension Data Holdings	Their "pureness" results from being new firms Formed to provide e-business services, with no legacy of skills and methods from previous eras.	Use a combination of creative and strategic talent To develop e-business strategy and messages. Also deliver applications, either by playing a general contractor role or by using their own development staff. Few of these firms survived.
Application Service Providers (ASPs) Oracle, SAP, and Peoplesoft	Offer the equivalent of software rentals. Customizes an application package to a particular client's needs, and then charges back for it through an up-front installation charge and a monthly fee.	By offloading the difficulties of developing and operating an e-business, ASPs claimed to make it easy for any firm to conduct business on the Internet.

The strongest firms, like IBM, are using the shakeout to make strategic acquisitions like its major acquisition of PriceWaterhouseCoopers consulting. Also, there is a move towards diversification—coined MDP's: Multi-disciplinary practices, which

offer legal, consulting and accounting services under one roof. McKee Nelson, a D.C. law firm, was created in November 1999 with the backing of Ernst & Young to "use an alliance platform to leverage the knowledge, infrastructure and client base of a world-class professional-service firm," in other words, to act as an MDP whenever possible. Britain is already moving in the direction of MDPs: they have been approved by the Law Society and are in the process of proposing legislation that would make them a reality. Big accounting firms like KPMG are setting up their own independent legal arms overseas; KPMG's law firm in France, Fidal, employs 1,200 lawyers and is the biggest law firm in France.

IBM The First and the Largest IT Consulting Company

IBM exercised a dominant influence on IT in general, and on IT consulting in particular. At the outset, IBM embraced a winning strategy to become the IT industry leader. IBM:
- designed its strategy to educate their market so that they could effectively sell into it
- gave (or highly discounted) computers to universities. The fledging Computer Science and Business programs taught students using IBM computers and software.
- used vertical integration and proprietary standards for both IBM hardware and software.
- bundled the technical service into the service of the computer, since the software was proprietary

In spite of a huge growing market of applications software development, external IT consulting firms experienced difficulties proving the value of their services to customers that seemed to receive IBM services for free. Furthermore, because IBM provided educational services to train the in-house staffs, external services faced the difficulty of convincing customers that their service was more economical or better than the existing way to obtain services. During this period IBM effectively dominated IT consulting, although IBM did not breakout their consulting services in their financial reporting, or set up a separate organization for IT consulting.

By the early 1980's, however, the IT environment had significantly changed with the advent of the PC and open standards. IBM stumbled to the point that it experienced billion dollar losses in the early 1990s. Lou Gerstner was brought in to turn the company around, which he did. Over the following 10 years, IBM unbundled its services, embraced open standards, and now has become the largest IT consulting firm in the world with revenues exceeding $20 billion—more than twice IBM's hardware sales.

While professional service firms insist that they want to diversify because their corporate clients demand it, we do not see corporations clamoring for MDPs, yet. A 2001 survey determined that, based on strategic advice, more than three-quarters of the large global business sample used different consulting firms from the ones that they used for advice on electronic business-services that they could easily, if they so wished, purchase from the same vendor.[vi] An ongoing debate exists regarding the attractiveness of one-stop-shopping versus a client's comfort level with being a captive of one provider who can offer a wide range of strategy, design, provision, development and implementation services. Clients recognize the potential conflict of interest that arises in such an arrangement. Furthermore, it is questionable whether one firm can provide clients with a full range of services, each at the level of best in class quality.

At the beginning of the century, the IT consulting industry is in a holding pattern with its recent explosive growth behind it. Many of the underlying drivers for the growth of IT consulting remain and there are forces that represent new opportunities and volatility. Therefore, we do expect the industry to emerge from its current low growth holding pattern later in this decade, but we do not expect that growth to be explosive and see reasons to expect some changes in the nature of IT consulting.
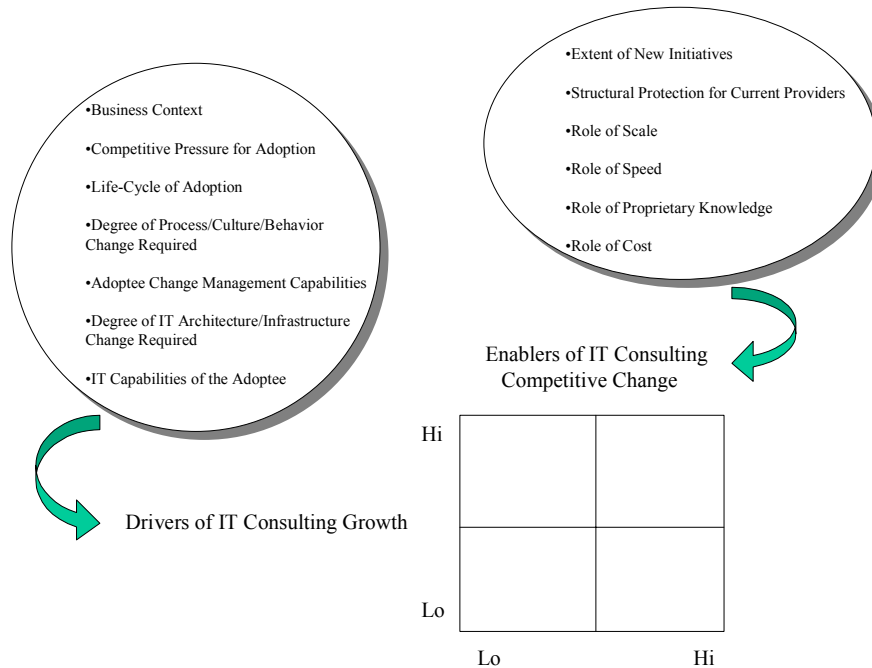
Forces that Shape IT Consulting: A Framework

As illustrated in Figure 3, the IT consulting industry is shaped by the convergence of: 1) forces that drive business growth, and 2) enablers of structural change.

