Strategic Information Management: Conceptual Frameworks for the Public Sector

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Information technology provides new tools for restructuring government's business.

These are not easy times for government. The federal budget deficit has been a serious economic problem and political fact of life for many years. Until recently, however, states and localities have escaped chronic deficits. Most state deficits resulted from one-time shifts in spending or revenue that could be addressed within the confines of a single budget year. By the early 1990s, however, it had become clear that something else was happening.

In 1991, New York posted the nation's largest-ever state budget deficit, $6 billion—its fourth consecutive multibillion-dollar shortfall. By 1992 California set a new record for state budget deficits—$11 billion. According to the Center for the Study of the States, most states now have "structural deficits" (Gold, 1991). They are not facing occasional mismatches between spending and revenue. Instead, their tax systems now persistently fail to produce enough revenue to maintain current services.

To complicate matters, public expectations for the level and quality of government services were formed in better economic times. Those expectations have grown while satisfaction with their fulfillment has steadily declined. In the past few years, it has become evident that cutting fat, eliminating waste, and preventing abuse—the management watchwords of the 1980s—are not nearly enough. Government needs to rethink its methods and restructure its approach to public services (Osborne and Gaebler, 1992). In the past, major operational reforms have rested on the infusion of new dollars and new people. Today, these solutions are no longer available. States need to learn to make more effective use of a fixed or shrinking pool of public dollars. Improvements in operations and services must occur within these resource constraints.

To meet the rising tide of dissatisfaction and ever-increasing costs, government managers of the 1990s need more than admonishment to change

their thinking. They need new tools for designing and managing programs. Strategic use of information technology may offer one of the few promising avenues for lasting improvement. Although technology has been a means for past innovations, it has typically been used to "computerize," to automate existing processes without significantly improving them. To adopt a popular metaphor, we have paved over the old cowpaths without asking where the best pastures are or whether we ought to be farmers.

However, the information technologies of the 1990s, with their emphasis on communications and interoperability, can support quite different initiatives. They allow managers to capitalize on the power of information by emphasizing relationships between organizations and their operating environments as well as the information exchanges among various people and organizations.

There are many recent examples of strategic innovations that use information technology to support redefined services. For example, Pennsylvania's ATM-like food stamp program dispenses with traditional service delivery processes, which are time-consuming, expensive, and error prone. These traditional processes included issuing a monthly authorization to purchase food stamps to each eligible household. Program participants would then take the authorization to a bank where they would purchase food coupons, which were then given to food merchants in exchange for groceries. The merchants exchanged the coupons for cash. All these separate paper-bound transactions were then reconciled by merchant, bank, and agency each month. Today, Pennsylvania issues magnetic strip identification cards to its food stamp recipients; merchants use these cards at the point of sale to check on-line for eligibility status and benefit amount. No paper changes hands, and all issuance, use, and accounting information is kept in an on-line electronic master file.

Other examples of strategic use of information systems include the Bay Area's use of geographic information systems to manage the disastrous effects of the October 1989 earthquake, and New York's automated fingerprint system, which speeds criminal investigations and court proceedings everywhere in the state.

These systems address an age-old problem for government—the need to integrate service delivery across a fractured pattern of vertically organized individual programs. In U.S. government, individual issues are addressed by individually authorized and funded programs, which in turn are administered by specific agencies at the federal, state, and local levels. The ties among these organizations are strongly hierarchical. As a result, the need to integrate services across organizational or programmatic boundaries is strong, but the ability to actually accomplish this goal is weak.

Strategic information management in the public sector can be a more powerful tool for service integration. It involves a two-step process: redefining government services in terms of critical stakeholder relationships and then choosing information technologies that capitalize on and reinforce

them. This article offers a guide to help public managers envision service innovations and choose appropriate technologies to support them. Our emphasis here is on the conceptual "front end" of this strategic planning process. We will propose two specific frameworks that can help managers think about information systems in strategic terms. These frameworks are intended to supplement rather than replace more tactically oriented information planning methodologies. They precede subsequent processes such as analyzing decision streams within the organization, data modeling and information flow, forms design, hardware and software specifications, and the other elements of a complete system.

We begin our discussion with a hypothetical human services system undergirded by strategic information technology applications. We then look in more depth at the notion of a strategic orientation for government services and review and adapt the strategic tools of business planning to the public environment. We conclude by applying these tools to another specific human services example.

A Strategic Human Services System

Imagine that each human services client is the holder of an electronic smart card that carries important identification and eligibility information. Imagine that all service providers are equipped with electronic terminals that read and record data carried on the client cards. Picture a secure master data base of individualized eligibility and program data and a provider data base containing information about available services. In this perfect world, an electronic network links public agencies, such as social services offices, employment and training centers, and even schools. It ties in nonprofit service organizations such as day-care centers and senior service sites and, through the card, the clients themselves. Imagine the changes now possible in service delivery.

