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Developments in Practice XXXII: Successful Strategies for IT Staffing

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Abstract:

To explore the current IT staffing challenges and issues, and how organizations are approaching these challenges and issues, we convened a focus group of senior IT managers from a variety of different companies representing several industries. In this study, we explore the number and types of IT skills that senior IT managers perceive important for their organizations, both currently and in the future. We further explore these organizations' IT staffing practices in hiring, retention, career development and training, and performance, promotion and succession planning. The focus group anticipated some emerging trends in their future IT staffing needs, and shared some interesting techniques and strategies that they used to effectively meet the IT staffing challenges and needs. We describe the efficacy of their current IT staffing practices and the new practices that they introduced to enhance their ability to hire, retain, and develop top candidates.

Keywords: IT staffing, IT recruiting, IT hiring practices, IT employment, IT skills

I. IT STAFFING IN CONTEXT

IT prognosticators would have us believe that IT is in permanent crisis. First, COBOL was declared dead. Then there was Y2K, followed by the dot com bust. Then, as things were settling down, the "IT as utility" concept predicted the death of IT as we then knew it. Now IT faces another crisis – a staffing crisis – based on the gap between the supply of computing, engineering, and IT graduates and the growing demands of the IT industry [Microsoft Research 2006]. Such doomsayers point to the "perfect storm" of plummeting enrollments in computing science programs, lopsided demographics, dwindling interest in IT careers, low levels of engagement/loyalty in the workplace, and shrinking IT staffing budgets. But will the outcome be as dire as these prognosticators would have us believe? The jury is still out. Gohring [2006] and Holmes [2006] predict that, due to the widespread practice of outsourcing entry level jobs, IT departments will simply shrink to offset the drop in supply. Meanwhile, Prewitt and Cosgrove-Ware [2006] suggest that the demand for IT staff is rebounding and thus worsening the situation. While predictions may be equivocal, significant changes are definitely underway that will impact IT staffing in the future.

This larger context impels us to first understand how various elements may impact the IT industry and vice versa. It is against this backdrop of social and economic factors (i.e., a supply-demand gap, outsourcing of entry level positions, generational differences, changing demographics and under representation, and changing skills/roles, etc.) that we explore existing IT staffing challenges and issues, as well as how organizations may effectively address them. It is recognized that these challenges and issues must be addressed with increasingly stringent IT staffing budgets. Gartner's IT Staffing and Spending Survey suggests that organizations' internal staff costs have dropped substantially, and further declines are expected [Gomolski 2003]. The latest survey of IT executives on IT budgets and staffing suggests that the number of CIOs planning IT staffing budget decreases will rise dramatically in future years, partly in response to the projected economic situation [Johnson 2009]. We next describe the key factors that affect IT staffing in organizations.

A recent study revealed seven major factors that contribute to the IT staffing dilemma: population aging; low fertility rates; declining enrolments in IT related post secondary programs; under representation of several population groups; mismatch between the skills of available workers and the requirements of employers making hires; the need for flexibility and lifelong learning; and technology embeddedness and the growing need for multi-skilling. These factors affect IT staffing in direct as well as indirect ways. Furthermore, few organizations remain untouched by these. Each of these factors is discussed below.

The IT Supply-Demand Gap

The IT supply-demand gap indicates that insufficient IT workers are available to fulfill organizations' increasing demand for IT skills. Enrollments in computing science and IT programs have been decreasing for a number of years across North America. In the U.S., the number of students choosing computing science as a major between 2000 and 2004 declined by 60 percent [Microsoft 2006]. With respect to demand, an additional 1.5 million jobs will become available in computing in the U.S. by 2012. The Canadian forecast is proportionally similar. Enrollments in computer engineering, computer science, and software engineering declined by 22 percent during the period 2002-2007, whereas, over the next three to five years a forecasted need exists to fill 89,000 IT positions [Bloom and Fennessy 2008].

Taking a global perspective, however, yields a different story. For instance, 700,000 engineers graduate annually in China ... more than 10 times the number to graduate in North America [Microsoft 2006]. This portends a global shift in IT – much as has already happened in other industries (e.g., manufacturing) over recent decades – with a significant portion of IT services and products sourced in "non-North American" locations. Given the global marketplace for goods and services, this situation presents worries that North America's dominant position of thought leadership in IT may erode [Microsoft 2006]. It also presents concerns over the impact of losing the multiplicative effect that local IT employment has on gross national product.[1] Dislocation of labor and loss of competitive advantage based on knowledge, however, do not suggest an "IT labor gap." This observation is supported by the current trend of outsourcing entry level jobs in IT.

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[1] The Conference Board of Canada estimates that the effect of not filling the 89,000 IT positions that will open up over the next three to five years will cost the Canadian economy in excess of $10.6 Billion.
[2] ICT is an industry sector classification representing Information and Communication Technology firms.

Outsourcing Entry Level Jobs

The practice of outsourcing and offshoring has undergone tremendous growth in the IT industry [GMA study 2006; Gurchiek 2005; Nasscom-McKinsey study 2005; The Outsourcing Institute 2005]. Both ICT[2] and non-ICT organizations engage in outsourcing entry level IT jobs [Shao and David 2007] if not offshoring. Organizations may "offshore" entry level work directly or indirectly (i.e., they may engage a service provider who outsources the work on their behalf). When we examine the type of work that is being conducted by these external providers, entry level activities such as programming, documentation, testing, and help desk are frequent candidates [Aspray et al., 2006; King 2007]. The majority of IT professionals today started in entry level positions and, with success, assumed increasingly senior IT positions. As/if we continue to outsource entry level IT positions (either directly or indirectly), it becomes problematic as to where/how organizations will be able to hire/develop senior IT professionals. In the short run, organizations will simply attempt to raid other organizations.

Changing Demographics and Under Representation

The workforce is aging and IT, although slightly younger than other industry sectors, is no exception (e.g., by 2011, one third of the workforce will be over 50). Furthermore, nearly every major region in the world will experience a rise in the relative size of their older cohort [Conference Board of Canada 2007]. The Conference Board study concludes that an aging population translates into increasing retirement rates and "the associated loss of experienced workers means fewer mentoring opportunities for the next generation workforce, a declining labour force participation rate, and intensified competition to attract new entrants."

