

Chapter VIII

IT Management

INTRODUCTION

This chapter presents the main issues of IT management with special emphasis on business, IT strategies integration and on trends that are taking place in this discipline at the beginning of the 21st century.

IT AS A NEW BUSINESS FUNCTION

In the 21st century the IT function becomes the most visible business function absorbing more new employees than other functions. It is a rather new business function, which is a result of the Information Wave's emergence in the last quarter of that century. In the 1990's IT is recognized as a new business function, complementing such classic functions as marketing, finance, accounting, and management. This function has grown from Data Processing (1960's to 1970's) through an MIS department (1980's) to a Chief Information Officer (1990's) with IRM (Information Resource Management) staff.

Figure 8-1 depicts the IT function's role among other business functions. It is a role of a *back-office's*¹, whose mission is to optimize operations of remaining functions that are composed of *back-offices*, *inter* and *intra-offices*.

Figure 8-1: IT Management Function in the Context of Other Business Functions

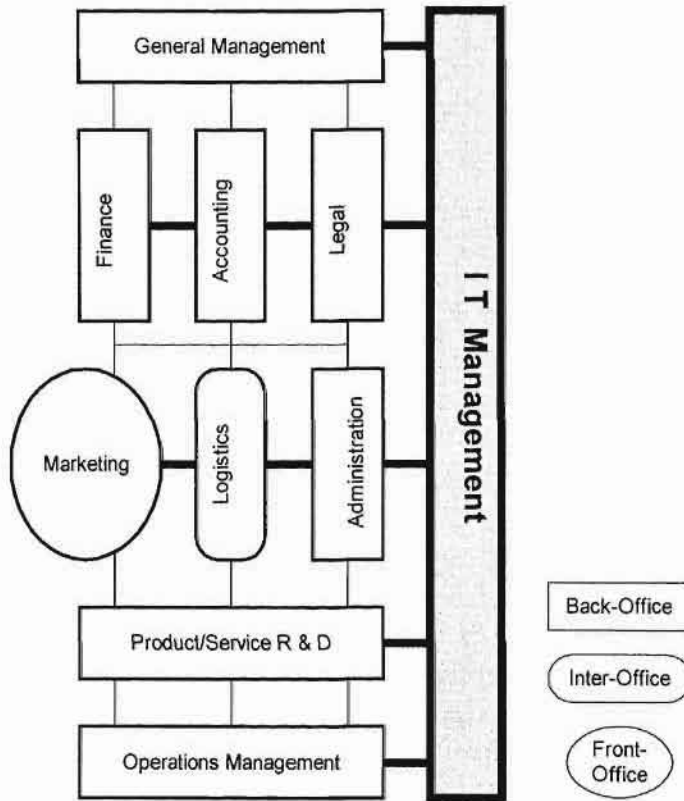
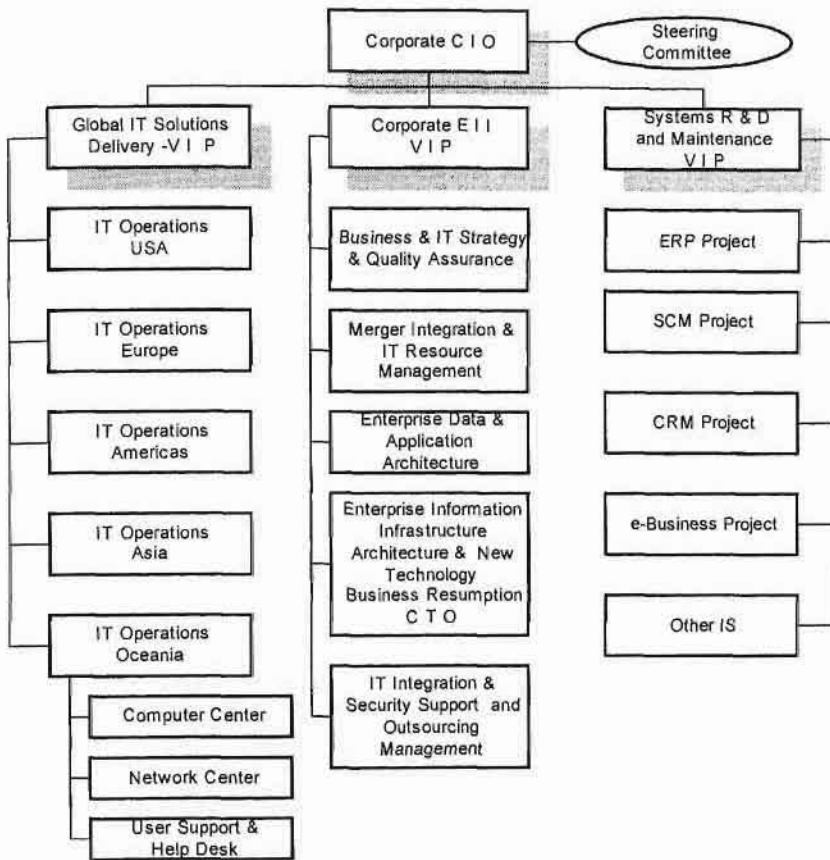