Social service workers could scan the provider data base for a quick overview of what day-care or job-training slots are available within the region. Information from labor department job banks could be made available to welfare case managers. Client cards run through providers' terminals could record and monitor individual progress and attendance at training and other services. By linking these monitoring systems with reimbursement mechanisms, providers would have an incentive to keep their service records up to date and would receive more prompt and accurate payment for services rendered.

By aggregating the electronic records of individual service plans, social service program managers could conduct communitywide needs assessments, comparing the aggregate need profile of a community to the inventory of services in the provider data bank. Backlogs and waiting lists would indicate bottlenecks in the service system, whereas unfilled service slots might be an early warning of overcapacity and inefficiencies.

Perhaps the most important benefit of such a system would be the ability to tailor programs to the needs of individuals. By linking services available from the schools, the welfare and labor departments, and private and nonprofit providers, case workers could construct highly differentiated packages of services to meet individual client needs.

No one knows if highly functional systems like this one could actually be implemented at reasonable cost or whether they would really work. Clearly, the decades-old problem of service integration cannot be solved by the wave of a technological wand. However, all the ideas sketched above are based on technologies available today, using information tools that have already been implemented in real organizations (such as national and international banking and credit card systems) with high demands for confidentiality, accuracy, accountability, and control.

Our point is not to claim that systems like these are inevitable or even really feasible in the near term. Rather, our goal is to show how a strategic approach to information resources can help public agencies reach beyond their traditional boundaries, enhance direct client contact, and envision new service integration possibilities. Clearly, envisioning new possibilities for information-intensive service integration will not make them so. A host of additional planning and implementation obstacles will have to be overcome before such strategically oriented systems can be implemented; all of the detailed planning and operational concerns that surround any information system development project will continue to require close attention. These critical questions, however, are not the focus of this paper. Instead, we are exploring conceptual planning tools that help managers push their thinking beyond today's tactical concerns to envision the information-intensive strategies of the future.

Toward a Strategic Orientation in Public Information Management

By any measure American government is huge and complex. Over the years, demands for government action have produced numerous programs, each directed toward a specific objective. Each program tends to be administered by a single agency or by a vertically connected group of federal, state, and local organizations sharing a common mission. However, the increasingly complex problems these programs seek to solve do not fall neatly within traditional organizational or administrative boundaries. Consider, for example, the range of goals we attach to the idea of "education": given the drive for global competitiveness, education has become an economic development issue as well as a human development issue; schools are seen as the hub of community services such as day care as well as the site of traditional instruction; and awareness, prevention, and treatment of critical health and social ills such as drug abuse, teen pregnancies, and AIDS often find their first line of defense in the classroom.

No education department is adequately equipped to handle these multiple, competing objectives. But within the immediate environment are other organizations dealing with the same students and their families, and armed with expertise, constituency support, organizational resources, and information. With effective horizontal linkages, departments of social services, health, and economic development, among others, could make important contributions to the ever-enlarging public mission called "education."

These organizations do not have to grow larger in order to better serve their constituencies. They do not need to absorb an ever-increasing share of scarce public resources. Rather, they need to work differently and together. We contend here that understanding the range of relationships at work in a given policy area is the first step toward improvement. Once these relationships are well defined, inter- and intraorganizational information systems can provide the linkages necessary for effective action. These, in turn, can help bring about the synergies needed to address today's complex public policy problems. Government managers can identify new opportunities to better serve the public if they can first recognize the strategic value of information.

What Is Strategic?

The word *strategy* comes from Greek roots meaning to lead an army. Today, strategy is a term of general management applied to any area in which a broad plan is needed to achieve a grand objective. It still often conveys the idea of critical goals achieved under battle conditions. For today's business managers the marketplace is the battlefield. But for public managers, the battle takes place in the schoolyard, the ghetto, or the state house; and the rules of engagement can be significantly different.

Much influential writing about strategic information management has come out of business schools and corporate experience. Because it is so concerned with profit and competitive advantage, it proves directly instructive mostly in those areas where government activity is also directed toward income generation and shaped decisively by competition (such as state universities competing for students, grants, and faculty or central service bureaus offering products or services that are also available on the open market).