At present, women represent approximately 26 percent of the IT workforce in Canada – a number that is likely to decline given the present lack of interest among women in the IT profession. When one considers that "women account for two thirds of full time enrollment growth in universities since 1971," this statistic becomes even more dramatic [Bloom and Fennessy 2008]. Other groups that are under represented within the IT ranks are visible minorities and immigrants. The many initiatives aimed specifically at increasing the number of women in IT (without much apparent success to date) far outstrip the number of initiatives targeting immigrants and visible minorities, despite the fact that immigration, particularly in light of lower fertility rates in North America, provides an attractive option for addressing the IT staffing shortfall.

Generational Differences

The aging of the IT workforce also augments the effects of generational differences[3] simply because more generations are represented within the workforce in greater proportions. According to the Bureau of Labor Statistics as cited by Sampath [2006], the workforce in the U.S. will experience 12 percent growth during the period 2002-2012, but this growth will not be spread evenly across age categories. Workers aged 55-64 will experience the most dramatic increase in growth at 44 percent and those over 65 will experience a 19 percent increase in growth.

A recent study claimed that banking and securities industries "could face critical deficiencies with approximately two-thirds of all front line employees being either less than 30 years old or within five years of retirement" [Sampath 2006]. This juxtaposes baby boomers with gen-Yers and suggests that organizations must be able to accommodate both with equal aplomb. According to a study by Jeffrey et al., [2004] Gen-Y values can be very different from that of existing workforce generations. They identified core gen-Y values as: long term career development and multiple experiences within a single organization, a sense of purpose and meaning in the work, work/life flexibility, a tech-savvy work environment, and open social networks that embrace open/honest communication. It was also noted that these gen-Y values "may reflect many of the broader marketplace changes, such as technological advancement, focus on social responsibilities, flexible sourcing, and global connectedness" [Jeffrey et al., 2004]. If this is indeed the case, then it could be expected that the values/needs of the gen-Yers would also appeal to other worker generations.

New Skills/Roles for IT

The IT profession is rather unique in that new developments occur unrelentingly, but older technologies never seem to go away! Even though legacy systems could easily be replaced by newer technologies, the business case for replacing them is difficult to make. As a result, organizations continue to operate systems and applications coded in older (sometimes ancient) languages while interfacing them with newer technology. As long as older technology survives, the need for expertise to manage these technologies remains. Frequently, the most critical skills within the IT professional ranks are those that relate to these older technologies – many of which are no longer taught in post

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[2] ICT is an industry sector classification representing Information and Communication Technology firms.
[3] Seniors are those born before 1946; baby boomers are born between 1946 and1964; generation X ("Gen-Xers") are born between 1965-1981; and generation Y ("Gen-Yers" or "Millennials" or "Nexters") are born between 1982-1993.

secondary educational institutions (e.g., PL/1, COBOL, RPG, JCL, Assembler). Nowhere is this more apparent than in the disparity of the skill base of retiring employees (i.e., the leading wave "boomers") and the skill requirements of the entry level workers (i.e., the Gen-Yers). This presents a conundrum. On one hand, the "critical challenge for IT work is that the speed of technological advancement at least in some instances renders current qualifications irrelevant for succession planning" [Bloom and Fennessy 2008]. On the other hand, due to the fact that older technologies are slow to be decommissioned, current (and perhaps older) qualifications become critical for succession planning.

While the collection of multigenerational technologies will likely continue (for the reasons stated above), there are identifiable emerging differences with respect to the mix of requisite IT skills. As IT departments bifurcate into two distinguishable roles – utility computing versus competitive advantage – there is a demonstrated need for IT professionals to obtain a much greater understanding of the business in order to drive organizational innovation with technology [Smith and McKeen 2006]. Overby [2006] describes this phenomenon as follows:

> It's no longer a matter of debate: The nature of IT is evolving from technical support center to innovative business partner. And the mix of skills needed to staff the new IT department is changing as well. While technical proficiency is still important, CIOs are desperately seeking hires with project management expertise, enterprise and industry knowledge, and the business skills necessary for customer-facing roles. Forty-one percent of CIOs said they place greater emphasis today on a job candidate's knowledge of business fundamentals than they did five years ago.

With the focus on productivity and effectiveness, organizations are increasingly turning to information technology as the vehicle for delivering these gains. Over time, this leads to the "digitization" of the workforce as IT becomes embedded within work processes. As a result, all employees (i.e., not just IT employees) require higher levels of technology literacy, and the share of IT-skilled employment increases as a proportion of total employment [Bloom and Fennessy 2008] who claim that, "effectively integrating information technology in the workplace has broader economic implications as well because there is a strong relationship between productivity and national economic prosperity."

To explore how organizations are approaching IT staffing issues, we convened a focus group of senior IT managers from a variety of different companies representing several industries including: manufacturing, insurance, consulting services, banking and finance, food processing, pharmaceutical, government, retail, automotive, and telecommunications. In preparation for the meeting, focus group members were asked to list the set of IT skills that are considered important for their organizations (i.e., a "now" picture) as well as a "future" picture to show the anticipated changes in terms of numbers and types of IT skills. In addition, the group explored hiring, retention, career development, training, and sourcing practices. The group was sequestered for an entire day and the discussion was moderated by one of the authors while the other author recorded the discussion. The remainder of this paper represents a summary of the focus group discussion.

The Evolving IT Skill Set

Group members generally agreed on the key IT skills that are not anticipated to change dramatically within their organizations. These key roles/skills include both a business/management focus and a technical focus. Roles/titles that emphasize business and managerial skills include: account/relationship manager, business analyst, business technology specialist, project manager, senior platform manager, development manager, strategy consultant/manager, and various administrative roles within IT. Roles/titles that emphasize technical skills include: technical specialist, systems programmer, programmer analyst, network/communication analyst, storage analyst, security analyst, enterprise architect, data architect, developer, quality assurance, database development manager, application maintenance, production support, data mining/analytics, and internet maintenance and development.