Drivers of IT consulting growth range from underlying business conditions, to IT initiatives that extend the capabilities of firms. Enablers include the intensity of new IT

initiatives, structural protection enjoyed by current providers, and the nature of what is required by service providers to convey a competitive advantage to the client.

Figure 3

•Business Context

•Competitive Pressure for Adoption

•Life-Cycle of Adoption

•Degree of Process/Culture/Behavior Change Required

•Adoptee Change Management Capabilities

•Degree of IT Architecture/Infrastructure Change Required

•IT Capabilities of the Adoptee

•Extent of New Initiatives

•Structural Protection for Current Providers

•Role of Scale

•Role of Speed

•Role of Proprietary Knowledge

•Role of Cost

Enablers of IT Consulting Competitive Change

Drivers of IT Consulting Growth

Hi

Lo

Lo   Hi

Drivers of IT consulting growth

Underlying *Business Context* is a major driver of IT consulting growth. It is not surprising that the IT consulting industry grew during strong economic periods and contracted when economic conditions withered. The exceptional boom times of the late 1990's illustrated the role of economic strength. Another business context factor has been the adoption of "outsourcing" as a preferred business practice. When (or if) that pendulum swing goes out of favor, the IT consulting industry will face a severe challenge. The trend to more integrated and coordinated global competition over the past ten years acts as another example of the role of business context. Globalization of

competition fueled the need for more efficient global supply chain capabilities, knowledge sharing and leveraging decision capabilities.

The degree of *Competitive Pressure for Adoption* of new IT initiatives creates IT consulting demand. This type of demand originates from customers, shareholders, regulators or others.

Equities markets are becoming increasingly impatient with companies that do not return their cost of capital. In industries like the automotive industry, key players emphasize initiatives to "digitize" the entire corporation to achieve structural changes and strategic benefits in supply chain performance, vehicle design and introduction, and customer service. If these kinds of conditions were the only ones that mattered, they would certainly drive IT consulting growth.

The *Life Cycle of Adoption* of an IT initiative or family of initiatives affects IT consulting growth. The role of IT consulting varies at different phases of the Stages Theory S-curves. During the early phases, IT consulting develops new capabilities, takes risks and seeks early adopters striving to achieve longer-term benefits that accompany being first to market. The expansion phase for IT consulting delivery comes after the concept has been proven and becomes a competitive "imperative" among players. At later stages in the life cycle of initiatives, IT consulting firms may contract, disappear or move on to other applications depending on their positions and capabilities. For example, the Network era required the upgrading of the batch-oriented legacy applications portfolio to incorporate real time messaging, and integrated data base technologies. The industry embraced the ERP approach to accomplish these upgrades in the form of large IT package implementations. Now most companies have accomplished

these application portfolio upgrades, and are turning towards customer "sensing and responding" IT capabilities.

Many IT initiatives place a high *Degree of Process/Culture/Behavioral Change* on the adopting organization. Indeed, most observers point out that when it comes to challenges of IT innovation "…it's the organization stupid"—or in vogue today: "culture is the only thing."[vii] In other words, understanding and controlling the technology is just the tip of the iceberg. But, initiatives vary in the degree of the organizational challenges they pose. A transaction processing upgrade may present little behavioral challenge to the organization. On the other hand, adopting a distributed ERP application in a global organization will surely require extensive redesign of planning and decision processes as well as resolving changes in management philosophy, approaches to empowerment and communication patterns.

The *Change Management Capabilities* of the adopting organizations are the critical companion factors to the degree of change required. Companies and industries with little experience and capability in handling that require organizational and process changes will typically turn to outsiders for that help. The growth of business process improvement consulting emerged partly because of the lack of capabilities to do this kind of thinking and work inside the companies.

IT initiatives differ in the *Degree of IT Architecture/Infrastructure Change Required*. The extent of these technology and process changes clearly emerges when an IT paradigm shift occurs, such as the shifts from mainframe transaction to distributed processing and then to network centric operations. But, these challenges may also apply to a new application within one of these larger "eras" of IT development. For example,

IT-based customer self-service systems are proving that not only can fully automated self-service be more efficient, but it can be better in the eyes of the customer. These kinds of new IT initiatives require the functional organization of marketing and sales to re-think many of their traditional assumptions about providing customer service.

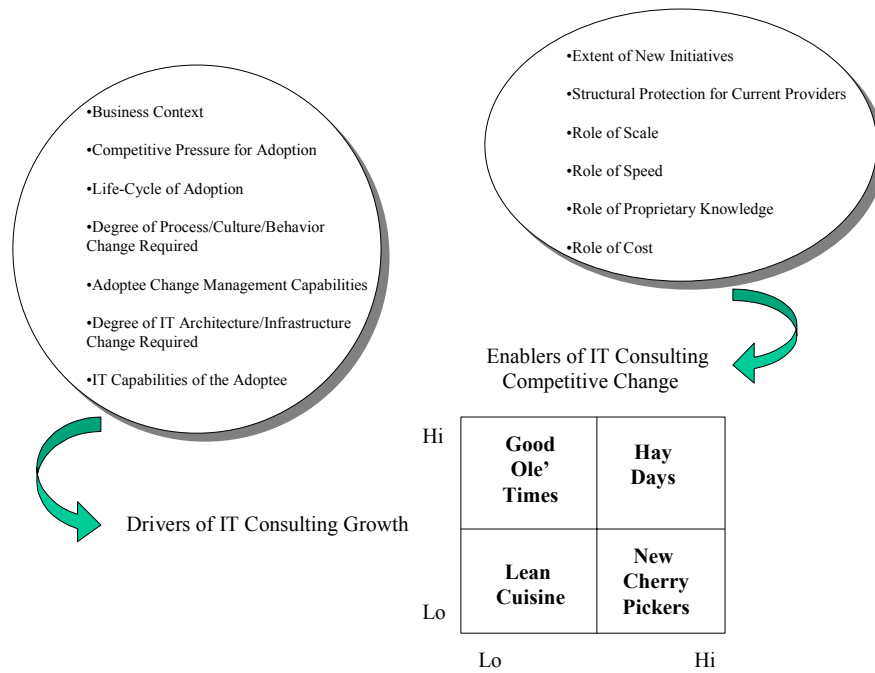*Enablers of IT Consulting Competitive Change*