Of course, one could argue that all public agencies compete with one another for their share of a limited total budget. However, a moment's reflection reveals that this sort of competition will not have the same beneficial effect of streamlining and improving organizational operations as it does in the private sector. The obvious explanation is that most of what government does is not defined by market forces. Political rationality, not economic self-interest, underlies most decisions. In the private economy, similar private sector organizations compete with one another for the same customers. In government, different kinds of agencies compete for a fixed pool of dollars to

finance different kinds of services for different sets of customers. Public agencies often offer monopoly services; government's customers have only a take-it-or-leave-it kind of choice. No one else issues driver's licenses or food stamps. In such a monopoly, interagency competition based on private sector ground rules can lead to inefficient turf-protecting behavior rather than to better, more cost-effective services. The notion of "strategic competition" must be transformed, refined, and reinvented to be relevant for most operations in the public sector.

This is not to say strategic management has no place in the public sector. On the contrary, both public and private organizations enthusiastically accept the concept of strategic management and both work hard to put it into practice (Bryson, 1988; Bryson and Roering, 1988; Eadie, 1983; Kaufman and Jacobs, 1987; Montanari and Bracker, 1986; Nutt and Backoff, 1987; Ringe and Perry, 1985; Skok, 1989; Streis and Poister, 1990; Summer, 1980; Todd and Hopeman, 1988; Wechsler and Backoff, 1987).

A strategic orientation, whether in government or business, has five distinguishing features:

It is concerned with mission-critical activities.
Its time dimension is long range.
It looks outward, beyond organizational boundaries, often with a special emphasis on customers and other important stakeholders.
It seeks maximum return on investment rather than minimum economic cost.
It places a high value on technological, human, and information resources.

The problem with the term *strategy* is that it is an evolving one. Although the original definition dates back to the ancient Greeks, a review of the modern literature illustrates how the definition has changed to reflect a growing understanding of the concept.

Chandler (1962) defined strategy as "the determination of the basic long term goals of an enterprise and the adoption of courses of actions and the allocation of resources necessary to carry out these goals." Over time other scholars have added to this basic definition. Schendel and Hatten (1972) emphasized the relationship between strategy and the environment. Steiner (1977) distinguished between internal and external forces and their role in shaping strategy. Andrews (1980) identified a specific strategy: corporate strategy. Later Porter (1985) distinguished between corporate strategy and competitive strategy.

Further complicating the problem is the fact that many strategic activities such as strategic planning (Weihrich, 1982), strategic management (Hax and Majluf, 1984), and strategy formulation (Andrews, 1980), are used interchangeably.

Strategy can also be viewed as three interrelated processes: strategic planning, strategic thinking, and opportunistic decision making (Ward, Griffiths,

and Whitmore, 1990). In this definition, strategic planning refers to a comprehensive analysis to develop a plan of action for the company. Strategic thinking requires entrepreneurial insights into ways the firm could develop in the future. Finally, opportunistic decision making means anticipating problems as well as opportunities that will confront the firm.

In this paper, we focus primarily on strategic thinking. We work with frameworks such as Porter's (1980) five forces and Wiseman's (1985) strategic options generator since they are intended to help managers identify ways in which information technology (IT) can be employed strategically to help the firm achieve mission-critical goals. They are not to be confused with other frameworks that aid in strategic IT planning such as business systems planning or information engineering.

Strategic Information Systems

Examples abound to show how new information technologies can change the way public employees provide services: park rangers on remote wilderness islands can log into computerized networks that afford city dwellers the opportunity to reserve sites in state campgrounds. Sophisticated communication networks and scheduling algorithms help avoid congestion, prevent the overuse of wild areas, and provide a welcome replacement for driving from campsite to campsite looking for a vacancy.

Police officers on patrol have on-line access to comprehensive data bases of arrest, conviction, incarceration, and parole information for an entire state's population, as well as access to national criminal history files. Prosecutors, courts, and probation and parole officers use the same information to increase the efficiency and effectiveness of the criminal justice system. Although their service areas are located in specific communities, their information resources are statewide, national, and global.

Social workers interviewing clients use expert systems to help determine eligibility for benefits. This computerized client screening process automatically opens an electronic file to support benefit payments. The system automatically checks for duplicate applications and possible abuses. Instead of waiting days or weeks for these checks to be completed, an applicant can receive an eligibility decision almost immediately.

These three examples are different from most traditional governmental applications of information technology because they enhance or transform the nature of a service provided to the public. They are intimately involved in direct citizen contact. By contrast, most past applications have been oriented toward improving the flow of information inside an organization, automating routine operations such as payroll or benefit issuance, or providing management with summaries of internal operations.