Looking forward, the group anticipates some interesting trends in future IT staffing needs resulting from what they perceived as the changing relationship between IT and business. As IT becomes ever more critical to organizational operations, and is increasingly asked to deliver innovation as well as process improvement and productivity, the focus group anticipated that IT would become much more "client facing," less "back office," and called to "deliver more value." This emphasizes the need for IT staff to enhance their "soft" skills and "leadership" skills across many different IT roles. One member commented that, "a strong technical base is still required, but professional skills are already more important with respect to help desk support, project management, security, and ITIL." Another member predicted a growing need for effective account managers and advocated for the creation of a new role which he referred to as a "business consultant." He reasoned that business analysts either have credibility in IT or in the business, but rarely in both. As "solution architects" begin to encroach on the "business analyst" terrain, it permits the business analyst to develop much more acute business skills, in effect becoming a "business consultant."

Particularly, the group suggested that, with an ever increasing breadth of services to be provided by IT, the focus will shift towards effective implementation and change management. IT will become "business solution providers" rather than "technologists." This will necessarily bring professional and business skills to the forefront including: leadership, business acumen, people skills, analysis, and problem solving, as well as process and project management. According to one manager, "understanding the technology is no longer enough ... IT analysts and management must know how to unlock IT value for organizations." Another suggested that, "IT will have to bring the whole package of skills to the table ... knowing RPG and project management but not supply chain management is not good enough. The business needs them all."

In addition, the trend towards "buy not build" is clearly behind many of these IT staffing changes. Package software requires generic skills NOT specific skills. Most organizations represented within the focus group rely on suppliers for their deeper technical expertise. One member suggested that the trend was, "towards more generalist technical knowledge spanning multiple platforms, integration and troubleshooting ... rather than deep knowledge of a single platform." As a result, the group predicted the continued consolidation and outsourcing of entry level roles (e.g., programming, help desk, systems administration), leaving internal staff focused extensively on analysis, process, value delivery, and service management. This would be accompanied by a disappearing need for traditional programming and deep technical skills. The new IT mandate will push business/process/generalist skill sets, leaving outsourcers to provide additional, perhaps specialized, services and deep technical knowledge. These trends also place critical demand at the senior level.

Table 1. IT Skills Mapping by Competency-Position															
	Position														
Competency	Manager	Architect	Project Mgr 1	Project Mgr 2	Prog Anal 1	Prog Anal 2	Prog Anal 3	Security Anal 1	Security Anal 2	Security Anan 3	DBA 1	DBA 2	DBA 3	Admin 1	Admin 2	Etc ...
Policy Development	3	3														
Capacity Planning		4														
Project Management	3		3	4												
Supp. Mgmt & Negotiation			2	3												
System Integration																
Testing					2	3	4							1	2	
Industry Knowledge	3	4														
Asset Management																
Architecture and Standards		4									2	3	4			
Continuity Planning		4	2					2	3	4						
Etc. …																

Coding Scheme:
1 = Has learning/knowledge but little to no experience; 2 = Accomplished – requires minimal assistance; 3 = Excel at – fully independent; 4 = Expert – can mentor and teach others.

Note: The "Etc" header column note

Communications of the Association for Information Systems

Previous research finds that business and human resource managers think that business and managerial skills are the most critical skills, whereas technical skills are the least critical for IT personnel, both in the short term as well as in the future -- in both IT provider firms and IT client firms [Goles, Hawk and Kaiser 2008]. In contrast, the analysis of IT job advertisements suggests that IT technical skills are in greater demand than business and managerial skills (Gallivan, Truex and Kvasny, 2004). Our study suggests that senior IT managers may have different opinions of what constitute important IT skills than business and HR managers do. Given their immediate exposure to everyday demands, IT executives may have a more complete view of the critical IT roles. In addition, the findings suggest that while business and managerial skills are important, such needs may not be reflected in the job advertisements for IT personnel.

Developing a Skills Template as the Basis for IT Staffing

It is critical for organizations to understand what skills are important for them both currently and in the future, because they can then plan their IT staffing on the basis of this analysis. An effective technique is to develop an IT skills template mapping important skills to different time frames and tailored to accommodate their specific organizational strategies, the role that IT plays in their organizations, and the technology environment that applies to their organizations [Ang and Slaughter 2000]. At a strategic level, IT staffing will always hinge on the consideration of two things: the *skills* required by the IT and business organization (e.g., do we need to improve our ability to negotiate and manage external vendor relationships?) and the resident *technology* (e.g., when will we exit our mainframe/AS400 environment and move into an AIX/Intel environment?).

One member organization addressed the skills dimension by developing a comprehensive matrix which maps competencies onto job positions/titles and ranks mastery of each competency on a scale of 1 to 4. Eight general business competencies (e.g., focus on results, take the initiative, recognize and support people, communicate effectively) are followed by 28 IT specific competencies, of which a representative sample are listed in Table 1. These competencies are meant to be "technology-neutral"; otherwise they would undergo constant revision. The benefits of this mapping are significant. Current employees can determine with a glance the level of mastery of various competencies that are required for progression to advanced/other positions. For this reason, this matrix is highly useful during annual performance reviews in terms of career guidance and development.