The intensity and breadth, or extent of new (IT) Initiatives influences opportunities for new IT consulting entries into the industry. Gaps in supply to meet demand for services associated with existing applications in a growth phase of adoption may motivate new IT consulting providers. For example, business process design got its start during the days of heavy demand for ERP. Other IT service providers start up around new application areas. "Infomatics" is a firm helping to pioneer applications in the biology and pharmaceutical worlds. Bioinfomatic applications stimulate the creation of new IT capabilities that incorporate and leverage the new understanding of biological processes.

The extent of *Structural Protection of Current Providers* plays a significant role in either enabling or discouraging emergence of competitors. IBM bundled IT consulting with their leases. It was only after IBM unbundled consulting services and "open" standards were achieved that the IT consulting industry really bloomed. Today, degrees of structural protection can still occur for any number of reasons including favored access to proprietary technology, close integration with a legacy installed base, or strategic partnerships that implicitly define a market and a position within it. The recent antitrust law suit against Microsoft addresses further disclosures of ways to integrate software

with Microsoft's proprietary Windows Operating System (i.e., disclosing API's—Application Programming Interfaces).

A third factor that enables structural change in IT consulting exists in what service providers do to give a competitive advantage to their clients. The *Roles of Scale, Speed, Proprietary Knowledge and Cost* can all be important. But it is the predominating mix of these that is significant. For example, at a time in IT consulting history when scale and proprietary knowledge are critical, it is less likely that new competitors will emerge. This characterized the years that IBM held the lion's share of the IT consulting market. At other times, speed of customization might be most important. This condition invites newer and smaller service providers into the market. When cost is most significant, opportunities exist for IT consulting providers to achieve competitive cost levels with creative strategies, such as sourcing from or partnering with offshore service providers.
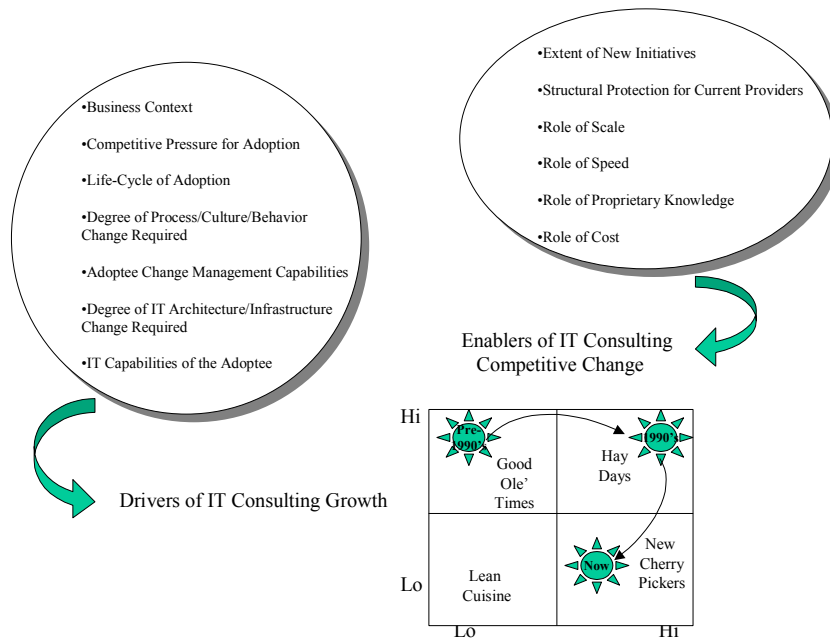
Figure 4 shows how these drivers of growth and enablers of change interact to shape the development of IT consulting. The four major possibilities are characterized as:

Business Context
Competitive Pressure for Adoption
Life-Cycle of Adoption
Degree of Process/Culture/Behavior Change Required
Adoptee Change Management Capabilities
Degree of IT Architecture/Infrastructure Change Required
IT Capabilities of the Adoptee

Extent of New Initiatives
Structural Protection for Current Providers
Role of Scale
Role of Speed
Role of Proprietary Knowledge
Role of Cost

Enablers of IT Consulting Competitive Change

Drivers of IT Consulting Growth

	Lo	Hi
Hi	Good Ole' Times	Hay Days
Lo	Lean Cuisine	New Cherry Pickers

1. "Lean Cuisine" – tough times for everyone, industry contraction;

2. "Good Ole' Times" – attractive conditions and growth for the established providers;

3. "New Cherry Pickers" – emergence of new and nimble players, and

4. "Hay Days" – established and emerging players prosper.

Figure 5 below is a summary of the positioning of the IT consulting industry at key times historically. We will return to this framework in the last section of the chapter to consider where the IT consulting industry is likely to be positioned in the future.