Faced with opportunities and problems similar to those in the public sector, private sector IT and business managers have built similarly innovative

strategic information systems. United Airlines, for instance, made better use of traditional services to improve internal operations through teleconferencing. American Hospital Supply applied traditional tools to an external environment by installing its order entry system in its customers' sites. New technology in the form of an expert system significantly changed the way Digital Equipment Corporation responded internally to orders for its VAX computer configurations. It improved service, reduced callbacks, and increased customer satisfaction. Finally, the Merrill Lynch Cash Management System gave Merrill Lynch the largest market share in the highly competitive financial services industry. By forming an alliance with Banc One, the cash management account brought together two different businesses to provide the banking and investment services that securities firms alone could not offer. This revolutionary idea dramatically altered the structure of the securities and financial services industries.

Figure 1 presents a simple way to think about this shift by classifying information systems applications according to two dimensions: internal versus external focus and traditional versus innovative organizations and services (Benjamin, Rockart, Scott-Morton, and Wyman, 1984). The model raises two basic questions for managers. The first is whether information technology can be used to make significant changes in the way the organization conducts its business. The second is whether the organization should concentrate on using information technology to improve its approach to the external environment or center its efforts on internal improvements.

As shown in Figure 1, the traditional domain of EDP has been in the upper-left quadrant—supporting traditional services and organizational forms

Figure 1. Taxonomy of Information Systems

	Focus on Internal Operations	**Focus on External Operations**
Traditional Services and Organization	TRADITIONAL DOMAIN OF EDP	Parks Reservation System Social Services Eligibility System American Hospital Supply United Airlines Teleconferences
Innovative Services and Organization	Integrated Criminal Justice System Digital Expert System	Merrill Lynch Cash Management System STRATEGIC SYSTEMS

with a focus on internal operations such as transaction processing and management information reports. The parks reservation system, the social service eligibility support system, and the American Hospital Supply and United Airlines systems all represent a new focus because, in these systems, organizations are reaching out to customers and clients with enhanced services. In the integrated criminal justice system, common data bases and communications networks have restructured the relationships among separate organizations by creating horizontal linkages between police, courts, corrections, probation, and parole agencies. In some instances, new agencies are coming into existence just to manage and facilitate this horizontal exchange of information. Digital's internal expert system for configuring VAX computers is a private sector example of how innovative technology can enhance internal organizational functioning.

Both public and private sectors now find themselves moving from internally focused information systems designed to support traditional products and services to systems oriented toward citizens, customers, and clients that facilitate significant changes in organizational structure or services.

We believe the most exciting future directions will occur in the lower-right quadrant where strategically oriented information systems will help to create new organizational forms and services that are externally focused on public contact. The Merrill Lynch CMS is a leading example of how strategic systems can restructure business operations. It uses new technologies to forge alliances and create new opportunities for growth.

Much the same as the retail marketing and banking sectors are being transformed by the use of information as a strategic weapon, we believe that government's business can be redefined and that public managers will need new concepts and frameworks for thinking about the possibilities inherent in these transformations.

It seems highly likely that within the next decade the rush of technological advance will significantly transform the kind and amount of raw computing power available to government information workers. We should expect by the turn of the century that every knowledge worker will have the equivalent of a mainframe computer sitting on his or her desk. Every worker will be connected on a node of a sophisticated communications network that will carry integrated voice, text, data, and images using global standards such as the Integrated Services Digital Network (ISDN) (Brancheau and Naumann, 1987). The adoption of such standards will allow multiple networks to be cross-connected, making government data bases throughout the jurisdiction accessible through sophisticated indexes and search capabilities.

Although these hardware and software advances present impressive potential, the real question is, What will be done with these technological

possibilities? Will government continue to deliver traditional services through historically defined organizational forms or will it seize the opportunity to redefine how it does business? Will we see marginal adjustments to the tactical side of government operations or will we witness bold new strategies for reaching citizens in ways that are not now possible?

The Strategic Gap Between Mission and Technology

Parsons (1983) recognized that many organizations have been unable to assimilate the benefits of information technology. He termed this difficulty the *strategic gap*. The gap is the result of different histories and perspectives that have evolved over time in different parts of an organization. In essence, IT people, when formulating technology strategy, speak of processing speed, storage capacity, and response times. Those who articulate the applications (that is, business) strategy think in terms of competitors, industry trends, and the like. Aligning IT strategy with business strategy requires that each level become sensitive to the different needs and orientations of the other and that IT managers work directly with the strategic business planners in order to help them gain an awareness of technology and its potential benefits. Armed with a better understanding of IT, strategic planners will then be better able to reformulate their initial strategies and identify opportunities to better address the various competitive forces that they confront in the market.

