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# **Partners in State-Local Information Systems:**

## **Lessons from the Field**

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**Center for Technology in Government  
University at Albany / SUNY**

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# Partners in State-Local Information Systems:

## Lessons from the Field

Sharon S. Dawes  
Theresa A. Pardo  
David R. Connelly  
Darryl F. Green  
Claire R. McInerney

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Center for Technology in Government  
University at Albany  
1535 Western Avenue  
Albany, NY 12203  
Phone: (518) 442-3892  
Fax: (518) 442-3886  
e-mail: [info@ctg.albany.edu](mailto:info@ctg.albany.edu)  
<http://www.ctg.albany.edu>

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Center for Technology in Government  
University at Albany  
1535 Western Avenue  
Albany, NY 12203  
Phone: (518) 442-3892  
Fax: (518) 442-3886  
e-mail: [info@ctg.albany.edu](mailto:info@ctg.albany.edu)  
<http://www.ctg.albany.edu>

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# Executive Summary

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. But, there is very little reliable information about what makes state-local projects succeed or fail. This study, sponsored by the New York State Governor's Task Force on Information Resource Management (now the NYS Office for Technology), is one of the first attempts in the US to analyze and document practices that lead to success.

The objective of this project was to identify and document the practices associated with successful state-local information systems by studying the experiences of eleven existing initiatives in New York State:

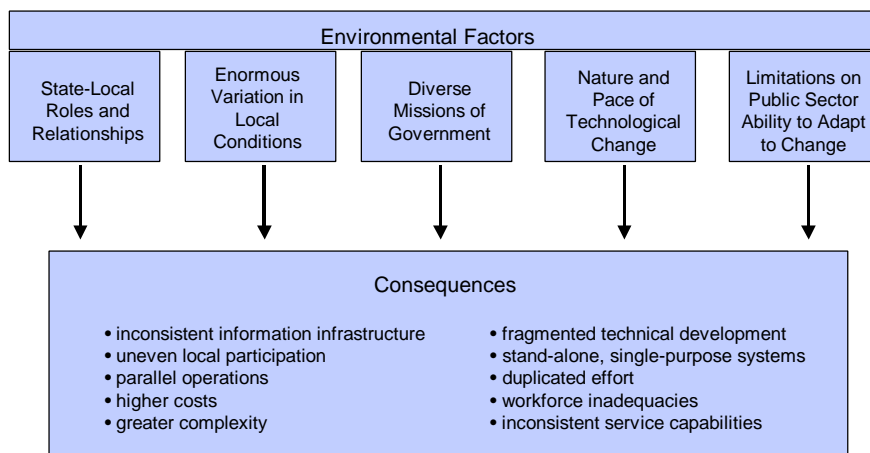
- Aging Network Client Based Service Management System Project
- Electronic Filing of Local Government Annual Financial Reports
- Electronic Death Certificate Project
- Electronic Transfer of Dog License Data
- Hunting and Fishing Licenses
- Immunization Information Systems Project
- Probation Automation Project
- Real Property System Version 4
- SALESNET
- Local Social Services District Imaging Project
- Electronic Voter Registration

Information needed to support the project objective was gathered in four ways: a literature and current practice review, an effort to describe the eleven participating projects in a standard way, a survey of both state and local participants in each project, and focus group interviews with the project teams. The Task Force established a Special Work Group on State-Local Information Systems to serve as both a planning and advisory body.

The main deliverable of the project is a handbook of best practices called *Tying a Sensible Knot: A Practical Guide to State-Local Information Systems* which presents a variety of practices that project managers and participants can use to develop successful state-local information systems. However, the project also uncovered issues that constrain success, but that cannot be addressed by single project teams acting on their own. These constraints are the result of environmental factors that combine to reduce the effectiveness and increase the cost of all state-local systems. This final project report discusses these systemic constraints on effective systems and offers three sets of recommendations for mitigating their effects.

## ***Environmental factors that shape state-local systems--and their consequences***

Every information system operates in a larger context that includes the policy, legal, and economic environment; program rules; business processes; management techniques; and human and organizational limitations. Our review of the goals, methods, and problems encountered across the eleven projects revealed several environmental factors that made all systems more difficult and costly than they might have been. The figure below shows how these factors combine to produce these undesirable consequences.



### **Systemic Constraints on Effective State-local Systems**

**Roles and relationships.** The roles of state and local government are complicated, changing, and often poorly understood. The two levels of government operate on shared and separate bodies of law, they interact differently with citizens, attract and rely on different kinds of professionals. They are organized according to a mixture of constitutional, programmatic, financial, traditional, and geographic dimensions. In addition, they engage in a variety of relationships with one another: collaborative, contractual, regulatory, and adversarial.

**Variety.** Local governments, especially, exhibit great variation. For example, New York has 57 counties, 62 cities and 932 towns. 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 based on population characteristics, economic conditions, and physical geography.

**Missions.** Every level of government tries to carry out a large number of unrelated missions: build roads, educate children, protect the environment, fight crime, create jobs. Even in the same agency, specialized programs usually serve to divide rather than connect groups of people with similar responsibilities. Systems that support service programs reflect this “stove pipe” way of organizing work.

**Technology.** The 1980s and 90s have introduced powerful new computing and communications technologies to government operations. However, the electronic revolution has not reached into every corner of our society or every government office that serves local communities. Wide discrepancies in technical capacity from one place to another severely limit the degree to which these new tools can be applied to program management and information sharing goals.

**Adaptability.** The very structure of our government allows change only when there is agreement among a number of individuals and institutions. By codifying governmental activities in law and regulation, we ensure stability in operations, but also make change difficult to achieve. The budgetary process, civil service requirements, and procurement and ethics laws all act as brakes on the ability of any one actor to make and implement decisions. Moreover, federal, state, and local electoral, budgetary, and legislative cycles may not coincide, making intergovernmental initiatives even more difficult to define and implement.

The environmental factors described above have specific consequences for using information systems effectively:

- Technological capacity (hardware, software, networking), and the ability to pay for it, vary widely from place to place.
- Inadequate intergovernmental, interagency, and interprogram communications lead to fragmented and duplicate development efforts.
- Program-specific funding and legal requirements encourage stand-alone, single-purpose systems.
- Voluntary local involvement in state-initiated projects results in uneven local participation in new systems, often requiring state agencies to support two or more variations.
- Inadequate development and retention of a technical workforce reduces the ability of both state and local governments to take advantage of new technologies.



## ***Recommendations for increasing government-wide system effectiveness***

The principles and practices described in *Tying a Sensible Knot* can help government managers avoid or reduce many problems. However, state and local government officials, as individuals, cannot change the environmental factors that make public sector work so complicated. The recommendations which follow are designed to mitigate their negative consequences by capitalizing on both the findings of this study and the infrastructure-building work already underway in New York State.