Figure 5

- •Business Context
- •Competitive Pressure for Adoption
- •Life-Cycle of Adoption
- •Degree of Process/Culture/Behavior Change Required
- •Adoptee Change Management Capabilities
- •Degree of IT Architecture/Infrastructure Change Required
- •IT Capabilities of the Adoptee

- •Extent of New Initiatives
- •Structural Protection for Current Providers
- •Role of Scale
- •Role of Speed
- •Role of Proprietary Knowledge
- •Role of Cost

Enablers of IT Consulting Competitive Change

Drivers of IT Consulting Growth

Good Ole' Times — Hay Days

Lean Cuisine — New Cherry Pickers

Perspectives of the IT Organization and the CIO

CIO's and their IT organizations play a central role in the demand for IT consulting. In our discussions with a number of leading CIO's about their impact on the shape of the IT industry, six themes emerged:

1. **IT is now an established function** in the structure of most organizations. For many years, the IT function was the "new kid on the administrative block." In that tenuous capacity as a newcomer, it was necessary and appropriate to use resources and expertise from outside the company. It was natural for companies

to rely on outside sources for guidance on key design and investment decisions and for resource capacity itself. This reliance helped fuel the growth of IT services. Now that a strong IT function is accepted as central to a healthy company as are the HR, Finance or Purchasing functions, the degree of reliance on outside support is both sharpened and diminished.

2. **The roles of IT in some companies are being redefined** by the nature of what remains to be done after everything else is outsourced. Not everyone is convinced that this IT function design by "default" is a good thing. For example, one CIO sees establishing the "information backbone" of the company as about all that is left after outsourcing maintenance of the data-center, running of the network and programming. This CIO will not outsource ownership of design or maintenance of the so-called information backbone because he believes that the ability to do that is central to the competitiveness of the company.

3. As an established function, **IT in the company now has more degrees of freedom to source services for highly specific purposes** and value. One CIO describes the IT organization of the future as consisting of the following:

- Business analysis to understand the needs of the businesses.
- Technical architecting to oversee and interface between IT and business systems.
- Project management to implement change consistent with the practices of the company.
- Management of IT processes.

For each of these four capabilities, this CIO easily identifies the IT consulting outsiders who currently provide that service to his corporation. And, he states that his strategy aims to steadily bring more capability on the first three into his own

organization. He prefers that these capabilities reside in his organization and then, by default, go to the outside if he has no alternative.

4. **CIO's have migrated from being mainly IT technical experts to participating in high level dialogue** about the strategic direction of the company. For example, the views of the CIO may be central to design or re-design of the business model or significant in assessing the viability and future value of a major acquisition. One CIO told us that: "if you have good people in the IT organization, they are good partners with the businesses." In the past, consultants helped bridge the needs of the businesses and the capabilities of IT. As an established strategy partner with business and corporate executives, the CIO and staff satisfy many of the IT related strategy needs that IT consultants satisfied in the past.

5. Many **CIO's say they will do less outsourcing in the future**. This is driven by several factors, including a decrease in the number of new, "gorilla" ERP and CRM initiatives and the increasing need for rapid and flexible modifications to existing systems. What they do outsource will be the "body shop" activity when they need more capacity, but they plan to keep the deeper expertise in their companies.

6. **Off-shore suppliers are providing an increasing share of IT services** for activities such as coding. These are companies like Infosys, Syntel and WiPro. They market and deliver services on-line and are viewed as providing rapid response, high quality and low cost service. One CIO told us that "…typically the outsource company will have 60% of their people on a project offshore and the other 40% at

our location." These offshore providers were 50% of the cost of the large, U.S. IT consultants.

A company's strategic I-Net (i.e. its intranet integrated into the Internet) is the operating environment in which the organizational components that comprise it interact to perform useful work.

Ten components enable a company's strategic I-Net and suggest an architecture for the IT consulting industry opportunities of the future. Four attributes of the I-Net relate to organizational issues: information transparency, the permeable boundaries of the extended enterprise, knowledge management, and self-directed work. The six technological components include: real-time messaging, data warehousing, PC availability, the browser, directory technology, and the web site.

A.   Organizational Components

Information Transparency: Freely Available

The emerging policy for the network age is information transparency, whereby information is made freely available to all who might act on it. Although information transparency enables instant access, companies do not want to saturate their workforce or partners with irrelevant information. Cisco, for example, releases financial data 24/7, but only to those who need to act on the information. Overly emphasizing secrecy proves completely antithetical to the idea of the permeable organization and the network economy.

Boundaries Are Permeable in the Extended Enterprise

Extended enterprise is central to the permeable organization, stretching the fixed, physical boundaries of traditional organizations to ones that shift to incorporate new

ventures or redesign existing elements of the company. Companies that use the Internet to open their Intranets to suppliers and customers are extended enterprises. Providing access to the I-Net's databases creates information transparency throughout the supply chain and enables various players to act on information instantly. Suppliers schedule and order materials more efficiently; manufacturers reduce order-to-delivery cycle times; and customers receive products faster. Vendors manage customer relationships and even bid on corporate contracts electronically, making the entire supply chain—including the selection process—a more expedient one.

Strategic Alliances

Strategic alliances, an essential part of most corporate strategies, are inherently opportunistic. As such they need to be arranged and formalized expeditiously, exploited for as long as they make sense, and disbanded when they are no longer relevant to the business. An effective I-Net ensures strategic alliances become an integral part of a company's business. To truly benefit the organization, alliances must maintain constant and frequent interactions. Working with alliance partners in an environment that operates in zero time enables a dynamic relationship. For example, Akamai supplies cache services that allow its partner organizations to use one of Akamai's servers to speed up the responsiveness of an organization's web site. Drugstore.com uses Akamai so that when a customer orders from anywhere in the United States fast-loading graphics speed the transaction.

Outsourcing

Outsourcing grew by leaps and bounds over the past decade. Savvy organizations capitalized on their relationships with companies, outsourcing necessary, but potentially

resource-heavy, business functions such as payroll processing (Automatic Data Processing, Inc.—ADP), logistics (Federal Express), and catering (Marriott Corporation). The Internet facilitates such relationships by providing a common platform capable of improving communications, coordination, and supporting electronic transactions (i.e., purchase orders, invoicing, and payments) with outsourcing partners.