Figure 8-2 illustrates an organization chart of the IT function within a global firm. The chart identifies three major divisions managed by a Chief Information Officer (CIO):

- Global delivery of IT solutions to business units located in different parts of the world through computer and network centers, and user support and help desks;
- Corporate Enterprise Information Infrastructure management, composed of the integration of business and IT strategy, IT solutions quality assurance, mergers integration and IT resources, data and application architecture, EII architecture and new technology and business resumption (by

Figure 8-2: An Organization Chart of the Global Firm's IT Management



CTO-Chief Technology Officer), integration and security support, and outsourcing;

- IT project research, development, and maintenance.

The management of IT varies greatly from sector to sector and from small to large organizations. However, the presented example emphasizes the complexity and comprehensiveness of the IT function within a business organization.

Nowadays an IT office is costly and must prove that is profitable for the whole company. In the following section an approach towards IT productivity and effectiveness is provided.

IT MANAGEMENT KEY INDICATORS

The measurement of IT performance is provided in the framework of an IT Balanced Scorecard of overall industry average in 2000 in Table 8-1. On average, *InformationWeek* 500 companies in 2000 earmarked 4% projected revenue for IT, about the same level as in previous years. Exceeding the trend are the telecommunications and financial-services, which splurged compared with most other sectors, allotting 17% and 14% of revenue, respectively, for IT spending. The demand for information systems is growing about 30% per year at corporations around the world (Rubin Systems, Inc.'s Report).

According to the same source, top performing companies can support as much as \$1,000 in revenue and \$50 to \$100 in income for every IT dollar invested. Average performers have historically been at \$50 in revenue and \$1.15 in income supported per IT dollar. Therefore, CEO's and CFO's want their companies to be at the high end of the band, and are demanding answers to questions about IT spending in business terms they understand.

The level of IT investment on a per-employee basis is significant and growing at many companies. IT spending per employee across all industries increased to an average of \$12,000 in 2000 from \$10,800 in 1998. Companies in the finance sector were the biggest spenders on average, investing about \$39,000 per employee, followed by insurance companies at \$24,000 and utilities at \$19,000 (Rubin Systems, Inc.'s Report).

A MIT professor Erik Brynjolfsson, one of the leading thinkers on the relationship between IT and worker productivity, co-authored with Lorin Hitt of the University of Pennsylvania's Wharton School of Business the study which maintains that productivity goes beyond simply installing a new technology—it's about inventing new ways of working. Accompanied by changing business processes and organization structures, the improvements are dramatic, Brynjolfsson and Hitt state. What is important to realize is that the benefits of technology don't just come from making employees more productive, but the resulting improvements in customer service, product quality and other things that are hard to slap a firm ROI to (Brynjolfsson and Hitt, 1996).

The best of *InformationWeek* 500 companies in 2000 boosted productivity by using the Internet, intranets, and data mining. The latter helps banks gather more, and deeper, information on customers. Net-based computing helps speed information to customers, since fast, accurate customer information is the firm's strongest weapon, particularly in retail.