- 1. Expand existing efforts to build a statewide information infrastructure encompassing technology, data, and human resources.** New York's new statewide secure intranet, the NYT, offers many benefits to state and local participants. It needs to be accompanied by education, demonstration, and incentive programs that encourage localities to connect. Existing efforts to establish preferred technology and data standards should be augmented with greater local involvement. A technical workforce assessment recently begun, should recommend ways to improve recruitment and retention of technical staff as well as more effective use of contracts at the both the state and local levels.
- 2. Establish formal linkages and communications mechanisms that encourage awareness of other models and experiences.** Peer reviews are already being required by the Office for Technology for major new system initiatives and voluntary best practice presentations are conducted on selected topics. These should be expanded to include periodic peer consulting sessions to help project managers define and design new state-local systems. This should be augmented by two additional efforts: a Web site containing up-to-date descriptions and contact information about current state-local systems projects and an ongoing program of communications and information exchange among state and local agencies.
- 3. Establish and support a project management "academy" for both state and local managers.** Traditional government services provided by a single agency are giving way to complex service programs that require many exchanges of information involving not only public agencies but often private and nonprofit organizations as well. The best practices guidelines produced by this project amply illustrate the importance of partnerships, collaboration, and entrepreneurship in bringing state-local system initiatives to successful implementation. In addition, public managers now face the complexity of negotiating and then managing contracts for functions and services they traditionally operated themselves. All of this calls for new management skills that take advantage of information as the key resource that ties all these parties together. Public managers would greatly benefit from a well-organized program of training and development that prepares them to guide projects from inception to evaluation in this complex new environment.

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# Chapter 1. Project Overview

Critical success factors for public sector information systems are well known: top management support, clear purpose, identifiable 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. Add the complexity of multiple organizations and networking technologies that offer the promise of integrated customer-focused services and system initiation, design, development, and operation become far more difficult. Systems that connect state and local government are a case in point.

A massive amount of information exchange occurs between state and local governments. Since there has been little coordination among agencies in how data is represented, processed, and exchanged, however, these interfaces between governments often lack standardization and can waste time and resources. To address these issues, the New York State Governor's Task Force on Information Resource Management, formed in 1996, established a local government standing committee to work on ways to standardize and simplify how state and local governments interact. The Task Force Standing Committee on Local Government has taken two actions to address these problems.

First, the Task Force released a Technology Policy about how state and local government agencies should work together when creating joint systems. Second, a Special Work Group on State-Local Information Systems was established and charged with the responsibility of generating a best practices document to guide future state-local collaborations on systems that integrate both levels of government into a single service delivery environment. The Center for Technology in Government undertook a project on behalf of the Special Work Group to document state and local government practices that lead to successful intergovernmental information systems.

## Current Environment

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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, a nonprofit, nonpartisan research organization, is identifying exemplary intergovernmental programs that involve city, county, and tribal governments as well as state agencies. Public Technology Inc. (PTI), a nonprofit 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, established 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 (Federal Computer Week, February, 1997).

Since governments all over the country often conduct similar programs, there is great interest in effective ways to carry out common public services. In Florida, for example, hunting and fishing licenses are now available online via the Internet. Some states, such as Minnesota, have been thinking about state-local information systems for a long time. Minnesota established the Intergovernmental Information System Advisory Committee (IIAC) in 1974, and since then it has been encouraging local and state agencies to share data in an integrated way. The IIAC has offered grants to localities as well as technical assistance that enables local governments to transfer information more easily to state agencies.

Integration in human service delivery depends on a coordinated, integrated information system. In Oregon, Clackamas County has integrated the referral and eligibility screening service for welfare clients in the Pathways project (Newcombe, 1996). Rather than requiring clients to go to a particular agency for intake and eligibility screening, they can walk into any one of several state or local agencies to receive service. In San Diego, the New Beginnings project provides comprehensive service delivery, including medical care and housing, in a project that required cooperation among city and county governments, a school district, a housing commission, health center, nonprofit agencies and state agencies. Implementation of the integrated case management information system overcame barriers of intra- and inter-institutional communication in order to deliver effective services to families (Marzke et. al., 1994).

Reducing crime and tracking criminal activity is a concern of most states and local criminal justice agencies. In New York, CRIMNET offers a model of integrated criminal information that is moving forward to become a comprehensive database on the World Wide Web. Developed originally to support client/server computer architecture, CRIMNET allows all criminal justice agencies, from the New York City Police Department to small local authorities and town courts, to locate rap sheets on suspected criminals. Over 300 agencies are now using the state-developed system to do background checks on individuals arrested for any crime.

Similarly, integrating health care information has become a prominent concern in states and among local health care providers throughout the country since more emphasis is being placed on the well-being of children and families, and since managed care has become the order of the day. Managed care requires coordination if the client is to be well-served. The primary care giver needs to communicate with other health care providers and often with multiple agencies to provide the best preventive care and the most effective overall health treatments. The New York State Office of Mental Health has cooperated with a county mental health center in Ulster County

and the University at Albany to develop a decision support system that tracks clinician productivity within an environment of managed health care. The system allows administrators to track face-to-face time with clients, other clinician activities, and the overall picture of providing health care. They can find the root causes of financial difficulty and intervene before problems become severe. The mental health care center was able to leverage the information system to improve management practices.

Despite these examples, there is very little reliable information about what makes state-local projects succeed or fail. This study is one of the first attempts in the US to analyze and document practices that lead to success.

## **The Project at the Center for Technology in Government**

In the fall of 1996, the Governor's Task Force on Information Resource Management Standing Committee on Local Government asked CTG to conduct a brief "reconnaissance study" that involved field visits and telephone interviews with various local government agencies to better understand the information flows and working relationships between state and local governments. The results showed that there was a very wide range of conditions and experiences to consider. Among the key issues were indications that state-supplied software systems often did not take local needs into account and were seldom coordinated or integrated with either state or local practices and existing systems. Based on these findings and a descriptive inventory of existing and future projects developed by Stanley France of Schoharie County, a Special Work Group on State-Local Information Systems was created and the project focus was sharpened in an effort to identify, document, and disseminate information about existing "best practices." Eleven existing system projects agreed to participate in the study.

The eleven projects are briefly summarized in Table 1.