Knowledge Management

Knowledge management consists of capturing, storing, combining, analyzing, mining and distributing information resources into forms that create value. I-Nets provide the essential means for enabling effective knowledge management. Management needs to learn from the pioneers who use both I-Nets and knowledge management. For example, drugstore.com employs knowledge management to continuously improve the design of their virtual store for personalized shopping. Each time a customer visits the virtual store, the way the customer shops the store is watched. The information is carefully mined, and used as a basis for more conveniently laying out the store for the customer's next visit.

Self-Directed Work

Self-directed work transfers the tasks once performed by others to the person who most benefits from it. You can observe self-service or self-directed work in everything from corporate tasks (such as corporate communications, payroll, employee benefits programs, etc.) to activities that help execute the company's strategic intent, which include interacting with customers, product delivery, supply procurement, order processing, and data management. At Cisco, the capabilities to electronically monitor a

product's performance enable employees to sense problems and take corrective action before product outages bring down a customer's network.

B. Technology Components

Real Time Messaging

The 12- month standard time frame for measuring business performance in the pre-Internet economy has been deeply institutionalized into the pace of business. This process reviews and establishes revenue and expense goals for the company. Real time messaging, a key component of an effective I-Net, enables the dissemination of company data at all times. Instant access to information is critical if companies are to remain sensitive and responsive to market fluctuations, changes in customer buying patterns, emerging technology trends, and competitive activity.

Data Warehousing

The data warehouse literally retrieves and stores data gathered from a variety of sources and facilitates the management of this information. Data warehousing is among the first steps towards developing corporate knowledge used by a strategic I-Net.

The data warehouse and real time messaging go hand-in-hand. Data transaction processing techniques update and time-stamp the data so managers always work with the most current information. The degree of simplification realized by tracking customer orders, supplier shipments, and financial status instantaneously allows employees to spend more time on value-added activities. Amazon's sophisticated data storage and retrieval techniques allow the company to track customer purchases and then develop a customer profile and make product recommendations.

Internet/Intranet Direct Access for Everybody

Networked companies must commit to the resource needs of the organization to ensure that the total cost of ownership (TCO) remains at appropriate levels. Companies that adopt this mandate must support it with a disciplined, network-oriented program that updates and maintains their staff's PCs. They also should equip their workforce with technology that ties them to the I-Net, whether by PC, notebook or personal appliance (i.e. Palm Pilot), that workers may need.

The Browser

The browser was among the first of the Internet's killer apps because its immediate and dramatic use helped foster the Internet explosion. The browser is intuitive and, once learned, can be applied in a wide variety of applications – and therein lies its power. Adopting a browser as a standard user interface renders a company's entire portfolio of applications accessible across the enterprise, and allows access to most of the Internet's applications.

Directory Technology

An internal user directory specifies levels of access to and interaction with an I-Net. Novell, the leading provider of directory technology, characterizes the directory as providing the "digital personas" of the network's users. The personas govern individuals' entry to specific network layers and access to specific resources. Security is incorporated into these digital personas, developed not only for employees, but also for suppliers and existing and prospective customers. Increasingly sophisticated directory technologies enable tailored reporting and priority services to individual users and can

also provide preferred paths to specific Web sites and databases that contain information of interest to particular employees or managers.

The Company's Web Site: The "Front Door" Receptionist

A company's Web site acts as the portal through which those who interact with the company enter—that is, everybody. Client computers of those who access the company's web site display a version of the company's I-Net homepage. Outsiders, such as customers or suppliers, possess digital personas that determine what information appears via their browsers when they access the company's Web site.

Externalities Impacting IT Consulting

By the early 2000's, IT became an integral part of the infrastructure of the firm, and the networks of customers and partners that enabled the firm to operate in the overall global environment. IT consulting always followed the impact of IT on the structure and strategy of the firm. Accordingly, we identify a number of forces and operational concepts that impact, and will continue to impact, IT consulting.

Componentization

Whereas early mainframe computers and databases were, like the Industrial age organizations that assimilated them, hierarchical, Information age organizations are increasingly modeled on IT network architectures. The popular children's building block, Lego, serves as an analogy for the latest trend in software architecture –the notion is that you can "snap together" software components, or *objects,* to build more complex objects (e.g., enterprise applications built from Java software components).

Recombinant and temporary consortia

We will see more "recombinant" phenomenon in the future. Organizations are re-combinations of modules from multiples of organizations. The new combinations allow organizations to acquire functionalities uniquely suited to market demands.

Beyond partnerships, analogous to the disassembly/manipulation/reassembly of atoms or molecules, temporary-consortia are a form of flexibility that goes further than the nimble and flexible firm. Ubiquitous, open systems are a significant enabler.

Firm as a set of business processes

A notion rapidly losing currency is that of fixed line and staff functions. A company is more usefully construed as a set of business processes supported by databases and object-oriented software. A defined process together with supporting data and software constitute an organizational component. Some components may be outsourced while others remain under company control.

The Applications Portfolio Conundrum

The applications portfolio concept has gained wide acceptance with CIO's and management. It has proven to be an effective way to plan for IT costs and benefits, as well as a tool to manage a company's IT technical and functional quality. However, with the Internet driven sea change of the dominant, real-time network, managing a company's IT using the applications portfolio concept poses some real difficulties.

The first difficulty lies with directly associating IT benefits with individual applications. At this point, most companies have realized comprehensive coverage of functional areas with IT applications. Thus, new IT benefits are not generally related to

providing IT to functions that previously have not been penetrated by IT. Instead, the new IT benefits that are characteristically associated with IT investments involve either the whole applications portfolio or major parts of it. Examples include real time messaging, single sign-on to the network, and security. Implementing these new capabilities require not only skills to work at the top level applications layer of the IT architecture, but also the more technical layers through the API's, Operating System, and, perhaps, the hardware. Both functional breadth skills and technical depth skills are necessary.

