

Critical success factors for public sector information systems are no secret: top management support, clear purpose, committed stakeholders, and realistic cost and benefit measures are just a few that contribute to a successful system. These factors are well known, but not easily achieved, even in systems that lie inside the boundaries of a single organization.

Today's public management environment is becoming ever more complex. The interdependent nature of most new programs means complexity beyond anything we have experienced in any one organization, no matter how large. This is a time of cultural change in which much responsibility for public services is being "devolved" from the federal government to the states; states are trying to avoid placing "unfunded mandates" on local governments; and local officials are trying to serve citizens at lower cost but with greater attention to customer service and convenience. Add to this the complexity of working across multiple organizations at more than one level of government. And add new computing and networking technologies that promise, but don't guarantee, integrated customer-focused services. And remember that no single participant can afford to cover all the costs of this new way of doing business. Under these conditions, information systems that support public services are far more difficult to design, build, and operate.

This book was written to help state and local governments work more effectively in this challenging environment. It presents both principles and practices, based on documented experience, that can lead to successful state-local information systems. The material we present is drawn from a cooperative project sponsored by the New York State Governor's Task Force on Information Resource Management to identify and promote the practices that lead to effective state-local systems. The project involved more than 150 state and local officials engaged in eleven such projects. The participants helped us document current issues, defined the characteristics of ideal systems, and, through surveys and interviews, shared with us their good and bad experiences. The result is the advice and examples which follow.

The fundamentals of state-local relations

The state-local context for information systems is complicated and often poorly understood. State agency staff tend to think of local governments as more or less similar operations. They are not. Local officials tend to view state agencies as organizations with independent authority to make decisions and act. They are not. Not long ago, local government participation in state initiatives was often mandated by state law. Today that participation is more likely to be voluntary. Once, state regional offices covered the landscape and were stepping stones on the career ladder for both state and local officials. Today, state agency presence in localities is greatly reduced as is the likelihood that a person will have both state and local work experience.

Enormous variation in local conditions

It is easy to think of local government as a single kind of public entity operating in our communities. Nothing could be further from the truth. There are many different kinds of general purpose local jurisdictions. New York has 57 counties stretched from Lake Erie on the Canadian border, to the isolated tip of Long Island; 62 cities ranging from little Sherrill with a population of 2,864 to mammoth New York City, and 932 towns that are home to as few as 47 and as many as 725,605 New Yorkers. There are also thousands of special districts that manage schools, fire protection, sewers and water systems, transportation services, and other specialized activities. Within each kind of local jurisdiction there is an infinite variety of specific conditions:

- physical size and geography
- population size, density, and demographic characteristics
- degree of and trends in urbanization
- types of businesses and educational institutions
- economic conditions
- volume of service transactions
- mix of state and local services offered
- kind, number, and specialization of staff
- kind, amount, and sophistication of information technology
- degree of formalization in organizational structure and functions
- the way these characteristics combine and interact to produce specific local conditions

In terms of mission, it is simplistic, but useful, to think of local government agencies as falling into three categories:

- **General purpose public service agencies** (e.g., County, Town, Village, and City Clerks) offering well-defined routine transactions initiated by citizens (e.g., County Clerks recording real property transactions, Town Clerks issuing fishing licenses).
- **specialized program agencies** (e.g., County Health Departments, City Assessors, Highway Departments, Local Social Services Districts) carrying out a dynamic set of related services that often involve ongoing relationships with customers (e.g., conducting public health clinics, maintaining road systems, preparing the city assessment rolls, determining eligibility for Food Stamps).
- **administrative support offices** (e.g., County Data Processing Departments, City Purchasing Offices) conducting a variety of centralized support and oversight functions (e.g., developing and operating various information systems or conducting centralized procurement).

In addition, local agencies respond to an array of elected officials, some of whom are department heads (such as the Clerks) and others who are responsible for overall executive and legislative functions (such as Mayors, County Executives, County Legislators, and Town Council Members). New York's strong traditions of local autonomy and "home rule" mean that these officials take seriously their authority to act independently of the State or to exercise the options that state programs provide.