<b>Table 1. Eleven State-Local Information Systems Projects and Their Goals</b>	
Aging Network Client Based Service Management System Project	<ul style="list-style-type: none"> <li>• Single application and screening process for multiple benefits</li> <li>• Electronically link older persons and their caregivers with programs and services that preserve independence</li> <li>• Reduce administrative and service delivery costs</li> <li>• Satisfy multiple reporting and management needs</li> </ul>
Electronic Filing of Local Government Annual Financial Reports	<ul style="list-style-type: none"> <li>• Reduce local staff time and effort to prepare AFR</li> <li>• Reduce time for review of data by OSC</li> <li>• Increase accuracy and timeliness of data</li> <li>• More consistent data for interpretation and trend analysis</li> </ul>
Electronic Death Certificate Project	<ul style="list-style-type: none"> <li>• Reduce delayed and inaccurate death certificates and burial permits</li> <li>• Remote submission of information by authorized parties</li> <li>• Remote authorization of certificate through electronic signatures</li> <li>• Reduce data entry costs and errors</li> <li>• Immediate access to information</li> <li>• Reduce overhead for funeral directors</li> </ul>
Electronic Transfer of Dog License Data	<ul style="list-style-type: none"> <li>• 14% savings in processing, data entry, and corrections costs for a slight increase in management costs</li> <li>• Provide faster, more accurate, complete dog identification data to participating municipalities</li> <li>• Eliminate duplication and data entry errors</li> </ul>
Hunting and Fishing Licenses	<ul style="list-style-type: none"> <li>• Faster, one-stop, 24 hour, license shopping for customers</li> <li>• Eliminate accountables such as license validation stamps and decrease paper recordkeeping</li> <li>• Increase assurances that valid licenses are being sold</li> <li>• Increase the accessibility of data and facilitate marketing capability to increase revenue to the Conservation Fund and recruit and retain licensees</li> </ul>
Immunization Information Systems Project	<ul style="list-style-type: none"> <li>• Increased rates of fully immunized children in NYS</li> <li>• Improve medical record charting and information processing to help health care providers ensure children receive age-appropriate vaccines</li> <li>• Eliminate wasteful re-administration of expensive vaccines</li> <li>• Reduce need for testing for previously administered vaccines</li> </ul>
Probation Automation Project	<ul style="list-style-type: none"> <li>• Reduce the paperwork load for Probation Officers and return that time to direct services</li> <li>• Easier and faster access to criminal histories and pre-sentence investigation reports</li> <li>• Eliminate duplicate data storage</li> <li>• Access to administrative templates for common functions</li> </ul>
Real Property System (RPS) Version 4	<ul style="list-style-type: none"> <li>• Faster and more efficient system processing</li> <li>• Code maintenance ability enhanced</li> <li>• Support user requested enhancements</li> <li>• Integration with local functions and commercial systems</li> </ul>
SALESNET	<ul style="list-style-type: none"> <li>• Eliminate the need for data entry at both state and local levels</li> <li>• Reduce corrections resulting from illegible and incomplete forms</li> <li>• Verified sales information will be available to agency staff and local assessment officials in 60 rather than 123 days</li> </ul>
Local Social Services District Imaging Project	<ul style="list-style-type: none"> <li>• Reduce caseworker access to files from days or hours to seconds</li> <li>• Potential to redesign case records and workflow based on the functionality of electronic storage technology</li> </ul>
Electronic Voter Registration	<ul style="list-style-type: none"> <li>• Decrease time needed to register address changes, party enrollment, and voting eligibility</li> <li>• Decrease data entry errors due to repetitive manual entry</li> <li>• Decrease the flow of paper between local Boards of Election, the State Departments of Motor Vehicles and Health</li> </ul>

## ***Project objective***

The objective of this project was to identify and document the practices associated with successful state-local information systems by studying the experiences of existing initiatives in New York State.

## ***Project workplan and participant roles***

Figure 1 shows the time line for the project, including major phases of work and interim and final deliverables. Information needed to support the project objective was gathered in four ways: a literature and current practice review, an effort to describe the eleven participating projects in a standard way, a survey of both state and local participants in each project, and focus group interviews with the project teams. The Special Work Group served as both a planning and advisory body. Each state-local project designated a contact person who coordinated the participation of both state and local officials involved in their system initiative. CTG's role was to act as integrator and lead investigator.

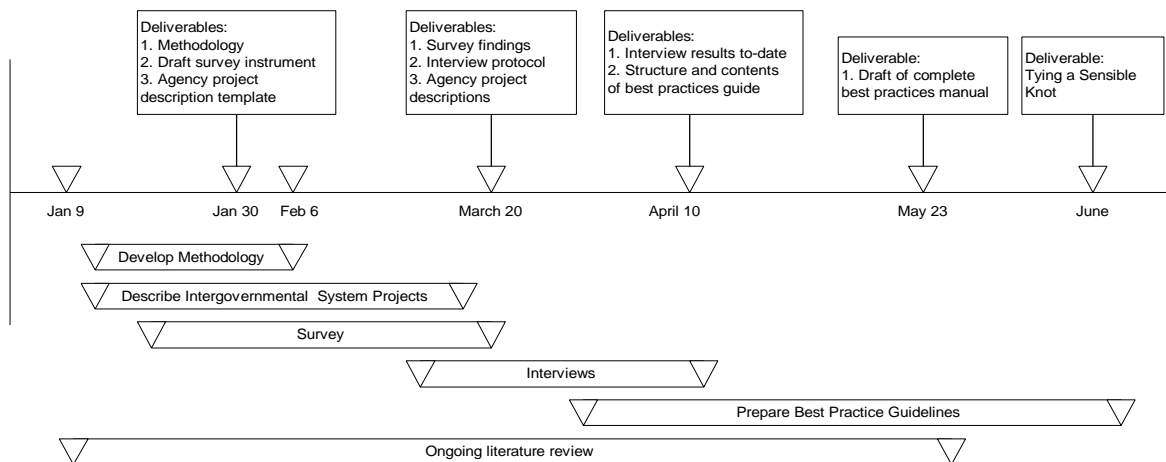
**Literature and current practice review.** In order to better understand this complex world of intergovernmental exchanges, CTG conducted a literature search and was generally unable to uncover any significant formal research regarding this issue. Various scholars and government agencies have begun talking about the issues relevant to this project but have done very little to expand their theoretical work. The current practice review included a search of the World Wide Web and a series of telephone interviews with officials around the country engaged in state-local initiatives similar to ours. All were at a very early stage of development.

**Project descriptions.** Each state-local project designated a contact person who served a coordinating role including the preparation of a project description that followed a standard outline provided by CTG. These descriptions allowed a first look at the differences and similarities among projects and supplied important background information for the subsequent surveys and interviews.

**Survey.** To establish a framework for the effort, the Special Work Group developed a set of characteristics that exemplify an "ideal" intergovernmental information systems project. The characteristics are organized into four categories: project objectives, project management processes, system characteristics, and user support features. The group also identified barriers to project and system implementation. This work became the basis for a mail survey sent to approximately ten members of each project team. The respondents were divided equally between state and local participants.