IT executives at these highly productive companies are making their applications more extroverted:

Table 8-1: IT Balanced Scorecard of Overall Industry Average, 2000

KEY INDICATORS	PERSPECTIVES			
	FINANCIAL	CUSTOMER	INTERNAL BUSINESS	INNOVATION
IT SPENDING IT budget as percentage of projected revenues	4%			
IT SPENDING PER EMPLOYEE	\$12,000			
E-BIZ PROFITS Percentage of companies that show profits from e-business operations	45%			
IT REVENUES Portion of companies selling IT services to other firms	32%			
IT SERVICES OUTLAYS Share of IT budget for IT services and outsourcing	15%			
PERSONNEL COSTS Share of IT budget for salaries and benefits	34%			
CUSTOMER SERVICE Inquiries handled electronically, without intervention		21%		
CUSTOMER CONNECTION Percentage of customers included in supply chain		34%		
SUPPLIERS LINKS Suppliers included in e-SCM			28%	
INTERNAL INTERACTION Portion of workweek IT executives meet with line-of-business and departmental managers			36%	
R&D INVESTMENT Share of IT budget for research and development				5%
NEW TECH SPENDING Share of IT budget for new products and technology				19%
KNOWLEDGE WORKERS Portion of knowledge workers using intelligence tools				29%

Source: 2000 CPM Media, Inc.

- Improving communication with customers and suppliers through SCM and CRM systems;
- Improving customer service and because of that, increasing revenues;
- Integrating applications across enterprise boundaries.

IT executives of introverted companies put more emphasis on:

- Improving top management control of IT;
- Accomplishing traditional IT goals;
- Saving on labor and R&D development costs.

Which companies did better? According to Brynjolfsson and Hitt's research, companies with an extroverted strategy had 3% higher productivity when compared with the introverted companies. Their productivity was growing faster, too (www.informationweek.com). Interestingly, compared with their competitors, extroverted companies were more likely to report that:

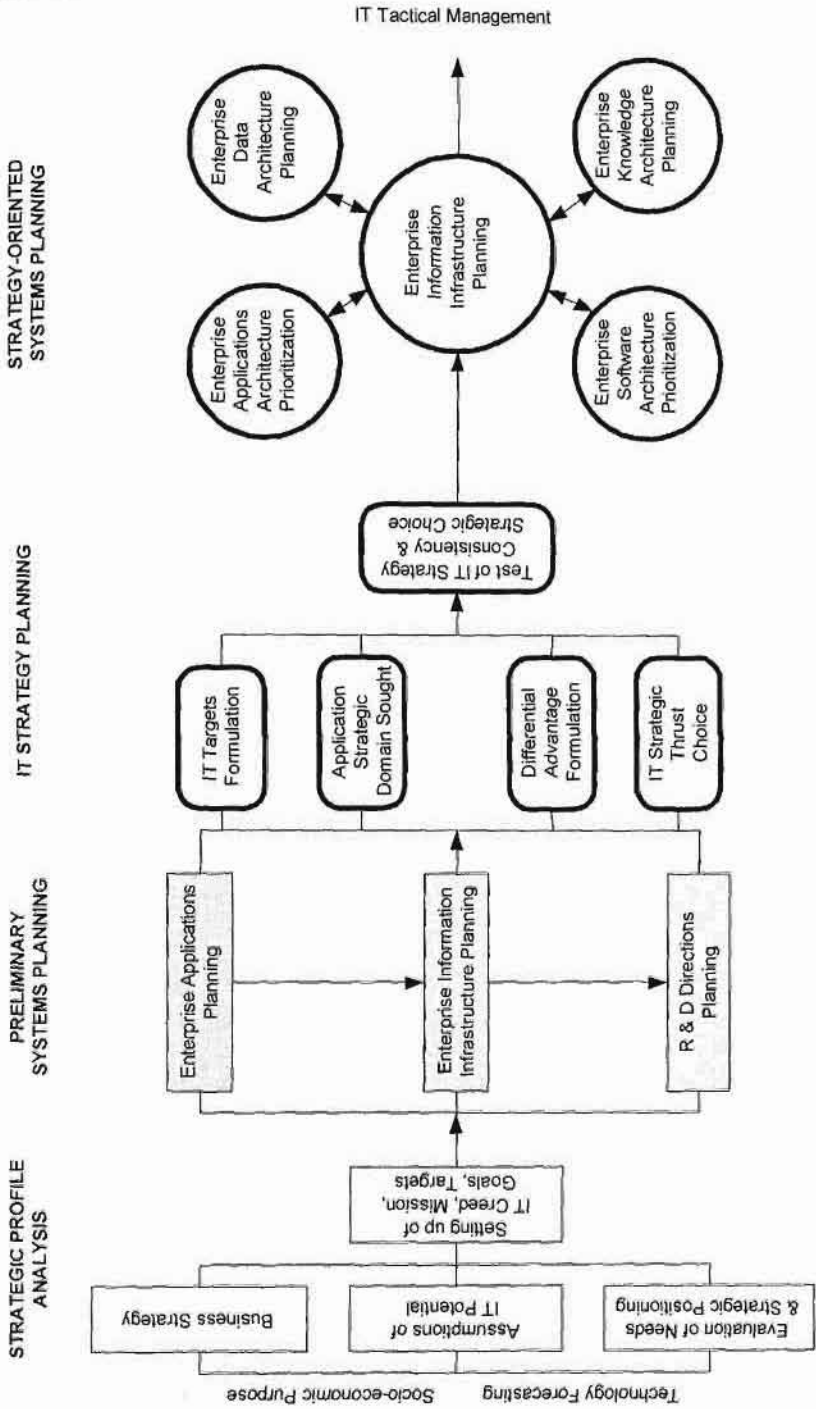
- IT was perceived as being core to their business, which means that CIO's were subordinated to CEO's, not to CFO's or COO's, shortening the distance between the CEO and CIO and creating a two-way dialogue on the interactions of business and technology;
- They were more willing to incur training costs to help their line workers use technology effectively;
- They had a slightly greater tendency to decentralize IT spending.