Although many differences exist between the public and private sectors, we believe that this misalignment of applications and technology strategies is endemic to the public, private, and not-for-profit sectors. In all kinds of organizations, applications strategies tend to be developed in separate operating bureaus, oriented toward constituent, customer, and client demands. Closing the gap between these applications strategies and traditional activity-based, supply-oriented, and tool-focused technology strategies is a ubiquitous problem across all sectors.

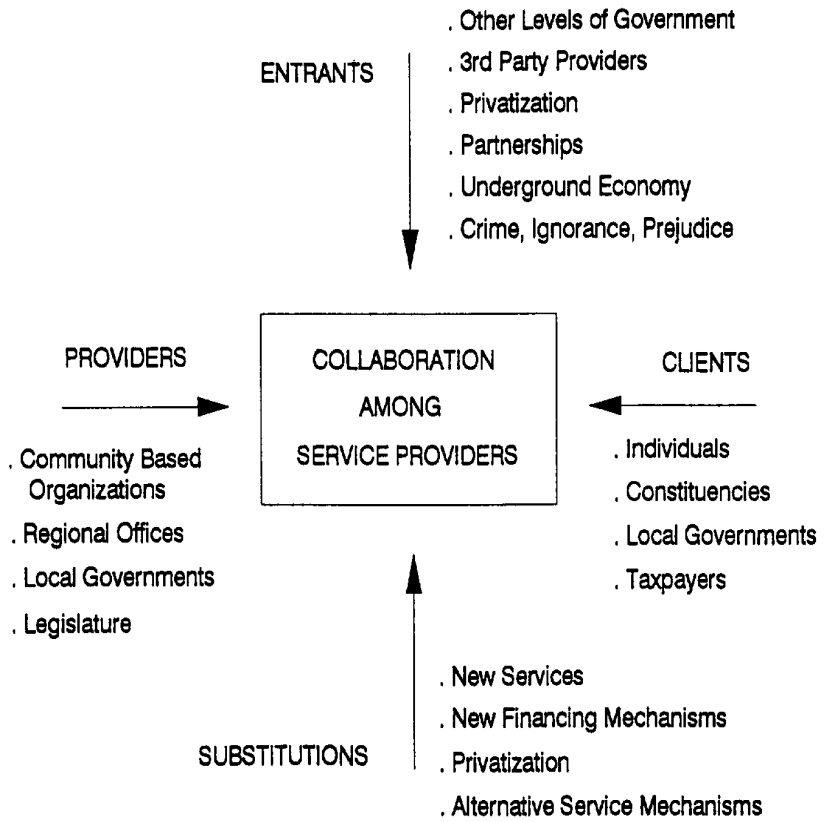
Strategic Analysis

Several frameworks have been proposed to help make managers aware of the opportunities for the use of IT in their businesses. These are often based on Michael Porter's work in industry analysis (1980). Porter's model defines the key components of strategic planning for private sector firms as the interactions of buyers, sellers, new firms entering a market, and possible substitute products and services within the market. All these external forces combine to produce the key concept of rivalry, or competition, among firms struggling for market share or customer loyalty. Porter noted that a firm is in business not only with its competitors but also with customers, suppliers, and potential new entrants. Although Porter's notions of strategy and

competition are appropriate for a private sector audience, they need to be modified substantially to be applicable in the public sector. As discussed above, interagency competition for a limited pool of public funds is generally a dysfunctional turf-protecting activity that leads away from the efficiencies and customer orientation spawned by competition in the private sector.

Figure 2 provides a framework for thinking about Porter's industry analysis concept in explicitly public sector terms. Unlike Porter's industry model, the key focus of attention in public sector strategy is not competition or rivalry among similar units. Rather, the key strategic focus of the public sector is on the collaboration necessary to provide services and maintain the attention and support of the agency's various clients and constituencies. In the public sector, the analogue to Porter's customers or buyers is clients, those members of the public that our agencies are bound to serve. Rather than sellers or suppliers, public sector strategic analysts must think in terms of providers—the community-based organizations, other levels of government, and regional and local agencies that are the means whereby we create and deliver services. Whereas in business new entrants usually mean emerging

Figure 2. Public Sector Model for Collaborative Strategic Analysis



sources of competition, the public sector strategic analysis is more likely to view new entrants as potential collaborators: third-party providers, or other governmental units that may enter to assist with the creation or delivery of services. In a market framework, substitutions refer to new products or services that might be developed or introduced by a competing firm. In public sector strategy, substitutions would refer to new financing mechanisms, modes of service delivery (such as privatization), new services that might be developed or nurtured by public agencies, and even new ideas that reduce the demand for services.

When engaging in strategic planning, public managers need to scan the full array of external forces sketched in Figure 2 and search for policy innovations that capture new energy or resources in their environment, reach out toward new goals or missions, or find new ways of relating to clients and constituencies. Often information management techniques can be key instruments in assisting an agency in aligning its strategic posture vis-à-vis its external environment.