## Intergovernmental Information Systems

### Project Workplan and CTG Deliverables January-July 1997



**Figure 1. Project Workplan**

**Interviews.** The results of the survey were used to construct an interview protocol that was then customized for each project. The intent of the interviews was to explore the survey responses of the project team with special attention to those areas where there was strong agreement between state and local participants about particularly successful elements. We also identified areas where each project differed substantially from the average across all projects. Thus, each group provided in-depth feedback regarding successful planning, design, and implementation strategies and also elaborated on areas where they had encountered particular problems. The interview notes were analyzed and compared across projects in order to identify the kinds of practices that seemed to lead to good results. Examples of each of the identified best practices were described in project-specific vignettes to explain in detail how a given project applied each concept in practice.

The final result of the project is a handbook of best practices called *Tying a Sensible Knot: A Practical Guide to State-Local Information Systems*. The contents of the handbook are summarized in Appendix A.

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## Chapter 2. Government-wide Issues & Recommendations

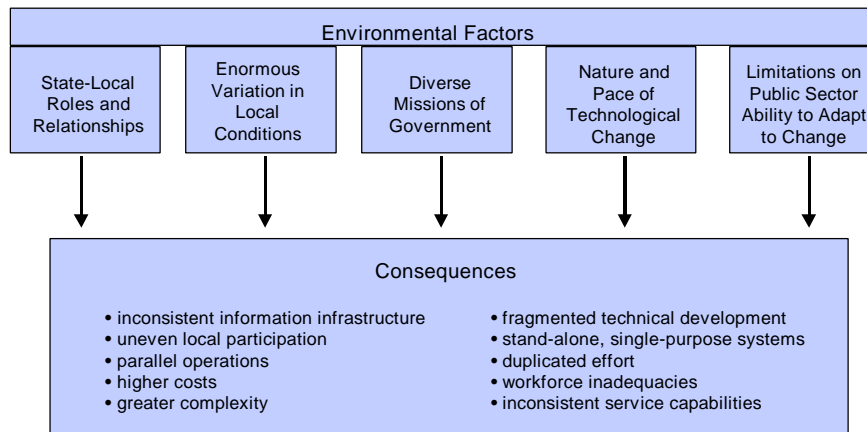
This project revealed a variety of practices that project managers and participants can use to develop successful state-local information systems. It also uncovered issues that constrain success, but that cannot be addressed by single project teams acting on their own. These constraints are the result of environmental factors that combine to reduce the effectiveness and increase the cost of all state-local systems. This chapter discusses these systemic constraints on effective systems and offers three sets of recommendations for mitigating their effects.

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### Environmental factors that shape state-local systems

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Every information system operates in a larger context that includes the policy, legal, and economic environment; program rules; business processes; management techniques; and human and organizational limitations. Our review of the goals, methods, and problems encountered across the eleven projects revealed several environmental factors that made all systems more difficult and costly than they might have been. Figure 2 shows how these factors combine to produce these undesirable consequences.



**Figure 2. Systemic Constraints on Effective State-local Systems**



## ***State and local roles and relationships***

This is a period 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. The interdependent nature of most new program initiatives means complexity beyond anything we have experienced in any one organization, no matter how large. These shifts in public policy must rely on effective links between state and local levels of government. Yet, 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. Local officials tend to view state agencies as organizations with independent authority to make decisions and act. Neither view is accurate. 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 agency regional offices 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 job experience at both the state and local levels of government.

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; 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; and administrative support offices (e.g. County Data Processing Departments, City Purchasing Offices) conducting a variety of centralized support and oversight functions.

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.

In general, state agencies specialize in single policy areas such as education, public health or transportation. 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, 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 (e.g., 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). State agencies rarely 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, who are responsible for the statewide policy implications of single programs. By contrast, local officials often handle a variety of programs and issues. They are well-versed in the “street level” implications of programs.

### ***Enormous variation in local conditions***

It is easy to think of local government as a uniform 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

### ***Diverse missions of government agencies and programs***

Every level of government tries to carry out a large number of missions that often have little to do with one another: build roads, educate children, protect the environment, fight crime, create jobs. Each mission is usually associated with at least one agency that is organized, staffed, and funded to carry it out, usually in well-defined programs authorized in law. As a result, program boundaries become a major defining factor in government operations. Programs are authorized by statute, funded by specific appropriations, and assigned to a lead agency. Rules, regulations, procedures, and information requirements are defined. Often, computer systems are developed to help manage the flow of information that keeps the program in operation. There are very few incentives for staff to look outside their program boundaries to share responsibility or information or to integrate their operations with related programs. Even in the same agency, programs usually

serve to divide rather than connect groups of people with similar responsibilities. Systems that support service programs reflect this “stove pipe” way of organizing work.

### ***Nature and pace of technological change***

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. Wide discrepancies in technical capacity from one place to another severely limit the degree to which these new tools can be applied to program management and information sharing goals.

In addition, these technologies demand significant human and organizational change. Consider these examples: A computer on the desktop is meaningless unless a worker is trained to use it effectively. Networks change the flow, location, and accessibility of information and therefore change working relationships. Imaging and work flow tools allow work to be conducted simultaneously on different parts of a problem, rather than through a series of sequential handoffs.

### ***Limitations on public sector ability to adapt to change***

The American political system is inherently resistant to change. The very structure of our government allows change only when there is agreement among a number of individuals and institutions. By codifying governmental activities in law and regulation, we ensure stability in operations, but also make change difficult to achieve. The budgetary process, civil service requirements, and procurement and ethics laws all act as brakes on the ability of any one actor to make and implement decisions. Moreover, federal, state, and local electoral, budgetary, and legislative cycles may not coincide, making intergovernmental initiatives even more difficult to define and implement.

In addition, sheer complexity makes change difficult. 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 additional limiting 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.

Finally, 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.

## **Consequences for government-wide information infrastructure**

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The environmental factors described above have specific consequences for the nature and effectiveness of the State's information infrastructure. We use the term "information infrastructure" here to mean more than hardware and software. A complete government information infrastructure comprises policies, people, organizations, information, and technology.

### ***Technological capacity (hardware, software, networking) that varies widely from place to place***

Computing and communications capabilities around the state mostly reflect local or agency-specific decisions and investments. 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 the development of joint programs.

These variations are a challenge to project teams trying to develop and integrate information systems across a substantial range of participants. The range across New York State's 932 towns is especially notable. North Hempstead on Long Island with a population of about 225,000 and Lebanon in the center of the state, with a population of about 1,265, illustrate the extremes. Lebanon hopes to add a fax machine to its technology infrastructure in the coming year while North Hempstead contemplates upgrades and substantial redesigns in its already sophisticated set of administrative and service systems. The implications of these variations are daunting. In general, each locality is responsible for its own technology investments. For many, advanced technology is beyond both their budgets and their specific local needs. As a result, most projects in this study were committed to developing new systems for use in some locations while maintaining older automated and manual systems in others. Total operating costs therefore remain high and initiatives that could take good advantage of a ubiquitous, consistent level of technology across the state remain out of reach.