The second difficulty concerns the benefits the new IT capabilities provide. Many of these benefits are industry and company specific. Even more importantly, realizing full benefits often requires experimentation, and continuous redesign. For example, real time messaging and an integrated database are IT technologies that must be implemented throughout the applications portfolio to achieve IT-based customer service similar to the customer service developed at Cisco (and being pursued by many other companies in diverse industries). Envisioning how the IT consulting industry might provide this rather narrow, but deep knowledge, remains problematic.

*New limbs of IT consulting services*

With advances in related fields, new limbs of the IT services tree emerge: IT+genomics, IT+biotechnology (bioinformatics), IT+automobiles (telematics). A "two-way" impact exists. IT enables biotechnology, which, in turn, reshapes IT by illuminating biological models of information processing. This suggests that a convergence of IT as a larger development exists within certain fields so that it becomes increasingly difficult to draw a boundary between them. To the extent that is valid, we should expect to discover

new generations of "IT like" consulting firms formed at the leading edges of those convergences.

IT Consulting In The Future

As depicted in Figure 6 below, we expect the IT Consulting industry to return to a "Hay Day" period of growth, but it will not be as explosive or dramatic as what we experienced in the late 1990's. Operating companies acquired talent not available to them during the Hay Days and this will ease their dependence on outside service providers. And, overall economic conditions will strengthen slowly.

Figure 6
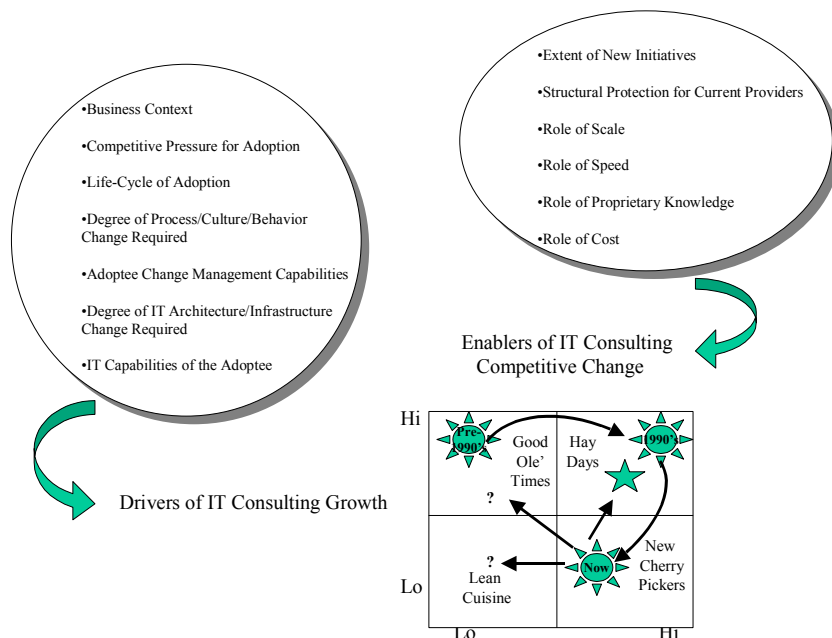
But many factors will continue to drive demand. The issues in companies utilizing IT services remain: (1) ERP or similar aggressive programs should replace their legacy application portfolios, which are ticking time bombs, (2) IT strategic applications have now moved from back office applications to front office capabilities to realize real time "sense and respond" strategies with customers-- and the strategic I-Net architectures need to be built, (3) prior to 2001 CRM types of applications just began taking off in a similar way to ERP, but now clients hesitate to engage in any new large IT project, and especially large projects like ERP projects-- a source of huge problems for most companies, and (4) outsourcing continues its momentum even though it has slowed due to a lack of IT spending.

And, new developments portend changes in the structure of the IT consulting industry. Considerable IT action outside the United States is being ignored by U.S. companies (like Internet growth in Asia and Europe). Security remains a perplexing issue and even though not much is being done right now-- there will be a lot of action and investment around this issue. Applications will become more diverse as new segments, such as telematics and bioinformatics, develop. Internet2 is on the horizon. And, companies competing globally in a world of intense rivalry and constantly accelerating change will demand rapidly delivered services that provide them with the ability to respond quickly and nimbly.

The IT consulting industry experienced sustained and robust growth for more than four decades by responding to the continued assimilation of IT in organizations, and the high levels of innovation in the IT industry. That high degree of industry adaptation will be required in the future. IT Consulting, as much as any product or service, creates its

own demand. By introducing innovations and educating the market about the competitive benefits of those innovations, IT Consulting invents and "earns" its opportunities for growth. This ability of IT consulting to lead and to adapt is a key to its robust development. With this in mind, we see four possible scenarios that suggest the re-positioning of IT consulting firms in the 2000's:

Scenario #1: "Giants Prevail"

IT firms, or giants, like IBM, Microsoft and Cisco, developed products and services as IT evolved to earn significant positions, if not partnerships, with their customers. Today, although each giant consulting service remains highly oriented towards moving their own company products into customers IT architectures and strategic I-Nets, the services have adjusted to the multiple vendor environments. IBM's Web-sphere strategy, the most product agnostic of the giants, revolves around helping companies build strategic I-Nets and realize global e-business advantages with the most appropriate set of IT products available. Microsoft's I-Net based product/service strategy called net (.dotNET) appears more directed to Microsoft products through its concept of "embrace and extend. Embrace and extend assumes that Microsoft will monitor the IT product/service environment and ensure that everything integrates in its overall architecture. Cisco, who wants to be perceived as the "Internet leader," fully focuses its strategy on the Internet. Its products are network-centric. Cisco continually brings customers to the company to experience the Internet use and advantages at Cisco, as well as observe the approach and methodologies Cisco uses to build their strategic I-Net.