IT MANAGEMENT LEVELS

Figure 8-3 presents the four-stage model of IT management at the strategic level with the following outcomes:

1. The Strategic Profile Analysis Stage elaborates an IT creed, mission, and goal which will shape the further stages' planning activities;
2. The Preliminary Systems Planning Stage provides a review of available applications, EII technologies, and possible R&D directions;
3. The IT Strategy Planning Stage formulates an IT strategy as a derivative of a business strategy;

Figure 8-3: IT Management at the Strategic Level, Profit and Impact-Oriented



4. The Strategy-oriented Systems Planning Stage re-examines concepts and directions of Preliminary Systems Planning stage. This fourth stage defines all necessary architectures and solutions.

Strategic planning of IT applications in an enterprise is a complex process which requires a systematic effort in defining IT aims (mission, creed, goals, and targets) which support business aims. Based on IT aims one must plan preliminary solutions for enterprise applications, enterprise information infrastructure, and R&D directions. This set of solutions allows the planning of IT strategy composed of IT targets, a strategic application domain, and a concept for how to achieve differential advantage through IT, and choose the IT strategic trust. After testing the IT strategy consistency one can pass to the stage of IT strategy-oriented planning of applications, data, software, knowledge, and EII architectures.

IT management at the tactical level is almost missing in the subject literature and IT professional disputes. It is a matter of fact that IT management at this level is debated as a strategic approach, while the correct strategic one is almost missing in IT management conceptualization.