- The NYS Office of Real Property Services Real Property System (RPS V 4.0) project team addressed this reality by forming a number of subcommittees to focus on the range of existing infrastructure and platforms most likely to be found in the localities. Development considerations for each level of infrastructure and each platform had to be

accounted for in the overall system design. This makes both the design and the ongoing system support needs more complex and expensive.

- The Department of Environmental Conservation took a different approach early in its deliberations for a new Hunting and Fishing License system. Their solution was to provide the necessary equipment for each locality thereby eliminating the concern of local technical variation. However, this was problematic as well. The Hunting and Fishing License system, as initially proposed, would create a stand-alone system that local governments would have to work with along with all the other systems they had in place to serve customers. Further, the quantity of licenses sold in some localities did not, in the opinions of the local governments, warrant the use of an automated system at all. Political support for such a significant statewide expenditure was also a major concern in light of overall state cut-backs in spending.
- The NYS Department of Agriculture and Markets is responsible for dog licensing. As in the case of fishing licenses, the quantity of licenses issued across local governments varies widely. Ag and Markets faced the same range of local technical infrastructure, including the fact that more than half of New York's Town Clerks are not "computerized" at all. In addition, many, but not all, of the Town Clerks who do use computers use one of several proprietary "Town Clerk Software Packages" to support their day to day work. These factors together prompted Ag and Markets to focus only on the towns with computer capability by working closely with software vendors to include a standardized dog license feature in their packages.

Clearly, neither "one size fits all" nor custom tailoring makes optimal use of resources. Both result in difficult and costly efforts to build and maintain information systems to meet program needs and statewide information requirements. With the variety of local conditions a one-size-fits-all effort may result in mismatches between the "problem" and the "solution." In custom tailoring efforts, the level of resources required to address the range of possible conditions results in costly, non-standard, solutions.

### ***Fragmented and duplicate development efforts***

In our study, we identified several common technologies being explored by more than one project. We found, however, that the project teams had little or no knowledge that others were conducting similar investigations and therefore little or no information was shared among them. These unconnected, redundant efforts cost both time and money.

- Telecommunications mechanisms. Many of the systems we looked at were relying on Internet connections to transmit information and transact business, but were independently exploring telecommunications mechanisms and standards to use for these purposes. The Aging Service Network, the Electronic Voter Registration System, the Electronic Dog License project, and Electronic Death Certificates, for example, all need to make effective use of the Internet as a communications channel.

- Security issues. System and data security concerns had to be investigated by a number of project teams including the Death Certificate and Immunization Projects. Each project stressed the need to ensure confidentiality of personal information and record integrity since these documents often are required for legal purposes or to access state services, but the projects were tackling these issues independent of one another.
- Central data repositories. Many of the projects were exploring the use of a central repository of data to be accessible by many users. These can provide users with easy local access to information that is maintained in a single, well-managed central source. This approach to data management is one that should be explored collectively since it has so many commonly useful applications and data management considerations, but these concerns were addressed independently in the Real Property, Hunting and Fishing License, and Voter Registration projects, among others.
- Electronic signatures. Many documents are not legally binding or admissible in court unless signed. Doing business electronically requires some form of legally binding authentication and a number of agencies were separately exploring the use and limitations of electronic signatures for this purpose. The Electronic Death Certificate and Voter Registration Projects are examples of systems that required this feature.

### ***Stand-alone, single-purpose systems***

Many localities voiced frustration and concern that state agencies generally develop new applications that operate without regard to related systems and processes. This is especially problematic for local governments that deal with multiple state programs whether these programs are administered by one or several state agencies. Local officials opposed the use of stand-alone applications to solve state agency-specific problems because these “solutions” ignore the multi-purpose and cross-functional nature of most local operations. From a state agency point of view, these systems are dedicated to a clear mission, but from a government-wide point of view, they prevent useful data sharing that could reduce the cost of related systems and improve the ability of the state to understand program dynamics and policy outcomes.

- Town Clerks offices tend to experience this problem most dramatically. Since the Clerk’s public service counter is the access point for a number of state-sponsored and local services, it is congested with information systems and forms that emanate from separate state agencies plus those that are related to entirely local programs. Each system or process makes sense on its own, but seldom takes into account the fact that they may, and often do, conflict or confuse other systems and ongoing business processes that operate in the Clerk’s office.

## ***Uneven local participation in new systems***

State agencies depend upon information from local program offices to support the planning, implementation, and evaluation of statewide efforts. There was a time when state agencies could depend on full participation of all local jurisdictions in these typically paper-based systems. This situation has changed dramatically for two reasons. First, local governments have convinced their representatives that state-imposed local mandates must be accompanied by state funding for their implementation. Second, the increasing shift to automated systems has not been accompanied by a consistent level of local capability or willingness to participate in an automated solution. In recent years, state elected leaders have made a conscious policy decision to allow a considerable amount of local latitude in systems participation. The resulting uneven participation in new systems often means parallel operations at the state level to accommodate automated, manual, and hybrid approaches at the local level. While local choice is a significant local benefit, it comes at the cost of projects that are more difficult to manage, systems that are more expensive to build and maintain, and results that are less uniform than they would otherwise be.

- The Aging Services Network, and Automated Financial Reporting projects are just two that will require the sponsoring state agency to support both paper-based and electronic systems for the foreseeable future. These projects redesigned business processes and identified common information requirements to be shared between the state and the localities. They then developed parallel operations to support these redesigned processes in both paper and electronic systems. Ideally, the non-automated localities will make a transition to the electronic system over time, but years of parallel program management lie between then and now.

## ***Inadequate development and retention of a technical workforce***

As technology has rapidly permeated our society and most of our institutions, government organizations often lag behind others. Due to minimal staff development budgets, 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 much on the technical tools and too little on the programmatic reasons for new systems.

Providing a stable and reliable computing environment that supports day to day program operations requires a technical workforce that is expert in the functions of existing information systems and their supporting infrastructure. While maintaining these legacy systems, staff also need to acquire new skills to adopt emerging technologies. In an employment market that highly values the newest technical skills, public employment is becoming less and less attractive. Agencies find that they either cannot attract people with the new skills or they lose well-skilled people shortly after making significant training investments.