Identifying Strategic Options

A second framework that has been employed to help identify strategic business opportunities is the *strategic options generator* (Wiseman, 1985). The strategic options generator recognizes that in order to gain a business advantage, a number of strategic thrusts should be explored with respect to various stakeholders. A firm can use several means to address these forces. It can seek a growth option, form an alliance with a client or provider, or use IT to facilitate the development of new products and services (differentiation and innovation). These strategic thrusts are competitive moves that organizations make in their quest for excellence. Once again, these notions need to be adjusted to yield insights in the public sector environment.

Tom Peters (1988) describes another potential maneuver, Total Customer Responsiveness, which appears to consist of two major components: time and quality. Both have been shown to be extremely important determinants of organizational success. Toyota demonstrated that it could significantly reduce sales and distribution cycle time by speeding up the flow of information between sales and manufacturing (Stalk, 1988). Milliken achieved total customer responsiveness by supplying clothing manufacturer Levi Strauss with such high-quality materials that Levi Strauss could omit its own inspection of the incoming supplies.

The broad strategies of differentiation, cost containment, innovation, growth, alliance, and time and quality improvements can also form a basis for strategic information analysis in government. One additional strategic thrust, regulation, is available to government by virtue of its legal and political authority. Regulation can be used strategically to direct and control behavior in the service system.

Example of the Strategy at Work: Serving Children at Risk

We return now to our opening idea of restructured human services and explore a more concrete example of how information technologies can assist agencies in restructuring service delivery.

One of the major social problems facing the United States is the endangered status of at-risk children—children who are being raised without the support of a family network, live in blighted neighborhoods, and attend our worst schools; children who are dependent on welfare programs for subsistence, and who statistically show little promise of becoming integrated into the workforce as they enter maturity. As they reach adolescence, they often become involved with substance abuse and street crime.

To date, our societal response has been disjointed and, at best, incremental. Social service agencies provide support payments to or for families of children at risk under a variety of categorical programs such as AFDC, food stamps, WIC, and Medicaid. Families who experience significant disintegration may engage another set of programs in the form of child protective services and foster care. On other fronts, schools try to educate these youngsters, labor departments provide job-search and job-training programs for their parents, and the courts become involved in the myriad of legal issues related to the enforcement of sanctions, the provision of service, and the rights and responsibilities of these children, their families, and the agencies they encounter. As the courts become involved, often the police, corrections, and parole agencies are drawn into the "service delivery" pattern. Private and nonprofit agencies such as hospitals, day-care centers, and job-training facilities also become involved as both providers of service and as "customers" of the state and local agencies that fund them.

Because services are provided through so many channels, it is highly probable that no single agency accepts overall responsibility for these families. What emerges is a patchwork of vertically organized programs with few horizontal linkages at the point of service. Consequently there are many service gaps—gaps that are the unproductive holding places for many children and their families.

Here again, we have encountered the classic problem of service integration—a persistent fact of government operations that has been repeatedly addressed in the past by such innovations as Community Action Boards, block grants, and various coordinating councils. Despite decades of concentrated attention, however, the fracturing of services remains. Moving from this pattern of fragmented services to a more integrated service delivery system will require broad strategic thinking and planning in the public sector. A strategic orientation toward information systems can be an important part of this effort.

Strategic information management can help address this persistent problem. The strategic gap described earlier certainly exists in this case. We can examine this gap from the point of view of a statewide social service agency

involved in the provision of services to these children and their families. The applications strategy for this agency must focus on providing horizontal linkages between many separate service units. However, the technology strategy most commonly employed in these agencies is oriented toward constraining the growth of the overall social welfare system through cost containment and regulatory measures. Information systems have been developed to support internal control over the accuracy of payments and over counting units of service, reconciling accounts, and enforcing program mandates. Such uses of information technology are appropriate initial applications because they address the crucial issue of cost containment and stress the value of using information systems to enhance managerial control.

However, exclusive reliance on the control aspects of information systems masks important strategic functions that can and should be performed as well. Information systems are not being developed to address the strategic question of how better to link social services with educational services with employment and job training with child care, and so on. This push for fiscal integrity with little attention to fundamental program goals results in a warped or, at best, highly limited definition of accountability. By emphasizing a wider range of functions, these technologies can help us move beyond cost control toward maximizing the outcomes of services within severe budget constraints.