Scenario #2: "Same Old, same old"

In consulting, success is highly dependent upon the ability of the consulting firm's leadership to acquire, motivate, and retain highly educated and creative staff. Large product companies that acquired successful consulting firms often fail to assimilate the consulting staffs into their company structures. In the "same old, same old" scenario those IT consulting firms that master the process of managing a large consulting firm will ultimately prevail. These firms include McKinsey, Accenture, and EDS. Companies want to buy consulting services that are truly product agnostic, and will continue to obtain these kinds of services from the large independent consulting firms.

Scenario #3: New "Emerging Edge" Players

As stated earlier, it is remarkable how relatively fragmented the IT consulting industry remains. The new "emerging edge" player scenario reflects that no one player will achieve significant market share, but that the new large players specializing in the emerging use of IT in the firm will grow into large, multi-billion dollar players. In much the same way that Cisco exploded onto the marketplace and dominated Internet equipment, other players may emerge in the same way around important niches such as ASP, security, or BioInformatics.

Scenario #4 – New Non-U.S. Players

IT is a great equalizer; it enabled companies like drugstore.com to enter the $160 billion U.S. retail drugstore industry in less than a year, and become a $150 million player within a couple of years.

About 300 million people currently use the Internet. The U.S. boasts about 150 million Internet users, and nearly half of U.S. homes have an Internet connection. The

U.S. population is about 280 million. Consider that there are about 40 million Chinese Internet users this year (even more as you read this book), about 20 million last year and that the China's population is about 1.3 billion. With rapid growth in demand, and the relatively low Internet penetration, it is not hard to conceive of a scenario where a large IT consulting player could emerge in China, India, or Europe.

This scenario gains more plausibility in light of the attention given to high-speed networks associated with Internet2 outside the U.S. Within the U.S., a prevailing sense of dot vertigo and cautious IT spending will linger.

What we would do if we were still running an IT Consulting firm

The history of IT consulting is rather short, and quite tumultuous. Only recently IT consulting firms evolved from the dominant partnership form to the corporate form with access to the equity markets. The fallout of the rash of mergers and acquisitions of the IT consulting industry left many firms in disarray, and many others just disappeared. Now the established IT industry product/service companies like IBM and Microsoft have entered into IT consulting as integral components of their business strategies, and the ultimate outcomes of these experiments are still being played out—although, with more than a $20 billion business in consulting at IBM, the experiment looks successful.

Nevertheless, the short history of IT consulting is characterized by change. IT consulting is a people business in which it is critical to acquire, motivate, and retain a highly educated, and creative group of professionals. It is a very difficult business to manage. The lucrative opportunities continue to appear as the industry enters into the second stage of the Internet era.

At present, the industry has been demoralized; marginal players have been eliminated; players still standing represent a core group to craft virtual integrated client delivery capabilities. This is an opportunity to reposition our firms for high-speed Internet2 networks that may spawn future growth opportunities.

The future holds many possibilities and the outcome is not obvious. We should approach the future carefully, and with a high degree of organizational flexibility. The good news: today's IT affords us flexibility never before possible. First, we can monitor the marketplace in real time to sense direction and opportunities. We can pounce on opportunity faster, we can cast off mistakes faster, and we can redirect our resources more appropriately. Second, we can gain access to resources at unheard of speeds. Our IT firm in the future would highly leverage these two distinct capabilities.

We would base our consulting firm on several assumptions:

1. IT consulting growth assumption- we believe that IT consulting will return to healthy growth, but not repeat its earlier, explosive aberration. We believe that clients are still absorbing IT into their structures and operations with the most significant benefits in front of them. We learned that we must calibrate IT absorption with the ability of the organization to assimilate the changes required. This will continue to change the way that clients do business and go to market as well as altering client work cultures. It is the long-term nature of change management that will govern the rate of IT consulting industry growth and we will invest in knowing more about and doing change management better than any of our competitors.

2. Know-how about managing intellectual assets assumption – Our experience is that management consulting firms, and IT consulting firms in particular, possess more know-how on managing intellectual assets than product companies and most service companies. Virtually all of a consulting firm's assets are contained in the professional consulting staff. Building, maintaining, and tapping these intellectual assets to deliver client value involves processes and management principles different than those processes and management principles for managing physical assets. For example, nurturing egos and diversity among professional consultants is generally associated with high levels of innovation and creativity—the kind of creativity required for important initiatives such as penetrating a new market opportunity. The existence of delicate egos in product firms often clashes with teamwork. Because of the importance of innovation in creating intellectual assets, consulting firms spend a lot of time and effort resolving such clashes.

The probable losers in the IT consulting industry include those that graft consulting onto existing organizations without fully understanding the unique people management aspects of the business. These will probably look like many of the IT consulting companies that cropped up in the late 1990's that were more oriented to the financial pro-forma's than management of the basics of the business: consultants and customers. Giants with established product/services businesses and cultures are especially vulnerable. We will value and reward people management knowledge, skill and effectiveness in our organization.

3. Expensive resource access assumption – Similar to the legal profession, there are times when a company requires access to the best-of-the-best talent in a narrow area. For example, when lawsuits escalate to millions of dollars in potential damages, the best

and most capable lawyers are sought. Few companies would possess the resources or the solution sets to keep such lawyers on their permanent staffs. IT is evolving in a similar fashion to present a level of diversity and complexity in consulting organizations where an expanding variety of specialized and highly skilled professionals are needed to help clients access and implement new IT architectural capabilities.