- The opportunity cost of insufficient technical resources must be considered along side the gamble of investing in the development of technical staff. The experience of the Office of Real Property Services SALESNET project is instructive. ORPS invested in its own staff by securing training that would give them in-house expertise in the use of the Internet. Unfortunately, the result was the loss of those staff to higher paying private sector positions, setting the project back by months since the needed skills were no longer available.
- The Immunization project found that all the technical staff in the Health Department were devoted to other priorities at the time their project was underway. As a result, they contracted with private companies for all or nearly all the system design and development work. This can be a good solution, but it requires sufficient funding (the Immunization project has a sizable federal grant) and strong contract and vendor management skills.

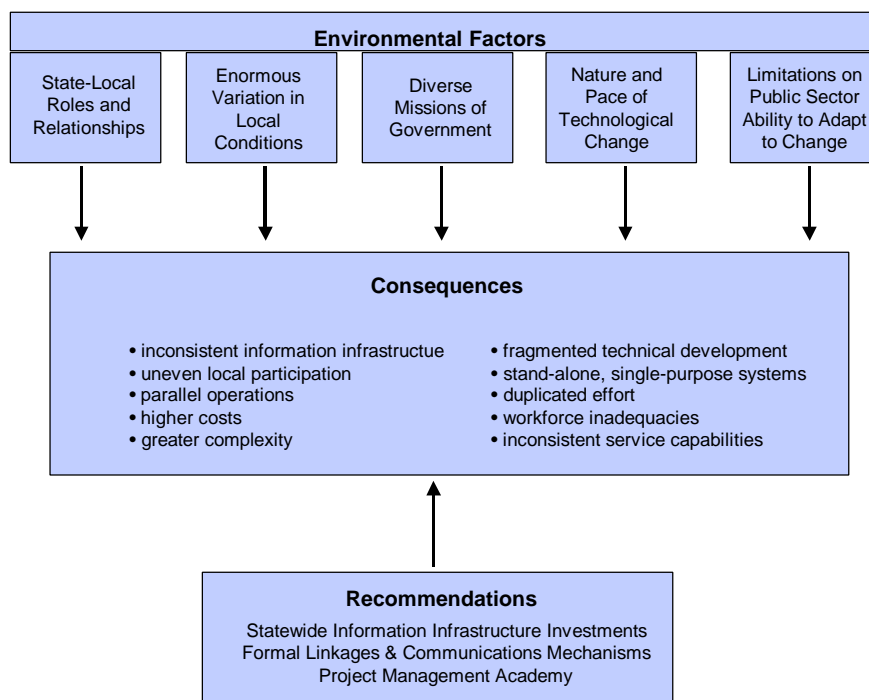


## Recommendations for increasing government-wide system effectiveness

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State and local government officials, as individuals, cannot change the environmental factors that make public sector work so complicated. They can however, try to mitigate their negative consequences. The principles and practices described in *Tying a sensible knot* can help government managers avoid or reduce many problems. The additional recommendations which follow are designed to capitalize on both the findings of this study and the infrastructure-building work already underway in New York State.

Figure 3, an expansion of figure 2, shows several classes of recommendations for counteracting the consequences of the systemic and environmental conditions outlined earlier. While no single government manager can change these systemic and environmental conditions, their consequences can be ameliorated by well-targeted actions that focus on technical infrastructure building, information sharing, and human resource development and support.



**Figure 3. Recommendations for Mitigating Systemic Problems**

## 1. **Expand existing efforts to build a statewide information infrastructure encompassing technology, data, and human resources.**

**NYT.** The Governor’s Task Force commitment to create a statewide Intranet, the NYT, is the essential foundation for a truly government-wide technical infrastructure. This statewide network can provide both state and local agencies with a secure, standardized system from which to operate a variety of applications. To promote its use and benefits, we recommend the implementation of the NYT be accompanied by:

- extensive outreach and education to local government decision makers about its benefits, costs, and uses
- formal training programs for local users and technical staff
- a purchasing program that encourages local governments to acquire the hardware and software needed to connect to and take advantage of the NYT and the applications that will run on it
- demonstration applications that illustrate to small jurisdictions the benefits of participating in a standard statewide technical infrastructure

**Technology and data standards.** With technology standards agencies can feel more secure in their procurement decisions and be better prepared to upgrade or integrate their systems with other agencies if the opportunities arise. The continuing efforts by the Task Force to establish and maintain technology standards should include more local government participation, efforts to promote the use of the standards, and education and peer consulting to help organizations adopt the standards as they acquire new systems. The goal is not to impose rigid technology standards on agencies or local government, but rather to establish “preferred standards” to promote interoperability and cost savings.

**Technical workforce assessment.** A Governor’s Task Force work group recently released a report outlining a broad IT workforce strategy for NYS which states “NYS needs to develop an ‘enterprise-wide’ approach to IT workforce planning, elevate it as a state priority and develop an investment strategy for our workforce which is commensurate with our investment in technology.” The findings of this project strongly support that recommendation. A problem that continually surfaced as we talked with agencies was the difficulty of acquiring, and the high risk of losing, expert technical staff. New York State should conduct a technical workforce assessment that documents the current situation, projects future needs, recommends actions that will lead to better recruitment, development, and retention of technical staff, as well as more effective use of contracts.

## 2. Establish formal linkages and communications mechanisms that encourage awareness of other models and experiences.

Throughout our research we were struck by the lack of cross communication among the projects, even though many were dealing with the same local governments or exploring similar technical solutions. Any project could benefit from easy access to information about systems projects in other agencies and other parts of the country. In addition, local participants often pointed out the need for more complete and frequent basic information about projects that would affect them. These recommendations address both kinds of communication needs:

**Current practice and peer reviews.** The Task Force has already initiated peer review of major systems initiatives and conducts best practice information sessions for selected application types. We recommend both of these efforts be expanded by:

- sponsoring periodic voluntary peer review sessions designed to help project managers identify and take advantage of the experience of others as they define and design new systems.
- sponsoring a Web site that contains up to date descriptions and contact information about current state-local systems projects.

**Ongoing communications and information exchange with local governments.** A special effort was undertaken by the Special Work Group to understand and recommend improvements in communications between state and local governments. These recommendations include:

- **Use local government associations to communicate with their members.** There are at least 50 different organizations and associations for local government, all of which communicate with their memberships on a routine basis. Since these associations and organizations regularly communicate with their members, it makes sense for the State to take advantage of that existing communication network by providing associations with specific information for inclusion in their newsletters or bulletins, and participating in professional workshops and conferences sponsored by associations.
- **Develop an electronic directory that directs users to the appropriate locations for specific mailing lists.** State and local agencies and associations maintain and update mailing lists of their employees or members. An electronic directory that links users to agency and/or association Web sites, mailing lists or contacts within an agency or association would help users reach their intended audiences without requiring them to reinvent or duplicate existing mailing lists. Such a centralized electronic directory would also help users determine what organizations they should contact regarding specific projects or information without requiring them to recompile specific mailing lists for each topic.