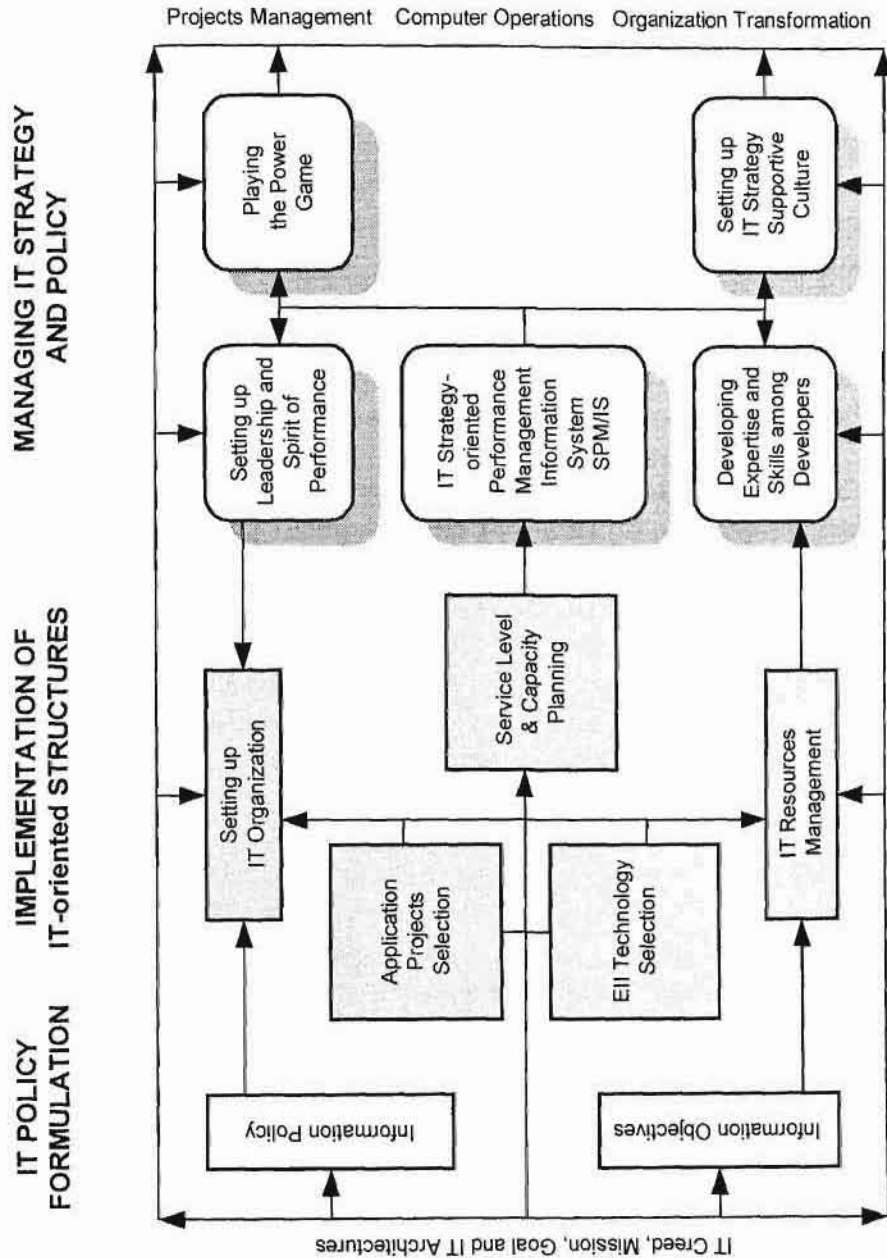
Figure 8-4 illustrates IT management at the tactical level, which is composed of the three-stage model with the following outcomes:

1. The IT Policy Formulation Stage formulates information objectives and policies;
2. The Implementation of IT-oriented Structures Stage leads towards the setting up of an IT organization, selections of applications and EII technologies, and a service level and capacity, according to available IT budget;
3. The Managing IT Strategy and Policy Stage involves the most critical aspects of IT management because it is based upon art rather than science. It concerns itself with leadership and the spirit of performance, playing the organizational power game, developing expertise and skills among developers and most importantly, setting up an IT strategy supportive culture within the IT developers and users.

Let's review some aspects of IT tactical management:

Information Policy is a general guide to operational action within the scope of IT strategy. It is a set of statements that provide direction for IT specialists and users. One can provide the following example of such policies:

Figure 8-4: IT Management at the Tactical Level, Innovations-Oriented



- **IT General Policy** – plan and follow EII architecture for e-enterprise;
- **Line of Applications Policy** – integrate ERP, SCM, and CRM systems through Enterprise Information Portal, and include e-Business systems via a Vortal;
- **Software Policy** – use multi-vendor solutions complying with the open system standards and Web-oriented solutions;
- **Information Tools Delivery Centers** – apply in-house system development;
- **IT Financial Policy** – apply the full chargeout system with the assumption that end-users will make the appropriate trade-offs of computing with other alternatives.