State agencies operate as specialists in the middle of the federal system

State agencies have some common characteristics, but also many variations. They all belong in some way to the Executive Branch of state government. With a few exceptions, such as the separately elected State Comptroller, their chief executives are usually appointed by the Governor, and most staff are appointed and compensated under the laws of the Civil Service system. Their missions and programs are defined in state law, but many are decisively shaped by federal requirements. Their budgets come from the annual appropriations process in which the entire state budget is divided into many portions according to the policy agreements made between the Governor and the Legislature. Some have special authority to generate revenue through fees or other methods.

A number of state agencies carry out programs that place them squarely in the middle of the federal system. Their programs are strongly influenced, if not wholly defined, by federal laws and regulations. They turn federal requirements into statewide policies, programs and procedures that have to work in all corners of the state — urban and rural; affluent and poor; industrial and agricultural. They usually manage statewide implementation through local governments as their agents. Each state agency tends to deal with one or very few kinds of local counterparts throughout the state (the State Health Department deals mostly with County Health Departments, the Office of Real Property Services deals mostly with City and Town Assessors and County Real Property Directors). Few state agencies deal with local jurisdictions in their totality.

State agency staff tend to be highly specialized in their professions. Although all agencies have a cadre of general administrators and support staff, they are mostly made up of people with specialized skills and training. They are somewhat removed from the "street level" implications of programs, but highly focused on the statewide policy implications of their decisions. In addition, state agency staff work in an environment of great political and philosophical diversity and need to understand and deal with a wide variety of competing preferences for how state programs are carried out.

Changes in the nature of intergovernmental authority and activities

Three trends are reshaping the nature of intergovernmental relations: public demand for services that make sense and operate at reasonable cost, the shift of authority away from the federal government to the states and localities, and movement away from mandated programs to optional ones.

- **Public demands for sensible, cost-effective services.** Increasingly, citizens and businesses demand that government programs make sense, work predictably and efficiently, and show a consistent, intelligent face to the public. They expect one-stop, same-day, customized services instead of the fragmented, duplicative, and lengthy processes that have often characterized government operations. Often, separate programs serve the same people, but without regard for the fact that they require the same information, or impose conflicting requirements, or result in costly duplication of effort. Programs that meet public demands for quality and effectiveness often require coordination, collaboration, and integration among multiple units of state and local government as well as private industry and non-profit service providers.
- **Devolution of authority.** Our recent political history has seen a dramatic shift of focus away from Washington toward state capitals in such critical public programs as Medicaid and Welfare Reform. These are the largest program devolutions in a line of actions stemming from Model Cities and Revenue Sharing in the 1960s and 70s to the block grants of the 1980s. The shift of authority for programs and services toward states in many

cases means a shift of responsibility to localities. As states redesign their welfare programs, for example, they often give local governments a number of local program options. This is an attempt to customize programs to local conditions at either the state or local level or both. One effect is more local control. Another is even greater complexity due to local variations in statewide programs.

- **Mandates vs. voluntary local participation.** As states take up the responsibility of newly "devolved" programs, they are mindful of traditional and growing local opposition to unfunded mandates. It is now common for local participation in state initiatives to be voluntary in whole or in part. This philosophy has positive effects on the localities and encourages the state to be more creative and responsive to local conditions in order to attract local participation. However, voluntary participation also leads to expensive parallel programs when some localities are willing to adopt a new way of working while others stay with the old way.

Changes in the technology tools of public management

The decade of the 1980s introduced powerful new computing and communications technologies to government operations. Today at the end of the 1990s, the old, rigidly structured, inflexible technologies and systems of earlier decades are beginning to be joined or replaced by more flexible systems that rely on networks, new methods of electronic communication, industry and international standards, and very powerful hardware and software tools. Technologies such as electronic imaging, electronic work-flow, e-mail, electronic data interchange, and the World Wide Web make it possible to share and transport information in ways that could not be imagined in the 1970s. These tools now make integrated programs technically feasible, although by no means easy to design, implement, and operate. However, the electronic revolution has not reached into every corner of our society or every government office that serves local communities. The wide discrepancies in technical capacity from one place to another severely limits the degree to which these new tools can be applied to program management and information sharing goals.

What exactly is a state-local information system?