- **Consider developing a hierarchical system to communicate information at the highest technical level that users can accept, with an eye toward adopting an electronic communication standard in the future.** Currently, the majority of local governments are not accessible through the Internet, with some of them still inaccessible by fax. However, New York State is moving toward use of the Internet or a statewide intranet to do business with local governments. Development of a hierarchical system, that would communicate with local governments and/or associations at the highest technological level that they are capable of accepting (i.e., first by e-mail, then fax, and finally paper), would progressively reduce production and mailing costs. Such a system could be housed on the NYT and funded in the same manner. Finally, adoption of a date after which communications will become electronic would inform localities of State government's direction and would provide localities and associations with an eventuality for which to plan. This recommendation requires further study as it may require significant planning and resources to fully implement.

### **3. Establish and support a project management “academy” for both state and local managers.**

The world of public management is dramatically changing. Traditional government services provided by a single agency are giving way to complex service programs that require many exchanges of information involving not only public agencies but often private and nonprofit organizations as well. Most of these rely on sophisticated information systems as well as new policies. The best practices guidelines produced by this project amply illustrate the importance of partnerships, collaboration, and entrepreneurship in bringing state-local system initiatives to successful implementation. In addition, public managers now face the complexity of negotiating and then managing contracts for functions and services they traditionally operated themselves. All of this calls for new management skills that take advantage of information as the key resource that ties all these parties together.

Public managers would greatly benefit from a well-organized program of training and development that prepares them to guide projects from inception to evaluation in this complex new environment. We discovered several “natural” managers in the projects we studied, along with creative tools and techniques that were being invented by project teams. We have tried to capture as much of this as possible in the guidelines. However, reading a handbook is a poor substitute for engaging in formal education that conveys concepts, teaches skills, and offers opportunities to apply and refine them. A formal project management program could be incorporated into existing management development programs at the Governor's Office of Employee Relations, or could take other forms. A number of resources already exist in New York State that could be drawn upon to create and sustain this program. These include GOER, the NYS Forum for Information Resource Management, SUNY campuses, state agency training offices, and the Center for Technology in Government.

## Appendix A. A practical guide to state-local information systems: a summary

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State-local information systems link state and local agencies together in a coherent service delivery or administrative environment. These systems facilitate information sharing for the achievement of mutual program or administrative goals. They address both individual and common needs and result from ongoing discourse among state and local participants. The main product of the project is a set of best practice guidelines for creating these systems.

The full set of guidelines, *Tying a Sensible Knot: A Practical Guide to State-Local Information Systems*, is available in both print and electronic form. It includes a full discussion of all the environmental factors, principles, and practices summarized below plus descriptions of the eleven state-local projects involved in the study. Each practice is illustrated by vignettes from the projects.

The document may be downloaded from the CTG Web site at:

<http://www.ctg.albany.edu/resources/pdfrwp/iis1.pdf>.

### ***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 voluntary ones.

- **Public demands for sensible, cost-effective services.** Increasingly, citizens and businesses expect one-stop, same-day, customized services instead of the fragmented, duplicative, and lengthy processes that have often characterized government operations.
- **Devolution of authority.** Our recent political history has seen a dramatic shift away from Washington toward state capitals in such critical public programs as Medicaid and Welfare Reform. This transfer of authority to states in many cases also means a shift of responsibility to localities.
- **Mandates vs. voluntary local participation.** As states take up the responsibility of newly “devolved” programs, they are mindful of local opposition to unfunded mandates. It is now common for local participation in state initiatives to be voluntary in whole or in part.

## ***Characteristics of the ideal state-local information system***

Project participants identified dozens of characteristics that they would expect to find in the “ideal” state-local information system project. These characteristics fell into four categories: objectives, project management methods, design features, and user support features.

- **Objectives.** The objectives of a state-local system project set the stage for all subsequent activity and evaluation. They drive all the investments of all stakeholders. Clear compelling objectives make these investments pay off.
- **Management.** 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 nonprofit sectors. An ideal project management process takes all this into account.
- **Design.** Systems that connect state and local government usually affect work already underway in both places. Ideally, such systems integrate with processes, information flows, technologies, and staff capabilities already in place.
- **Usability.** 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. User support services are a key to that success.

## ***Barriers to ideal systems***

These ideals are difficult to achieve because there are significant barriers to overcome. The project participants identified many problems that state-local projects encounter. These are among the top ranking barriers:

- lack of education and information about technology and programs
- lack of a shared, reliable computing and network infrastructure
- goals that are too ambitious for the resources available
- human and organizational resistance to change
- unrealistic time frames
- organizational, programmatic, technological, and legal complexity
- changing priorities
- overlapping or conflicting missions among participating agencies

## ***Guiding principles***

Nine fundamental principles to guide state-local information system initiatives emerged from this study of eleven existing efforts. These principles support shared vision and commitment—vision of what is to be achieved and commitment to a collaborative way of achieving it.

- **Understand the full range of local and state conditions.** In order for state and local levels of government to work toward the same or complementary goals, they need to understand and appreciate one another’s abilities, strengths, and limitations.
- **Have a clear purpose and realistic, measurable expectations.** Common understanding of a shared and clearly articulated purpose is crucial in state-local initiatives. Realistic, measurable expectations about achieving that purpose are equally important.
- **Commit to serious partnerships.** Active, trustful partnerships focus on common goals and support healthy interdependence.
- **Choose the right people for the jobs that need to be done.** State-local system projects demand a full range of management, programmatic, administrative, technical, and customer service skills.
- **Expect to assemble a mixture of resources.** Most state-local systems are supported by a variety of funding and in-kind resources contributed by different organizations, with different rules of accountability.
- **Communicate as if your survival depends on it.** Open interchange of concerns and ideas means an ongoing flow of complete, appropriate, timely, and accurate information tailored to the needs of each audience.
- **Design a system that integrates with your business.** A new or revised system should take account of, link with, and enhance existing operations.
- **Demonstrate and refine ideas before you implement.** Prototypes and demonstrations make ideas tangible to users and open to improvement throughout the design process.
- **Let common sense guide you to workable solutions.** Trust the experience and good sense of participants to define needs and uncover practical ways to meet them.

## **Best practices**

The surveys, interviews, and project documents revealed nineteen best practices that should go into the design, development, and operation of any state-local information system. Each state-local system project requires a somewhat different mix of these practices to guide it to a successful conclusion. A traditional way of thinking about projects is that a number of steps need to be completed in order to reach project goals. While this kind of thinking is useful and important for managing activities, we think of these best practices not as steps, but as areas for continuous attention through the entire project. The level of intensity that any one practice commands at any point in time will vary—but it will not disappear.