IT consulting firms provide a means to attract and deliver these highly skilled professionals to the companies that need them, when the skills are needed. In addition, IT consulting firms are generally relatively open to operating "virtual" organizations enabling efficient tapping of these scarce resources within the global marketplace.

We believe the difficulties of scaling professional consulting firms will constrain the ultimate size of the IT consulting players. Accordingly, we believe there will be lucrative niches for widely diverse players who enter the industry. We will take a portfolio management approach to this diversity of specializations and niches in our firm. We will add niche capabilities to our portfolio where we can obtain the right professionals and distribution capability into the market to meet a sustained demand. We will develop strategies for having niche capabilities when needed. First, we would develop "deep partnerships," globally, with firms in markets we consider strategic. Deep partnership means we would share methodologies and market opportunities where we can leverage common culture, values, and objectives. Second, we would have the organizational and individual skills to be able to rapidly create temporary partnerships on a more opportunistic basis. In some cases these will be operating arrangements with other firms and in other cases these will be with individuals.

We will also closely monitor our firm's cost structure in light of the widely diverse labor rates for consultants around the world. It will be critical to ensure that the cost structure of our IT consulting firm is benchmarked globally, and not just locally, in order to remain competitive.

4. Network form organization structure assumption - The form of our IT consulting firm would be highly networked, global, and virtually integrated. Both personal and IT-enabled networks would be nurtured, and formalized upon consummation of client engagements. We would bring clients into our networks in the form of an extended organization so that we could effectively "sense and respond" to needs and opportunities, as well as forge high degrees of mutual trust.

5. The Bi-modal capability assumption- Our firm will have two dramatically different kinds of capabilities. One of these will be highly intellectual, creative, technologically advanced and sophisticated about client's organizational challenges and change processes. This will be a leading edge capability that will sense and open new application markets and provide direction to application services. The work of the second capability will be more tactical and transactional such as code writing and project administration. We will utilize very different kinds of people, cultures, strategies and process to maintain each of these capabilities. And, we will be adept at maintaining two different cultures at the same time.

If we, Nolan and Bennigson, ran our own consulting firms today, we would take careful stock of the past, present, and what the future might hold for IT consulting. The past tells us that IT consulting has been one of the fastest growing industries in the World. It also tells us that the industry remains quite new and immature. In the present

we read opportunity to tailor the next generation of opportunities. And, in the future we

see opportunities that are characterized by change, innovation, excitement and risk. The

future will belong to those who can appreciate the past but are not bound to it, those who

do the best job of sensing change and those who are fast and flexible. It will be quite a

run.

i The Stages Theory was influenced by Larry Greiner's seminal *Harvard Business Review* article on Evolution and Revolution as organizations grow. Greiner and Nolan were both at the Harvard Business School when both of their articles were published in *The Harvard Business Review*. The Stages Theory was first published in Richard L. Nolan, "Managing the computer resource: a stage hypothesis." *Communications of the ACM* 16 (July 1973): 399-403. This original stages theory of computer growth was based on the learning curve reflected through the data processing budget. Subsequent publications focusing on the Stages Theory as applied to organizational learning include Cyrus F. Gibson and Richard L. Nolan, "Managing the Four Stages of EDP Growth," *Harvard Business Review* 52 (January-February 1974): 77-88, and Richard L. Nolan, "Managing the crises in data processing," *Harvard Business Review* 57 (March-April 1979): 115-126.

ii For a discussion of the emergence of "dominant designs" in technology see William J. Abernathy and James M. Utterback, "Patterns of Industrial Innovation," *Technology Review* 80 (June/July 1978): 40-47; and James M. Utterback, *Mastering the Dynamics of Innovation* (Boston: Harvard Business School Press, 1994): 23-55.

iii Richard L. Nolan "Managing the advanced stages of computer technology: key research issues," in Warren F. McFarlan (ed.), *The Information Systems Research Challenge: Proceedings* (Boston: Harvard Business School Press, 1984): 195-216 lists various corporations that have applied the stages theories to their information systems. Several Harvard Business School cases have applied the stages theory to a particular industry or company. These include: Linda M. Applegate, "Frito-Lay: The Early Years (A)," 9-193-154 *Harvard Business School Case* (1993); Linda M. Applegate and Donna B. Stoddard, "Xerox Corp.: Leadership of the Information Technology Function (A)," 9-188-113 *Harvard Business School Case* (1988); Linda M. Applegate, "Xerox Corp.: Leadership of the Information Technology Function (B)," 9-191-024 *Harvard Business School Case* (1990); Linda M. Applegate and Ramiro Montealegre, "Eastman Kodak Co.: Managing Information Systems Through Strategic Alliances," 9-192-030 *Harvard Business School Case* (1991).

iv See Louis A Girifalco, "The Dynamics of Technological Change," *The Wharton Magazine* 7 (Fall 1982): 31-37. Also, Edwin Mansfield, *Economics of Technological Change* (New York: W.W. Norton. 1968), Richard N. Foster. *Innovation: The attacker's advantage* (New York: Summit Books, 1986), Clayton M. Christenson, *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail (Management of Innovation and Change Series)* (Boston: Harvard Business School Press, 1997), and Philip Anderson and Michael L. Tushman, "Technological Discontinuities and Dominant Designs: A Cyclical Model of Technological Change," *Administrative Science Quarterly* 35 (1990): 604-633.

v Anonymous. "Institutionalizing change." *Crossborder Monitor* (April 1, 1998): 1.

vi "Professional-service firms are becoming vast diversified conglomerates…" The Economist, July 7, 2001.

vii The culture change is a major thesis of Lou Gerstner's recent book on IBM's transformation, <u>Who says elephants can't dance?: inside IBM's historic turnaround</u>. New York : HarperBusiness, 2002.