The other critical factor in the determination of IT staffing needs is technology – both current and future. A different member organization shared their "2007-2012 Technology Target State Architecture." Using a large poster format (represented in Figure 1), this organization has mapped its entire technology blueprint over the next five years.
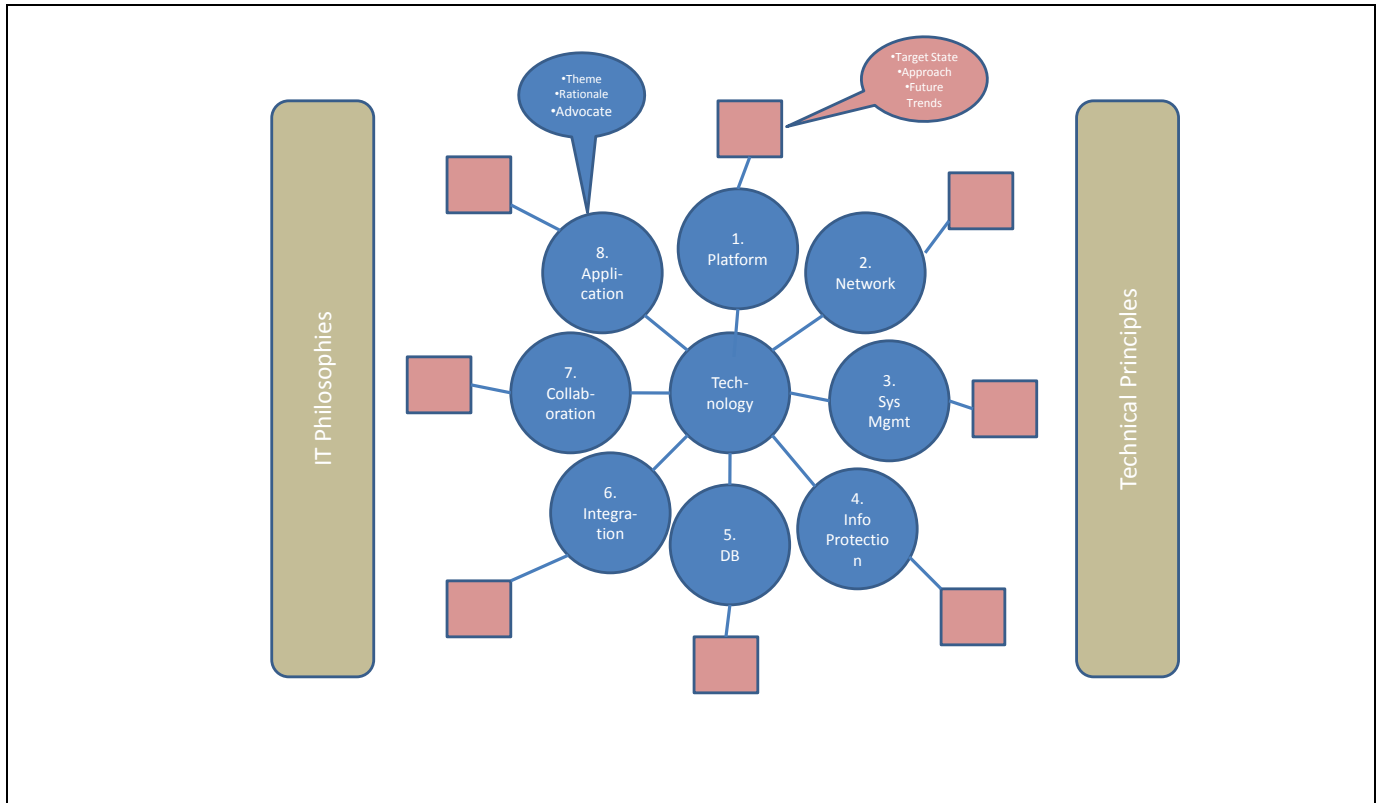
Figure 1. Target State Technology Architecture Map

Their technologies are divided into eight components, each discussed in terms of its a) theme, b) rationale, and c) advocate. As an example, one of the technology components – "network technologies" – is described below:

- **Theme**: We will deploy secure network technology that will provision throughput capacity, scale to meet future business requirements across the enterprise and remain current by continual assessment of business needs and technical advancements in service availability and capacity.
- **Rationale**: The networks are critical for our enterprise businesses to operate and communicate effectively and efficiently. Increased reliance on network due to more browser-based applications and increased volumes of transactions and data.
- **Advocate**: Director, Technology Services

Each technology component is then described in detail. Using the same example, "network technologies" would be described as follows:

- **Target State**: lists all technology standards that have been adopted as well as those that are planned to be decommissioned
- **Approach**: describes the means by which the organization will approach the target state
- **Future Trends**: outlines the transition timing to new technologies

The final components of the Target State Architecture map are a listing of the "IT Principles" – which cover data and information management, solutions and applications, technology, IT governance, and IT investment and prioritization – and "Technology Principles" – which describe generic technology principles (e.g., common access, license mobility, SLA) and domain-specific technology principles (e.g., platform, network, systems management).

The Target State Architecture map is highly effective as an educational and motivational tool. It is displayed prominently throughout the IT department and has become a conversation piece. All IT employees are well aware of the status of all technologies – which are growing and which are in decline. IT employees can relate their personal skills to the technology map and plan their future. For instance, if your expertise is on the AS400 platform and you can see that it will be decommissioned over the next three to five years, you can take appropriate career steps. The real power and benefit of these two tools – the Target State Architecture map and the Competency-Position Matrix – becomes apparent through their ability to link specific technologies, skills, competencies, and positions. For instance, it would be possible to map the competencies of all employees regardless of position, thus highlighting gaps as well as areas of weak coverage and/or over coverage. The combination of these two tools would be invaluable as aids for IT staffing and planning.

Once organizations understand their IT skills in context, they can better implement successful strategies to acquire, sustain, and further develop their IT staff. In the next section of the paper, we analyze various IT staffing issues and, based on the inputs from the focus group, suggest a number of proven strategies for effective staffing.

II. SUCCESSFUL STRATEGIES FOR IT STAFFING

The focus group shared a number of strategies used to address their IT staffing needs. These are discussed below under the following four headings: 1) hiring; 2) retention; 3) career development and training; and 4) performance, promotion and succession planning. The literature recognizes the importance of viewing IT personnel management as holistic approaches rather than individual practices [Agarwal et al., 2006]. The four elements are most likely interrelated to each other and best viewed as an IT staff management system. Without effective retention, organizations may waste their investment in recruiting and training. Strong retention and employment security without sufficient employee training and development may result in a performance lag at the individual, group, and organizational level. Without accurate performance appraisal, training and development become baseless. Without effective succession planning and promotion practices, training and development may underperform.