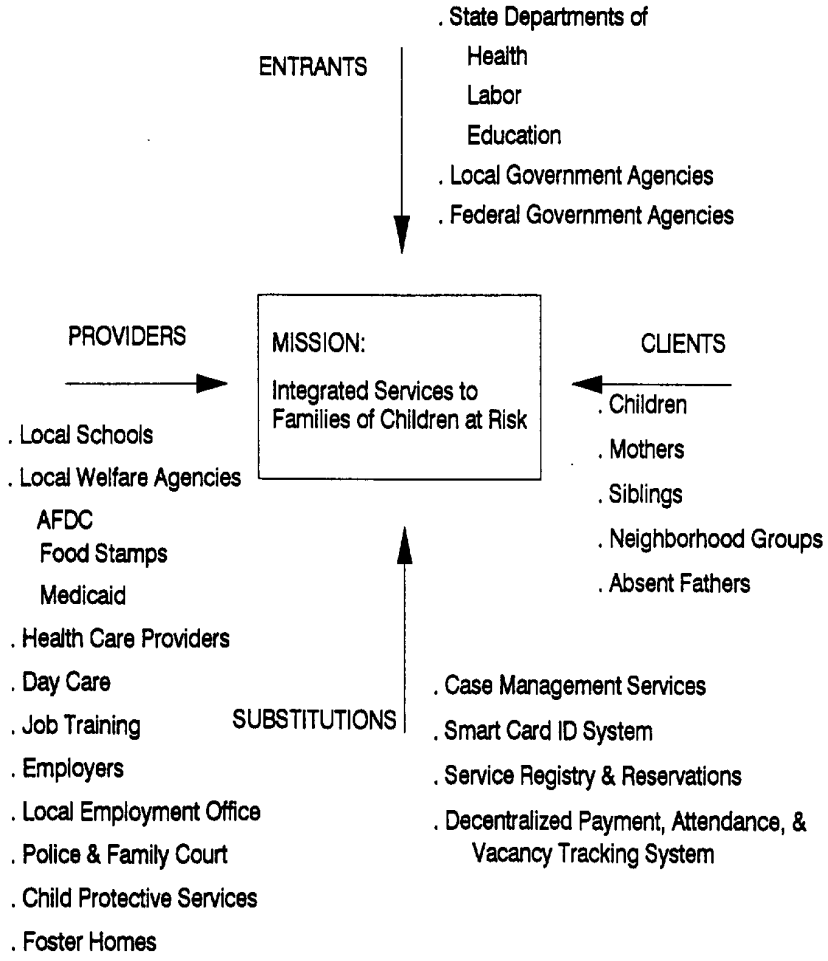
Figure 3 presents an analysis of the full range of entrants, providers, clients, and substitutes that are at play in this case. In this strategic scan, the central mission is to provide integrated services to families of children at risk. The client group consists of the children themselves, their mothers and siblings, their neighborhoods, and fathers who may or may not be nearby.

The providers identified in this strategic scan include the wide variety of agencies and organizations. The list includes schools, local social service agencies (with programs for AFDC, food stamps, Medicaid, job search, child care, job training, and so on); local hospitals, clinics, and physicians; day-care providers; employment service offices; and potential employers. The police, family courts, child protective services, and foster homes and congregate care facilities can also become involved.

Whereas in the private sector new entrants may be viewed as potential competitors, in this case the scan of new entrants identifies other agencies and levels of government who can help share in a solution. The challenge is to avoid dysfunctional competition for a fixed pool of public resources and move toward cooperative solutions that share scarce resources. New entrants include the departments of health, labor, and education as well as agencies within the local and federal governments who can provide staff and matching dollars to help address these problems, or programs or services that might prevent or reduce them.

Substitutions consist of those ideas, approaches, and service delivery mechanisms that may serve as alternatives to our current system. Experiments with case management systems, smart card client ID systems, and service

Figure 3. Strategic Scan for Human Services Agencies Serving Children at Risk



registry and reservation systems, as well as decentralized payment, attendance monitoring, and vacancy control systems for contracted services are examples of these substitutes. One of the challenges facing information resource managers is the need to help program managers envision service delivery strategies that are made possible by the deployment of information technologies, to identify technologies that support services as opposed to those that monitor compliance with program regulations. This is not to say that the strategic use of information technologies will drive up costs or necessarily increase the number of clients being served. Rather, they can lead to better services to a fixed pool of clients or to an ability to serve more people with the same amount of resources.