We define a state-local information system as one that links state and local agencies together in a coherent service delivery or administrative environment. They facilitate information sharing for the achievement of mutual program or administrative goals. These systems address both individual and common needs and result from ongoing discourse among state and local participants.

Coordination among the staff and objectives of different government units presents special challenges because it is not "business as usual." This coordination effort must recognize and account for the diversity of organizational cultures, structures, and budgetary processes found in the range of government units affected. A successful coordination effort must deal with mismatched fiscal years; a range of hierarchical, team, and matrix management styles; and program-driven versus process-driven vs. customer-driven work environments. And these are just a few of the factors that contribute to the enormous complexity of state-local systems projects.

To overcome the fragmentation that often exists because of this complexity, state-local information systems must meet the critical needs of all the participants, and provide services within an integrated framework that includes shared goals, shared technical and physical infrastructure, and shared financial and human resources. One expert says, "the boundary-spanning aspect of intergovernmental information systems implies a high degree of coordination and mutual respect among managers, planning teams, and implementation efforts" (Kumar, *MIS Quarterly*, 1996). We couldn't agree more.

In search of the ideal state-local information system

Coordinated state-local information systems offer the hope of integrated services to citizens and streamlined operations within government. Many government and professional organizations are searching for ways to make these essential systems more successful. The Council for Excellence in Government is identifying exemplary intergovernmental programs that involve city, county, and tribal governments as well as state agencies. Public Technology Inc. (PTI), a non-profit group sponsored by the National League of Cities, the National Association of Counties, and the International City/County Management Association is researching local priorities for intergovernmental IT projects and policies. NASIRE, the National Association of State Information Resource Executives, maintains an intergovernmental relations committee and recommends policies and technologies that help state governments streamline their operations. Recently, the Industry Advisory Council, a private sector

group formed by the Federation of Government Information Processing Councils to advise federal agencies in their information systems efforts, formed a committee to discuss intergovernmental projects. Other groups searching for best practices in intergovernmental systems include the National Governors Association, the National Telecommunications and Information Administration, and the National Newspaper Association (Varon, FCW Government Technology Group, 1997).

In New York State, the Governor's Task Force on Information Resource Management Standing Committee on Local Government formed a Special Work Group on Intergovernmental Information Systems in 1996 to work toward this goal. The Work Group developed a set of characteristics that exemplify an "ideal" state-local information system project. The Center for Technology in Government used these characteristics in a study of existing projects in the state to identify those practices that were leading to success in a variety of areas. Some of the most important ideal characteristics are presented in four broad categories below:

Characteristics of ideally formulated project objectives

The objectives of a state-local information system project set the stage for all subsequent activity and evaluation. They drive all the investments of all stakeholders, and therefore should have these characteristics:

- System goals are based on well defined program or business needs.
- All participants in the project agree about how the system will serve the needs of citizens.
- The system objectives are reasonable given the resources available to support it.
- The system objectives have the support of elected officials and top management.
- The objectives include performance measures and a post-implementation evaluation.

Characteristics of an ideal project management process

State-local systems projects involve a variety of players in different organizations, at different levels of government, in different locations, and sometimes in both the public and private or non-profit sectors. An ideal project management process takes all this into account and has these features:

- All participants are treated as equals and have a substantial stake in the project's success.
- All participants understand the project management process and the roles and responsibilities of all the players.
- Available financial resources are invested where they are most needed.
- Information about project status is shared frequently.
- The participants engage in joint problem identification and problem solving.
- Collectively, the project team has the skills needed to carry out a successful system project.

Ideal design features

Systems that connect state and local government are usually systems that affect work already underway in both places. They involve processes, information flows, technologies, and staff capabilities already in place. An ideal design therefore has these characteristics:

- The system is designed to integrate with the related systems and business processes of the affected organizations.
- Standard definitions of key data are used by all participants.
- The system is designed to support information sharing across organizations and programs.
- Built-in safeguards assure system security and the confidentiality of sensitive or personal information.
- The design adheres to commonly accepted industry standards and does not rely on proprietary technologies.
- There is no need for parallel or supplemental systems or procedures to support the service or business functions that the system is designed to meet.
- Built-in features reduce human effort and minimize duplication.
- The design takes into account the current technical capabilities of the participating organizations.