Hiring Strategies

The overall IT hiring requirement for Canada over the next three to five years is 89,000, of which 58,000 (i.e., 65 percent) is due to job growth, and 39,000 (i.e., 35 percent) is due to replacement demand [Bloom and Fennessy 2008]. That is, new hires will double the rate of replacement hires for the next few years. Most members of the focus group were experiencing hiring pressures, but of different kinds since not all organizations hire actively at the entry level. For those organizations not hiring at the entry level, the claim was made that entry level employees "took too long to ramp up," didn't graduate with "sufficient skills," and/or were "difficult to retain once up to speed." This is a fact of organizational life; that is, all organizations face difficulties retaining newer employees over the "new hire" window of 0-10 years, in particular those with "hot" skills or in times of "hot" markets.

Organizations hiring entry level employees need to adopt strategies to attract and hire the best. Critical tasks demand the best skills because a "good" solution can make an enormous difference in IT outcomes over an "average" solution [Cappelli 2001]. Successful IT hiring practices include building relationships with academic institutions [Agarwal and Ferratt 2002] and are facilitated by a number of "pre-hire" practices, such as the following:

- Participation in industry networking events
- Hosting post graduate seminars and recruiting events
- Special relationships with university programs (e.g., work project placements, co-op programs)
- Hosting post secondary technology-based competitions (e.g., robotics, new ventures, web services)
- Hosting events on campuses and meeting students
- Student referral programs following work placements
- Use faculty recommendations to find the top students
- Use speaking engagements in classrooms to promote careers in IT
- Act as judges at class competitions and presenters at campus conferences

The preferred strategy was to get involved in as many ways as possible. It is through this breadth of exposure that students build awareness and eventually relationships with organizations. Finding the top entry level people is job one; landing them is the next important step. Here, member organizations fell back on more tried and true techniques, such as promoting features such as the culture, diversity, opportunity, growth, travel (either its availability or absence, depending on the nature of the business), and work-life balance.

To be successful in hiring entry level individuals, organizations must put programs in place that are specifically tailored to appeal to this generation. The best news is that the values that Gen-Yers subscribe to (described earlier) are highly worthwhile organizational objectives and, if implemented, would benefit all organizational employees. Few in organizations today would object to an open social network, work/life flexibility, a sense of purpose, and meaning for their work and long term career development. It's a good model. Regrettably, among the focus group organizations, only a few had articulated a thorough and concerted plan for creating such an organizational environment. This gap indicates an area that organizations can work on to gain a competitive edge.

Hiring experienced IT professionals differs from hiring entry level employees. Here, most organizations in the focus group tended to engage practices such as job posting, monitoring job boards, referrals, and networking with various IT professional groups and associations. Most organizations argued that it was important that they increase their head hunting efforts in order to increase the pipeline of candidates, so that they would have a better chance of acquiring the best skills in the market. It is also important for potential candidates to know that "you are in the market." One member noted that his organization's leading edge practices (e.g., CMMI, PMP, and ITIL) tended to attract seasoned professionals and was working in their favor.

Interestingly, immigration was viewed as a source of "seasoned" hires but not as a potential source of entry level employees by many organizations. Coupled with the wide spread phenomena of outsourcing or offshoring many entry level activities, perhaps it is not surprising that seasoned employees would come from non-North American countries.

Retention Strategies

As the IT supply-demand gap widens and the internal IT budget shrinks, the ability to retain valued employees increases in importance. To maximize the value of IT staff, organizations need to first differentiate the set of critical skills/competencies that need to be retained by the organization from those which can be outsourced. Methods for accomplishing this activity exist [McKeen et al., 2005; McKeen and Smith 2007].

One focus group member defined "core" skills as ...

"those with emphasis on competencies that have high transferability – transcending a job matrix – such as business, management, and leadership. Core technical competencies focus on areas for which we have a specific investment agenda. Today, some cores skills are architecture, security and integration."

At another organization, core skills were, "those units that can work with the business on new developments and strategies." Once these have been identified, retention strategies can then be created to retain key individuals. A number of successful retention strategies were suggested by the focus group categorized under the following headings: employee satisfaction, monetary rewards, recognition, and non-salary benefits. By identifying the core skills, organizations can then engage in selective hiring, retaining, and further development of employees so that they have the desired core skills. The literature contrasts two approaches: the human-centered approach and task-

centered approach [Ferratt et al., 2005]. Human centered HR management values supportive work environment, career development, sense of community, and employment security, whereas task focused HR management pays less attention to these dimensions. Study finds that human capital focused HR management leads to significantly lower turnover than task focused HR management [Ferratt et al., 2005]. Either focused approach toward hiring, retention, and management of IT personnel is more effective than an unfocused approach.

- **Employee Satisfaction** – While employee satisfaction is one of the key dependent variables in the HR management literature [Ang and Slaughter 2000], employee satisfaction is often not evaluated in organizations. However, having accurate and timely indicators of employee satisfaction is critical. Such indicators need to be measured at the group level (in order to discern general trends and common areas of concern) as well as at the individual level (in order to target specific employees at risk of leaving the organization). Such measurement should be aligned with actionable plans to address areas of lower satisfaction. Many of the following strategies would qualify.

- **Monetary Rewards** – The key part of any monetary reward program is salary. Most organizations have internal procedures for conducting formal salary reviews, typically benchmarked against peers. In addition, similar procedures exist for benchmarking internal salaries against industry standards, often focused on direct competitor's salary structures. The importance of these procedures was voiced by one member of the focus group whose organization tied salaries to "roles with ceilings and caps." Over time, this practice allowed salaries to gradually become uncompetitive. The lesson here is to examine HR strategies to ensure currency, particularly in "hot" markets.

  In addition to benchmarking base salary with competitors, a variety of alternative monetary rewards can be used. Many organizations offer stock options/purchase plans as a retention strategy. With such plans, the organization typically contributes a percentage (say, 50 percent) toward the stock purchase but requires a minimum number of years of employment in order to receive 100 percent of the benefit. Theoretically, this option creates an incentive for employees to stay longer in the company. In practice, however, such plans have had a checkered record of success. With the value of the stock option subject to market vacillation, the efficacy of this retention strategy depends on performance cycles beyond the control of the organization. Other useful retention strategies include short term strategies, such as incentive pay schemes as well as long term strategies, such as enhanced benefit retirement plans. When employees achieve their individual performance goals in a year with strong organizational performance, bonuses can be substantial. Retirement benefit plans were also judged to be effective by focus group members. At one organization, their partially indexed defined benefit plan, which had proved successful as a retention incentive for long time employees, had recently been adjusted to discourage early retirements! The goal of retention is to keep valued employees from leaving the firm ... *for any reason*!