Information Objectives may be planned for the whole IT organization or for major IT projects. Information objectives should be quantitative derivatives of IT goals and strategy. They should guide IT undertakings, set standards for their performance, and control it. For example, if the IT goal is to implement e-enterprise then one of the IT objectives will be to develop the Intranet and Extranet.

Setting up the IT Organization depends on the organization's advancement; for example, one can recognize its following stages:

- *Stage I: IT Initiation* – may lead towards the selection of application champions within users' departments, who will promote IT solutions among peers;
- *Stage II: Application Proliferation* – should create an inter-departmental steering committee, which will promote dissemination of IT applications;
- *Stage III: Enterprise Applications Integration* – requires a strong IT organization, capable of professional supervision which could create an advanced EII;
- *Stage IV: Inter-Enterprise Applications Integration* – leads towards the expansion of the IT organization into a core business function which transforms other functions' ways of doing business.

IT Resources Management is based on the budgeting process. It creates a plan, within certain constraints, covering estimated expenditures involved in pursuing applications development and computer operations. The following items should be included in the IT budget:

- Assets cost (hardware and software, realized cost benefits, previous year's profit);
- Liabilities cost (depreciation reserves, unrealized cost benefits, previous year's net loss);
- Expenses (equipment, personnel, overhead);
- Revenues (outside service, annual realized cost-benefits, applications-attributed revenue increases in business);
- Other.

Investigations deciding whether or not to initiate IT programs should be conducted through feasibility studies. If the cost-benefits analysis cannot be applied, then the impact analysis is recommended.

Service Level and Capacity Planning—involves user service marketing planning, user service level planning, system recovery planning, information security planning, system audit planning, and other planning needs. Decisions that determine the value of service planning focus upon the utilization of IT resources, costs and the workload associated with the service function.

Setting Leadership, and Spirit of Performance—once the strategy-driven EII architecture has been defined, one must bring together capital, people, technology, suppliers, facilities, and communications. The successful IT organization needs dynamic leadership, which guides IT professionals and business users towards the accomplishment of the IT strategy. Greater managerial attention needs to be focused on reward systems and job satisfaction of IT professionals, at least when a firm wishes to maximize organizational commitment and minimize turnover. A CIO should be visible, imaginative and able to foster an IT strategy supportive culture that keeps IT professionals responsive and innovative. One of the techniques used by the best CIO's is to emphasize results and the spirit of high performance ("morale").

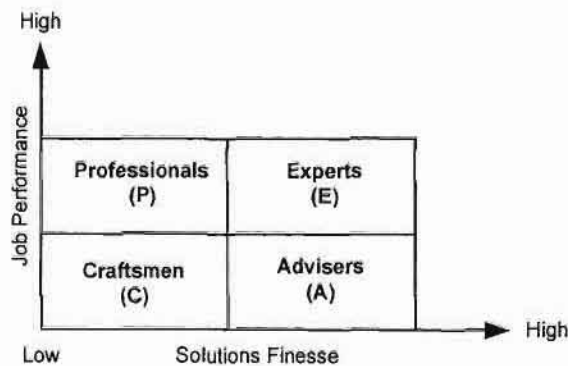
Development of Skills and Expertise among Developers and Users—often a new IT strategy requires new expertise and new skills. In the past,

when computer skills were based on “COBOL” skills, it was easy to replace an IT professional. Nowadays, the complexity of developing an e-enterprise is so high that IT professionals are a real human resource (capital) to a company. It takes years to develop an IT professional who knows more about a given business than just a programming language. Also, an employer must maintain a reasonable structure of IT personnel in order to attain the IT strategy. A concept of IT Personnel Portfolio (IT/PP) may help in establishing an accurate personnel hiring policy. Figure 8-5 illustrates a concept of the Portfolio, which is based on two criteria: job performance and solutions finesse.