Ideal user support features

State-local systems are implemented in a wide variety of organizational settings and used by staff with a range of skills and experience. The system will only be as successful as its users can make it. These user support features are therefore part of the ideal system:

- Complete user documentation (e.g., manuals, troubleshooting guide) is available.
- Continuing, up-to-date, and accessible user training is offered.
- Ongoing, adequate technical support services are available for system maintenance and enhancement.
- An ongoing, adequate "help desk" supports users.
- There are built-in data management and analysis capabilities for users including access to local, regional, and statewide databases for planning and evaluation purposes.
- Some provision is made for local modification based on local needs, including low-tech and no-tech options where local conditions do not support high-tech solutions.

Barriers to achieving ideal intergovernmental systems

These ideals are difficult to achieve because there are significant barriers to overcome. The Special Work Group identified many problems that state-local projects encounter. Among the top ranking barriers are:

- **A general lack of education and information about both technology and programs.** Technology has rapidly permeated our society and most of our institutions, but government organizations often lag behind others. Government staff are often ill-informed and poorly trained in how to use information technology effectively. This is particularly true of the newest technical tools and platforms. Public employees, both users and technicians, seldom have ready access to skills training or professional development that continuously upgrades their knowledge and skills. Conversely, technical staff typically have few opportunities or incentives to learn the goals and operational realities of service programs and therefore tend to focus too sharply on the technical tools and too little on the programmatic reasons for new systems.
- **Lack of a shared, reliable computing and network infrastructure.** Existing state-local systems suffer from the lack of a ubiquitous, consistent computing and communications infrastructure. This makes it difficult or impossible to operate technology supported programs in a consistent way from place to place and organization to organization. It also slows and complicates communication among state and local staff involved in joint programs. New York State is currently embarking on a statewide networking strategy called the NYT that will help solve this problem for future systems.
- **Goals that are too ambitious for the resources available to achieve them.** Project goals are often laudably comprehensive, but the staff, equipment, and dollars allotted to achieve them are often underestimated. Projects that could succeed on a smaller or incremental scale, fail to achieve success when their goals and resources are played out on different scales.
- **Human and organizational resistance to change.** In some cases, new state-local initiatives threaten a comfortable status quo. They promise big changes that not every participant is eager to see. Fear and resistance to change exist even in the best planned and managed projects. A new way of doing business threatens existing personal, organizational, programmatic, and political conditions by rearranging authority, influence, power, resources, and information. This natural resistance is exacerbated when new programs arrive with too little advance information, weak leadership support, inadequate user participation, too little funding, and less than comprehensive training and orientation.
- **Unrealistic time frames.** Many information systems projects take considerably longer than originally planned. State-local projects, with their added layers of legal and organizational complexity are especially vulnerable to this problem. Since so many different organizations are affected by them, time delays lead to serious difficulties in planning for and adjusting to changes in operations.
- **Organizational, programmatic, technological, and legal complexity.** The state-local environment is extraordinarily complex on a number of dimensions: organizational size, number of organizations, number and skills of staff, size of budget, financial practices, legal authority, programmatic focus, and geographic dispersion. Existing systems are an important complicating factor. Only so much change is possible in an environment that depends on information systems already in place # especially ones that were designed and implemented using older technologies. There is little that can be done to simplify this environment, making it essential that project participants have a good understanding of how it will affect their activities.
- **Changing priorities.** Any project that lasts more than a few months is subject to changing priorities for time, money, and attention. This problem is multiplied in state-local projects since each participating organization is

- likely to be working in circumstances and with responsibilities and priorities that are unique to its own situation.
- **Overlapping or conflicting missions among the participating organizations.** Government organizations at both the state and local level have public service and public accountability goals that can overlap or conflict, even when they are engaged in a joint project. For example, a state agency manager may have the role of project leader which implies facilitation, collaboration, and support for other participants. At the same time, that person's agency may have oversight responsibility and financial and other regulatory means of compelling local compliance with state requirements. In other projects, non-profit service providers may be project participants sitting at the same table with state or local officials who license and inspect their programs. These roles are all legitimate but can conflict and become a source of difficulty in sorting out the working relationships within the project team.