- **Recognition** – Many ways that do not involve remuneration to retain employees exist and these can be equally (if not more) effective. Furthermore, non monetary incentives become more important as IT staff budgets decline [Gomolski 2003; Johnson 2009]. Having IT staff's efforts and accomplishments recognized by the organization is extremely motivational and rewarding, especially as most corporate cultures under value and under reward technical work in their organizations [Cappelli 2001]. Everyone needs to feel valued and appreciated. At the focus group companies, awards varied from purely "recognition" to "large corporate awards" covering all types of possibilities. The useful strategies identified range from technical innovations to management and leadership awards, as well as from individual to team/group awards. The focus group made it clear that being recognized for one's accomplishments is more important than the award itself. Another important form of recognition is the granting of special roles within the organization. At one firm, roles such as "fellows" and "distinguished engineers" have been awarded to accomplished individuals in order to recognize their outstanding contributions as well as the continued importance of their skills and competencies to the organization. In this particular organization, these distinguished roles were accompanied by substantial salary grades.

- **Ancillary (non salary) Benefits** – Research suggests that monetary remuneration is not as motivating for IT personnel as factors such as interesting work, job rotation, and work support, etc. [Cappelli 2001]. Good job design that allows IT personnel to connect their work to the organizational goals, socialize with others in the organization, further their learning and knowledge, and enjoy autonomous and flexible work schedules may well be the most cost effective motivators for IT personnel [Cappelli 2001]. Some ancillary benefits used among focus group companies include flexible work arrangements that offered features like flexible work schedules, regular part-time employment, workplace flexibility/mobility, and multiple leave programs (e.g., elderly care, volunteering). Other organizations offer programs catering to employee needs such as work-life balance to ensure that the corporate culture continues to motivate and retain key individuals. One company recently developed an internal portal with a personal touch promoting "family" and "culture" as well as serving as a communication vehicle for sharing work related and personal information (i.e., blogs and personal pages). This

portal is offered in a relatively "hands off" manner for use by employees in ways that they choose. It is not governed by any specific policies beyond corporate expectations.

In addition to the retention of current IT employees [Agarwal and Ferratt 2002; Ang and Slaughter 2000; Ferratt et al., 2005], the focus group members pointed out that retention strategies should also focus on those who have already left the firm either by joining another firm or by retirement. At one organization, a "retiree on call" (ROC) program has been created to benefit both the organization and the retiree. Once retired, employees can continue to work under the ROC program, at their regular salary, on a contract basis. This enables the organization to retain the skills and experience of its retired employees and it allows recent retirees to keep a foot in the workforce as they ease into full retirement. Another organization created an alumni program for employees who leave the organization in order to join another. Through the alumni program, employees continue their relationship with their former employer informally. Significant benefits accrue from such a program, including the ability to foster inter-firm relationships through established alumni networks.

Career Development and Training Strategies

The history of career development and training is interesting. Until the mid-1990s, employees basically put their careers in the hands of their employers, following the adage "you do good by me and I'll do good by you." This changed dramatically with the advent of business process reengineering and successive rounds of downsizing. By the time we reached "rightsizing," the social contract between employee and employer had changed to, "the company owns your job but you own your career." Company loyalty plummeted. Fortunately, the pendulum may be swinging back toward an equilibrium position. This new balance is seen in the approach to career planning. At most focus group firms, the practice of applying a standard template for individual career paths has been discontinued. It is now up to the individual to plan their own careers. Individuals assume responsibility for (and take ownership of) their career development, the determination of what training is necessary, and building the case for it. The firm assumes responsibility for establishing career development initiatives, providing training programs (and resourcing these programs), and working directly with employees to proactively manage their personal development.

This partnership approach relies on effective communication between the company and the employees. For example, one company publishes a "flexible roadmap" which links capabilities needed by the business and individual career development. The balance is struck with employees taking responsibility for their individual development plan which aligns their personal career development aspirations with the future needs of the organization. One organization expressed this balance as "facilitated career growth" where career development is "largely a self-service model" where employees must create a business case for a promotion or proactively seek alternative employment positions by applying for internal postings. This particular organization is also rolling out an internal rotation program to promote lateral movement. In order for the employees to take initiative for their career development, they need to know what skills are most important for them to acquire in order to thrive and succeed. Organizations that have thoroughly analyzed IT skills within their contexts can use IT skills templates (mentioned earlier) as a tool to communicate with employees the needed skills in the short and long run.

In developing and training their IT staff members, organizations need to take into consideration some special characteristics of IT work. Evolving technology trends require organizations to update their IT skill sets [Agarwal and Ferratt 2002]. To fulfill their boundary spanning roles, IT personnel need to have diverse knowledge across multiple domains [Ang and Slaughter 2000]. Further, to work with clients, IT staff members need to master many soft skills such as communication, leadership, and consultation skills, etc. Recent study shows that IT personnel also must cope with emotional dissonance when dealing with clients [Rutner et al., 2008]. Emotional dissonance is the difference between an employee's expected emotional display and the employee's actually emotion. Study shows that emotional dissonance causes work exhaustion, which in turn affects job satisfaction and turnover intention [Rutner et al., 2008].

Members of the focus group shared a number of strategies for managing career development of IT staff members. We group these under the categories of creating opportunities, coaching/mentoring, and soft skills.