The IT/PP recognizes the following types of IT personnel:

- (C) – Craftsmen
know the job’s routine but, due to the lack of education or motivation, have low job performance and potential. Firms should minimize their employment in jobs that require problem solving skills; however, they can be cost effective at information, data and maintenance centers.
- (P) – Professionals
have very good skills in a specific domain and are highly motivated. Because of their highly specialized knowledge, their multi-job potential is rather low. They are the best type of employees to carry out mainstream tasks at planning, development, maintenance, data, and network centers. However, they are not good enough to provide strong leadership in company pilot projects.

Figure 8-5: IT Personnel Portfolio



- (E) – Experts
are well educated, highly motivated, and technically adept. They possess the highest job performance capabilities and have the highest job potential. They are greatly needed at the planning and development centers. They are expensive, but it is better to have one of them than two craftsmen or professionals. Without experts, a firm will pay dearly for expensive external consultants.
- (A) – Advisors
are, most likely, former experts either in IT or in organizational dynamics; hence, they still can give useful advice (high job potential), but their job performance is limited. They function as developers of IT strategy and culture. To this end, they are important members of the IT organization. At corporations like IBM and Apple, their job-title is “fellow.” They mostly are needed in planning centers.

For each center, one can approximate a satisfactory mix for the IT Personnel Portfolio:

- Planning Center – mostly advisors and experts should be employed;
- Development Center – needs some leadership by experts and guidance by advisors but has a majority of employed professionals;
- Maintenance Center – needs both professionals and craftsmen;
- Information Center – can accommodate professionals and craftsmen;
- Data Center – employs mostly professionals and craftsmen;
- Network Center – requires professionals.

IT/PP should be seen as the process of anticipating and making provisions for the movement of IT professionals within and out of the IT organization.

Development Of a Strategy Supportive Culture Among IT Developers And Users – is required for a new IT strategy which brings about new technological or even civilizational solutions. Culture is a value-driven system of people’s behavior. Values define cultural man’s need for rationality, meaning, emotional experience, richness of imagination, and depth of faith.

Organizational culture creates a communication climate which influences workers to implement aims, such as an IT strategy.

A CIO who develops the healthy culture may include the following plan:

- Developing IT strategy with a strong feedback from the IT personnel;
- Providing a set of awards and recognition for high performance;
- Disseminating success stories;
- Creating meaningful symbols, slogans, jargon, and metaphors;
- Promoting talented professionals to champions;
- Assuring the authority of experts and advisors;
- Securing the development of know-how among workers;
- Other.

A derivative of such an organizational culture should be a set of broad, silently understood rules (policies) which tell an employee how to behave under a variety of circumstances.

Playing The Power Game—must be predicted in the implementation of an IT strategy, which certainly changes structures of somebody's power and/or skills. It should aim at softening resistance to new applications and methods of doing business. One can predict the power game at the following levels:

- Level of workers—focus on educating users about how to develop new knowledge and skills to successfully adapt to new IT tools; however, not all users will be willing to accept the challenge of new knowledge and skills, even with a carefully planned training;
- Level of the formal organization—some departments will have to reconfigure their ways of operations and they won't be willing to do so, finding rational and irrational obstacles;
- Level of the informal organization—new IT solutions may threaten the established groups (including cliques) by restructuring their influence.

Good tips on successful political tactics may be recognized as follows (Quinn, 1980):

1. Let weakly supported ideas die through inaction and minimize your political exposure to them;
2. Propose additional tests of solutions that are good but not supported by executives; in other words, do not oppose executives openly;
3. Let more negative decisions come from a group consensus rather than from you;
4. Do a lot of chatting and informal debates to stay abreast of how things are progressing and know when to step in to intervene;
5. Lead an IT strategy but do not dictate it;
6. Reward high performance generously and visibly;
7. Assign pilot tasks to “champions” whose future is linked to their success.

IT solutions can be positive or negative factors in social transformations. Political action should create the social background for controllable applications. Then with proper feedback, computing can create a positive influence for the implementation of organizational and social transformations.