The barriers are undeniable. But the potential benefits of successful systems are compelling reasons to go forward with well-designed state-local initiatives. Table 1 shows how the participants in the eleven projects we studied characterize the benefits of the systems they are developing.

Table 1.Expected Benefits of Eleven State-Local Information Systems Projects

Chapter 1. Understanding the State-Local Environment

Aging Network ClientBased ServiceManagement SystemProject	* Single application and screening process for multiple benefits* Electronically link older persons and caregivers with programs and services that preserve independence* Reduce administrative and service delivery costs* Satisfy multiple reporting and management needs
Electronic Filing of LocalGovernment AnnualFinancial Reports	* Reduce local staff time and effort to prepare AFR* Less time required for review of data by OSC, more accurate information sooner* More consistent data for interpretation and trend analysis
Electronic DeathCertificate Project	* Reduce delayed and inaccurate death certificates and burial permits* Remote submission of information by authorized parties* Remote authorization of certificate through electronic signatures* Reduce data entry costs and errors* Immediate access to information* Reduce overhead for funeral directors
Electronic Transfer ofDog License Data	* 14% savings in processing, data entry, and corrections costs for a slight increase in management costs* Provide faster, more accurate, complete dog identification data to participating municipalities* Eliminate duplication and data entry errors
Hunting and FishingLicenses	* Faster, one-stop, 24 hour, license shopping for the customers* Eliminate accountables such as license validation stamps and decrease paper recordkeeping* Increase assurances that valid licenses are being sold* Increase the accessibility of data and facilitate marketing capability to increase revenue to the Conservation Fund and recruit and retain licensees
Immunization InformationSystems Project	* Increased rates of fully immunized children in NYS* Improve medical record charting and information processing to help health care providers ensure children receive age-appropriate vaccines* Eliminate wasteful re-administration of expensive vaccines* Reduce need for testing for previously administered vaccines
Probation AutomationProject	* Reduce the paperwork load for Probation Officers and return that time to direct services* Easier and faster access to criminal histories and pre-sentence investigation reports* Eliminate duplicate data storage* Access to administrative templates for common functions
Real Property System(RPS) Version 4	* Faster and more efficient system processing* Code maintenance ability enhanced* Support user requested enhancements* Integration with local functions and commercial systems
SALESNET	*Eliminate the need for data entry at both state and local levels* Reduce corrections resulting from illegible and incomplete forms* Verified sales information available to agency staff and local assessment officials in 6 vs. 123 days
Local DSS DistrictImaging Project	* Reduce caseworker access to files from days or hours to seconds* Potential to redesign case records and workflow based on the functionality of electronic record storage

Electronic VoterRegistration	* Decrease time needed to register address changes, party enrollment, and voting eligibility* Decrease data entry errors due to repetitive manual entry* Decrease the flow of paper between local Boards of Election, and the State Departments of Motor Vehicles and Health
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How this book can help

This guide was written to support public sector managers at both the state and local levels who are participating in intergovernmental information systems projects. These officials are responsible for defining, delivering, and managing information systems that connect different levels of government in a single service delivery channel or an integrated administrative process. We have tried to design the guide to be useful to management, program, and technical staff in all phases of project activities.

This first chapter and Appendix A set the context for what follows. Appendix A contains brief project summaries and comparisons of the eleven projects we studied. We encourage you to review them now before proceeding to the discussions in Chapters two and three which present principles and practices based on these project experiences. These are presented in rough logical order, but they are meant to be used iteratively. There is no single "recipe" for success in these complex projects. Instead, there are some overarching considerations (we call them principles) that define the context for these projects; and there are a variety of techniques (we call them best practices) that can be used in different situations.

Chapter 2 presents nine fundamental principles that managers of state- local projects should understand and follow. Chapter 3 presents 19 practices that have good track records for success. For each practice, we present two or three vignettes from the New York State projects we studied that illustrate how good managers are adapting these ideas to real- life situations. The appendices contain brief summaries and comparisons of the eleven projects, an annotated bibliography of related reference material, and a list of World Wide Web sites that contain more information on intergovernmental topics.