- **Creating Opportunities** – Once organizations communicate to employees the set of skills that are valued and important, they need to provide IT staff with opportunities to develop those skills. More growth and development opportunities for IT staff lead to less employee turnover, and vice versa. Recent hires are often discouraged by limited career advancement opportunities and, as a result, many leave to accelerate their careers. Indeed, in exit interviews, a substantial percentage cite the lack of career development as their primary reason for leaving. For this reason, it is critical that organizations build and offer as many different career paths as possible. At one organization, the belief is that career opportunities should be as varied as individuals. They offer horizontal growth (i.e., anywhere within the organization) as well as vertical growth (i.e., within a specific area within the IT organization). Centers of excellence (COE) provide appropriate training to facilitate growth laterally to other

COEs or vertically within an area of expertise. Additionally, employees need not be limited by standard ranks or progression paths. Virtually everything and anything is possible. One organization sponsors qualified employees to undertake an MBA program.

In addition to "vertical" development within the IT domain, organizations may also adopt "horizontal" development of IT employees. Most organizations offer and encourage opportunities for IT professionals to move directly into the business. According to one company, such movement is typically viewed as "a loss for IT but not for the organization" in the short term but as "a win for IT, a win for the organization and a win for the individual" in the long term. With all such opportunities, the organization must provide support and encouragement and, furthermore, must been seen as doing so. While an employee may be interested in a specific career move, they may not be ready for the move. As a result, it is important for organizations to prepare/train (i.e., groom) good candidates for internal promotions. According to one focus group member, the "top performers who have the technical skills and demonstrate the appropriate business potential are the ones considered/groomed for promotion." It is also important for organizations to assist employees to "find the fit." One successful method is to create job rotation programs. One organization requires every employee to "have a current position as well as a designated future position."

- **Coach/Mentor** – Members suggest that coaching and mentoring differ in purpose and importance. According to one focus group member, "coaching focuses on improving one's current job performance ... mentoring focuses on everything else." We adopt this distinction. One organization, reflecting this difference as well as the importance of mentoring, hires an external firm to coach their employees while mentoring is done internally. Another organization enlists both internal and external mentors in order to balance the internal messaging with different viewpoints. Mentoring programs must be well designed and well executed. According to the focus group, experience is a necessary, but not sufficient, condition for mentoring as "not everyone is effective as a mentor." Mentors need to be selected and trained carefully. At some organizations, mentoring is carried out under the auspices of a "buddy" system where responsibility for career development is shared by the buddies.

- **Soft Skills** – While soft skills are considered to be as important as hard skills, the fact remains that the majority of skills-based training in IT organizations remains focused on technical skills. That does not mean that soft skills are not being taught however. Literature suggests organizations that are successful in managing their IT employees provide leadership training to IT managers [Agarwal and Ferratt 2002]. It is encouraging to find that at most organizations in the focus group, employees promoted or hired into a management role are encouraged to enroll in the managerial or leadership courses offered by their organizations. In addition to leadership skills for IT managers, members of the focus group stated that their organizations had launched a number of initiatives that IT staff can take advantage of to enhance their soft skills. One of the more advanced organizations with respect to such initiatives offers between 50-100 soft skills courses annually, addressing such topics as communication, conflict resolution, and diversity. Another organization offers courses on emotional intelligence and "words of influence." At still another organization, such soft skills courses are offered "right down to the manager level." To gain appreciation of (and empathy for) the valued roles that others play in the organization, one company mandates that everyone in IT must shadow another employee in a customer facing operational role one day per year.

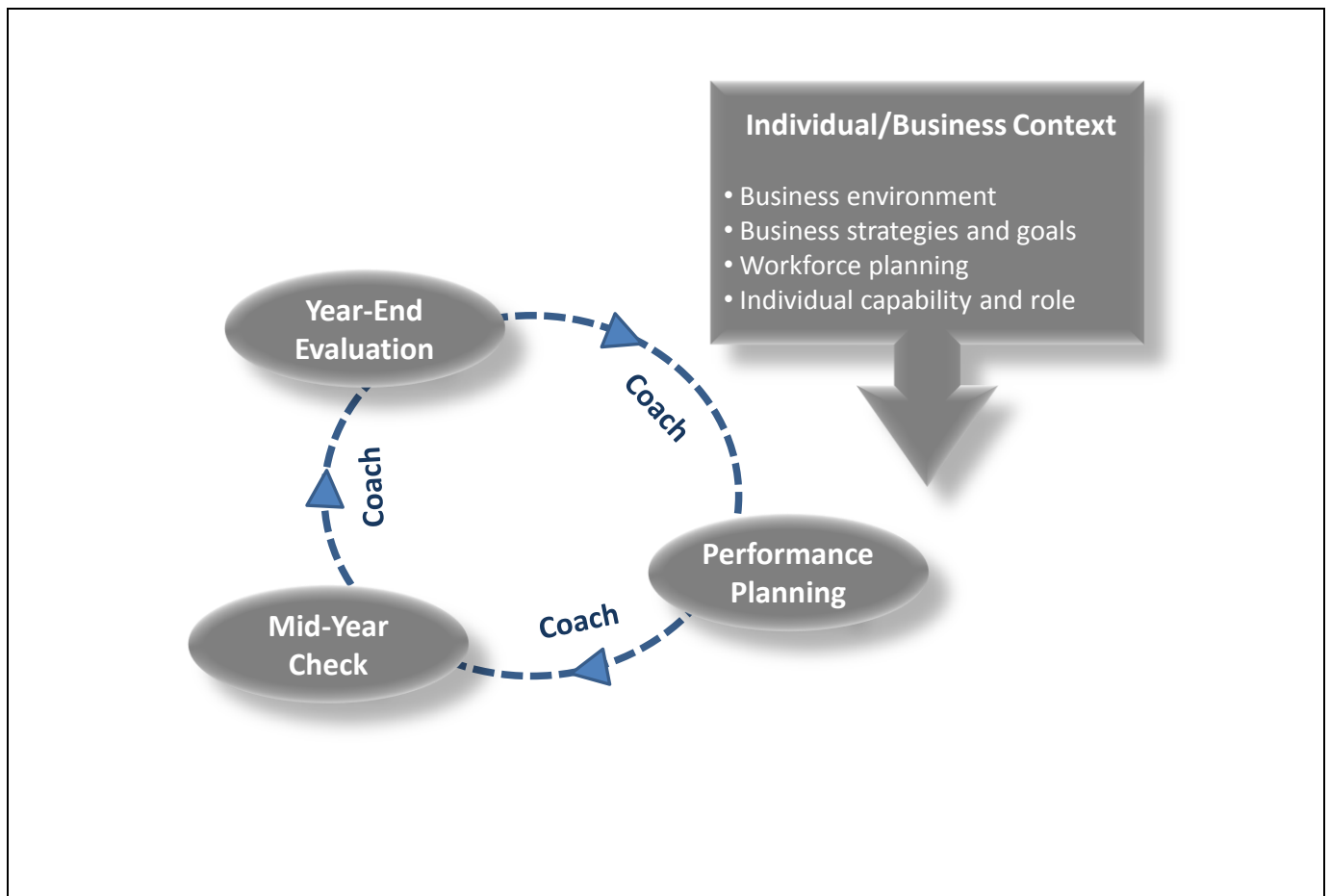## Performance, Promotion, and Succession Planning Strategies