Because IT applications in enterprises do not follow exactly a theoretical framework of strategic-tactical systems planning, one can recognize in practice rather an eclectic set of solutions. Examples of IT management trends which take place in business practice, sometimes in the same enterprise, are presented in the following section.

IT MANAGEMENT TRENDS

Legacy Systems Management (LSM) – still takes place in many companies that do not have the right IT expertise available or begun to implement IT applications long ago and they still work quite effectively. LSM is either in-house or outsourced and its mission is very often to support the core business.

IT Integration Management (ITIM) – is steadily evolving and takes place at different levels of integration, as described in Chapter 7. The first level of integration applies middleware software for different tasks. This leads to more clear applications' integration within one enterprise (EAI). The holistic view of EAI has triggered the appetite for the cross-application integration via workflow systems. In the meantime, a large number of legacy systems have waited for their improvements through their integration via GUI. It is evident that the results of IT integration would be better if the whole business process was re-engineered, and in consequence it would be integrated across business functions. Hence, IT integration is just one step towards B2B integration of the inter-enterprise business process, which eventually may even lead towards the partners' integration within an e-marketplace. However, the ultimate integration is geared to real-time access for field workers via mobile devices. Each of these integration solutions requires very special attention and demands unconventional, innovative management.

e-Transformation Management – embraces the phenomenon of the Internet and its e-business as well as e-enterprise solutions. It requires the radical switch from EAI & ERP architectures to Web technology, which transform brick & mortar firms into brick & click or click & click as well as to click & brick environments. Many IT organizations struggle for the right IT strategy and talent.

IT Outsourcing Management – is caused by cost saving, mergers' problems and management's desire to focus on mainline business issues, and IT low expertise. The most common fully outsourced services are: disaster recovery, application development, user training, software maintenance, and help desk assistance. The other IT services seldom outsourced are data networking and IT planning. If an outsourced service is relatively simple, then usually it meets users' expectations. IT outsourcing takes place when top management perceives IT as a cost center, not a strategic core solution. Outsourcing IT activities abroad is becoming popular as long as the international subcontractors won't complicate (sometimes on purpose) solutions that will be difficult to manage. One can also predict that IT insourcing after outsourcing may take place too, particularly when it will be clear for many businesses that they cannot sustain their competitive advantage through IT, since the outsourcing contractor may pass their competitive solutions to other companies.

ASP – Application Service Provider's Management – a contractual service to their customer for deploying, hosting, managing, and providing

access to an application from a centrally managed facility. Among applications wholly delivered by a provider one can recognize the following:

- Enterprise ASP: ERP, SCM, CRM, e-business;
- Collaborative ASP: e-mail, groupware, conferencing;
- Personal ASP: end-user computing and consumer applications.

Among ASP's benefits one can mention rapid deployment and access to state of the art solutions. ASP's essentially host and manage software for companies and provide technical support for that software. Companies may save money with an ASP by avoiding the purchase of copies of software and periodic upgrades for every computer in the office and by reducing the need to train technical staff to maintain the systems. ASP's reduce the total cost of ownership for applications by 30% to 70% (Mark Hall, www.computerworld.com).

Among ASP's risks it is possible to perceive flawed execution, ASP's low knowledge about organization issues of a given company, its personnel turnover and even the disappearance of a service provider. According to the Gartner Group's report, 65% of ASP's (out of 480) bankrupted in 2000.

Perhaps the simple applications service providers will win the market's acceptance, and the complex ones may cause many problems on both sides of the service contract. The users cannot be misled that ASP's will solve all their IT problems; for on the contrary, they may even create more problems for them.

After reviewing an IT office's role in an enterprise organization and in increasing its productivity and effectiveness as well as after looking at IT management trends, let's analyze the central issue of how to integrate business and IT strategies, in the following section.

BUSINESS AND IT STRATEGIES INTEGRATION

Business Aims

If a company does not have well-defined business goals and strategy, then the formulation of IT aims may be difficult. Figure 8-6 illustrates a set of business aims for a telecommunication company².