Table 1, a strategic options generator, more clearly delineates this difference. To date, the technology strategy of most social service agencies has focused on

Table 1. Strategic Options Generator for Serving Children at Risk

Strategic Thrust	Strategic Targets: Providers	Clients	Entrants
THRUST OF CURRENT SYSTEMS			
GROWTH	Increase service units		Sponsor demonstrations
COST	Audit payments to local providers	Automate eligibility Screen for fraud	Maximize federal funding
REGULATION	Monitor payments to providers	Monitor eligibility Detect client abuse	Service standards Provider standards
FUTURE POTENTIAL			
DIFFERENTIATION	Better match between clients and providers	Individual client profiles	New services integrated into client service system
INNOVATION	Integrated system of client placement, attendance & payment	Smart Card client IDs	Issue RFPs for needed services
ALLIANCE	Provider payments linked to client attendance	Clients view & choose their own services	Increase accountability across federal, state & local levels
TIME & QUALITY IMPROVEMENTS	More rapid reimbursements	Rapid identification of available service slots	

the strategic thrust of cost containment. Using cost control and regulatory mechanisms, social service managers have used information technology to increase surveillance of clients and providers and to regulate the entry of new providers and clients into the system. Such systems have not focused on linking the many actors within the broader strategic arena. Rather, they have concentrated on setting reimbursement rates, auditing and controlling payments to providers, automating the application of eligibility criteria, screening for abuse and fraud, and maximizing the amount of federal match for state and local dollars. Although these are important ends, they are not the only ends to which information systems can be applied.

This drive to enhance fiscal accountability was an appropriate first focus for the application of information systems. However, the strategic scan contained in Figure 3 and Table 1 suggests that far greater benefits may be achieved when automated systems are deployed to support greater differentiation of services (providing more appropriate and lower-cost alternatives for some clients), to create powerful alliances between a social service agency and current and

potential service providers, and to implement a client-oriented comprehensive service mission.

Implementation Experience

In New York State, these tools and concepts have been used successfully in implementing a program initiative designed to integrate workforce preparation services across education, labor, and social service agencies. The model for collaborative strategic analysis (Figure 2) was an effective group planning tool for this program. Representatives from each of the involved agencies and nonprofit service providers worked together with an expert facilitator to identify the full range of clients, providers, entrants, and substitutions that are (or could become) involved in workforce preparation services. They then began to define new relationships, changes in resource allocations, improvements in information flow, and other elements of a strategically redesigned approach to workforce preparation. In each case, the members of the planning group were seeking ways to make better collective use of available resources on behalf of a client population for which they share responsibility.

The group decision support approach resulted in conceptual agreement on a new direction and identified the key elements of change. This broad agreement laid the foundation for smaller working groups, using the more traditional tools of IT and program planning, to begin building the working elements of the new program.

Summary

The rapid increase in the number, scope, and range of public programs has been coincident with spectacular growth in information technology. Computerized administration has made possible benefit and regulatory programs that reach into every business, home, and community. In traditional applications, they have given public officials a way to enhance efficiency and productivity, "automate" the application of complex program rules, reduce per capita costs, and streamline work flow. However, the internal, process-focused tradition in information management must now give way to an external, mission-oriented approach.

For the past decade or more, organizations in both the public and private sectors have been gradually capitalizing on information technology to improve the way they do business. As the pace of technological innovation accelerates, the strategic opportunities to reorganize, restructure, and redefine operations similarly increase. In both sectors, managers need frameworks and conceptual models to help them organize their thinking about how best to capitalize on the strategic opportunities that new information technologies offer. Typically, these opportunities involve direct client or customer contact. They reach

outside traditionally defined organizational boundaries and integrate separate but related services into more comprehensive and comprehensible packages.

While public sector agencies face a collective budget restraint, we do not advocate competitive strategies, and this is a major departure from the strategic thrust of the private sector literature. Instead, we emphasize collaborative strategies that make the best use of the collective resources available to public agencies and their stakeholders. The tools we describe here all recognize this critical difference.

In this article we have presented a two-part framework for strategic information management in the public sector stressing the need to create frameworks that are sensitive to the special circumstances of the public sector. First, the approach involves scanning an organization's environment to analyze more precisely its mission, and its relationships with clients, providers, new entrants, and substitute products or services. Second, strategic information management options are generated by examining how relationships with providers, clients, or new entrants can be reoriented around the strategic thrusts of growth, cost, regulation, differentiation, innovation, alliance, and time and quality improvements. Using the case of providing integrated social services to the families of children at risk, the value of these frameworks for the design and implementation of strategic information support systems was illustrated and discussed.

Finally, we should emphasize that by focusing so tightly on strategic frameworks for IT planning, we have left undiscussed a wide range of important issues. These include feasibility studies, cost-benefit analysis, systems analysis, implementation planning, and other issues that must be included in any complete discussion of how to implement a strategic orientation toward information systems. These important considerations are well beyond the scope of this article but are treated more fully in the literature of both public and private sector information management (for example, Andersen and Dawes, 1991).

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