The mechanism for assessing performance, granting promotion, and conducting succession planning is the performance review. As such, it will be described first.

- **Performance Review** – A performance review provides the opportunity for an employee to meet with his/her supervisor to review past performance and to outline future expectations by matching an employee's career aspirations with the organization's needs. The importance of performance appraisal has been documented in the literature [Ang and Slaughter 2000]. Performance reviews are "just part of the organizational fabric," according to one member of the focus group. "No one questions their existence ... every organization conducts them." While this is true, significant differences in terms of how performance reviews are conducted exist (e.g., differences in terms of frequency of occurrence, content, formality, professionalism, responsibilities, expectations, and outcomes). Rather than discussing the myriad differences in reviewing performance, we will share the approach used by one organization within the focus group which had a very thorough and mature process for conducting performance reviews and can perhaps be considered exemplary.

Unlike the performance appraisal approach that focuses on individual performance, the performance assessment is based on the context of the business environment, strategies and goals, workforce planning, and the individual's capability and role (both current and future) within the organization, as depicted in Figure 2. The

purpose for conducting this assessment is to align each individual's role within the context of the organization's overall needs. The exercise enables employees to map their contributions to the attainment of the organization's goals. Such performance appraisal is particularly motivating for IT staff because, rather than focusing on isolated tasks, employees are encouraged to connect to the larger organizational goals. Being able to move from isolated individual tasks towards integrated organizational goals is a significant motivator for employees [Cappelli 2001]. According to the focus group manager, "we like to think that our employees are more than just cogs in the wheel."

The review consists of a formal annual performance planning opportunity, a mid year check and a final, year end evaluation. It is suggested that organizations can increase the frequency of performance appraisals to enhance IT staff management [Agarwal and Ferratt 2002]. The members of the focus groups suggest that this is the formally structured part of the performance review process. The informal part is the ongoing coaching to ensure that the employee is receiving adequate training, mentoring, and encouragement to keep "on plan" toward achieving his/her goals for the year. This process ensures that supervisors meet with employees monthly on an informal basis, quarterly on a more formal basis, and annually for the formal performance evaluation and planning exercise. According to the focus group member, it is "both a measuring and managing program that is followed consistently across the company." It is score card based, assures line of sight up, down and across, and ensures that all individual goals (and related measures) align back to express organizational priorities (e.g., financial, customer/client results, operational efficiency, etc). The performance development plans have built in project reviews where client input is added (e.g., customer satisfaction via scorecards) and technical expertise is measured. The approach is consistent with the appraisal practice that incorporates multiple inputs in the performance appraisal [Agarwal and Ferratt 2002]. Currently, 360 degree feedback occurs at only the senior level, but the company is in the process of rolling it out company wide. These 360 reviews are tied to incentive pay and promotions. Perhaps the greatest benefit of these reviews is their ability to monitor both sides of the equation; that is, the employee being reviewed and the superior doing the reviewing/coaching.

Figure 2. Annual Performance Assessment Cycle

- **Succession planning and promotion** –Although succession and promotion are often the goals of personal career development, the current literature pays little attention to succession planning and promotion. While succession planning and promotion are different activities, they are described together, because some would consider them different sides of the same coin; that is, planning for one's successor is planning your successor's promotion. Succession planning has been a concern for senior management for some time, but much less so for junior positions. It is common to require each major department within IT to develop a succession plan for key leadership and technical positions which are then tracked by HR. At some organizations, succession planning is up to the individual or, as described by one focus group member, "look for your replacement so that you can go on to new opportunities." At other organizations, there is assigned accountability at management levels to identify and groom key individuals and to ensure that opportunities for growth and adequate training are provided.

  The importance of these activities for the continued health of the organization presents a strong argument for sharing responsibility for succession planning and promotion between individuals and the organization so that these critical activities are not left to the discretion of individuals. The goal is uniform and consistent behavior regarding succession planning and promotion across the enterprise. One member noted that centers of excellence typically have well defined procedures for both succession planning and promotion as part of their overall mandate.

  Where promotion and succession planning differ is with respect to role specificity. While succession planning is tied to a specific role and therefore can be constrained by the availability of senior roles (e.g., you can't be promoted until a slot opens up), promotion need not be tied directly to a specific role (e.g., you can be promoted when you have developed to the point where you are operating at a higher grade level). In organizations with relatively stable senior positions, it is important to have a variety of options for sustaining individual growth, recognition, and advancement beyond succession. Thus, "promotion" is seen within a much larger interpretation.

III. CONCLUSIONS

If there is a staffing crisis at hand, it will come as a surprise to the members of the focus group. While they saw changes to the requisite IT skill set, heightened demand for hot skills, and challenges imposed by the impending retirement of a large cadre of talented individuals, they were clearly not in "crisis" mode. Their response is to reassess the efficacy of their current staffing practices and introduce new practices aimed at improving their ability to hire, retain, and develop top candidates. This paper outlines a number of their practices and strategies with the hope that others may benefit.

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Editor's Note: The following reference list contains hyperlinks to World Wide Web pages. Readers who have the ability to access the Web directly from their word processor or are reading the paper on the Web can gain direct access to these linked references. Readers are warned, however, that:
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