- **Define purpose and scope.** Well defined project purpose and scope both rest on a solid understanding of the underlying program or policy. Together, they represent deliberate decisions about what part of the program the project should address and what realistically can be achieved given the resources available. Ideally, the selected purpose and scope not only attack current problems, but lay a foundation or build capacity to deal with future ones.
- **Choose a well-skilled and respected project leader.** The project leader is a critical success factor in state-local projects. Choose a person who is able to span the psychological and political distance between state and local governments; has a good understanding of local operations; enjoys the confidence and support of top-level executives; is an excellent communicator; is a resourceful manager of people, time, and money; and is flexible and willing to seize opportunities.
- **Recruit the right project team.** Assemble a team of both state and local staff who collectively have strength in three areas: management, technology, and policy. Without individuals capable of handling project management functions (time lines, workplans, budgets, recruiting) you run the risk of poor coordination, and wasted time and effort. If a project lacks adequately skilled technology personnel, it is likely that deadlines will be missed and applications may fail or contain crucial flaws. Teams that do not include well-informed program and policy staff, especially those engaged in direct service functions, are likely to miss the boat on substantive service goals.
- **Sell the project to decision makers.** At the beginning of the project, develop a shared vision that identifies tangible benefits and shows how investments of state or local resources can achieve them. This vision (used consistently in important project documents and events) communicates to decision makers important information about why the project is being undertaken, what the expected goals are, and how the realization of these goals will benefit their stakeholders.



- **Communicate often and clearly with stakeholders.** Good communication practices ensure that all stakeholders (both those actively involved and those who will eventually be affected) are continuously and adequately informed about project goals and progress. This is not a one-size-fits-all endeavor. The techniques selected should be based on the particulars of the project and specific needs of each audience: what information do they need? how much detail? how often? through what medium?
- **Finance creatively.** A state-local information system effort will likely be financed by a package of resources that includes cash appropriations, grant, in-kind resources (public and private), and a lot of redeployed human effort. Creative financing entails not only the usual budget management skills, but the ability to convince others to contribute resources, to identify and capitalize on grant opportunities, to “leverage” resources, and to balance the constraints and rules that multiple funding sources can impose on a project plan.
- **Adopt tools and techniques that can manage complexity.** These projects require tools to manage people, time, relationships, partnerships, ideas, conflicts, resources, information, and processes. Project managers need a range of techniques and the insight to use them in the right context to manage multiple streams of formal and informal communication and activity. Successful techniques are usually based on a keen understanding of the project’s goals and common sense adaptation of both traditional and newly popular management tools.
- **Look for existing models.** Any project can benefit from a systematic review of similar efforts in other places. Since private and public sector organizations in this country and others often conduct similar programs, there are nearly always models from which to learn. Academic researchers and nonprofit organizations may also have solved a problem, or at least developed part of the solution. There is a lot to learn from success stories and even more to be learned from cases where things didn’t always go as planned.
- **Understand and improve processes before you apply technology.** A system which successfully supports both the service delivery role of local governments and the information requirements of the state usually results from a clear understanding of the dependencies and requirements which govern the business processes that link them together. Project teams often find that a significant amount of the improvement they expect from a new system actually comes from understanding and improving these processes before they apply any technology.
- **Match the technology to the job.** Before choosing a technical approach, give full consideration to the work processes and overall business context in which a state-local system must operate. Consider user capabilities and the organizational and staffing limitations of the agencies that will be implementing, using, and maintaining the system to deliver services. Conduct technical awareness activities such as literature reviews, searches on the World Wide Web, vendor presentations, or attendance at technology exhibitions and conferences. Prototyping is an excellent, relatively low-cost way to test the “fit” between a technology and the environment in which it must work.

- **Use industry standard technology.** Industry standards exist for almost every type of hardware, software, and communications technology, including such things as data organization and access (e.g. database structure, query languages), data sharing (e.g. Electronic Data Interchange, encryption), networking services (e.g. data communications, network management, e-mail), and document imaging (e.g. scanning, imaging, work flow). Standards enable interoperability and electronic messaging among system components. They also offer vendor independence and scalability — when you use a common standard, you will be able to choose among different products that adhere to the standard and will be able to scale up to larger systems when the need arises.
- **Adopt and abide by data standards.** Data standards usually include an agreed upon definition of the meaning of a term and an agreed upon format for how the term will be represented in the system. Standard data definitions and formats organized in a common data dictionary are an essential prerequisite for effective information sharing among government organizations and between the government and private firms. They provide a common language for information sharing, help ensure that the data sets will be described accurately, facilitate automation, allow for both central and distributed storage of data, and support electronic information exchange.
- **Integrate with related processes and practices.** In most cases, state-local information systems projects are focused on standard business processes such as issuing a license, determining eligibility for a benefit, or recording a property transaction or vital record. However, these business processes are conducted throughout the state in very non-standard environments. Projects therefore need to focus on both the business process and the ability of individual organizations to adopt an information system to support that process. Tools such as data dictionaries, and process and workflow analysis help identify ways that different organizations can and should participate. Organizations unable to implement a sophisticated automated system in the short term can begin by focusing simply on the new or improved business process. An organization that needs to retain its reliance on paper processing can still improve its performance and consistency by adopting the set of standard data definitions that are built into the computerized system. In this way, each organization can begin to integrate the useful elements of the new system into its own environment, within its own operational and resource constraints.
- **Use prototypes to ensure understanding and agreement about design.** The philosophy behind prototyping is that system development is more effective when customers are partners in the design process. Prototyping allows for the building of the system to begin much earlier in the development process, and allows customers to see and influence the system as it is being built. The prototype makes tangible all the ideas that both designers and customers usually try to communicate to one another in words. The prototype makes it possible for both to see and understand the needs, functionality, and limitations of the design and to alter it as needed.

- **Choose a capable pilot site.** Many system implementations are initiated with pilot tests that bring the system into the field to evaluate and refine design, performance, and integration with other systems and activities. The pilot site is a critical organization — one that is willing to undergo on-the-spot evaluation and identify and work on the inevitable problems that pilots are created to uncover and resolve. A capable pilot site must be representative of local conditions, have the organizational capacity and leadership commitment to carry out the pilot, and be geographically accessible for easy interaction among designers and users.
- **Make the best use of vendors.** Technical expertise to support the implementation of a new networking technology, a new database engine, or a more intuitive graphical user interface is not the exclusive knowledge of government officials. Depending on resources and the needs of the project, outsourcing portions of the work to technical specialists can be an effective way to get the job done. Well-managed outsourcing allows the government staff to focus on those issues that demand their specialized knowledge and experience while relying on other experts to do the technical work.
- **Train thoroughly.** The process of adopting a new system can be made much less difficult by offering well-designed, user-oriented training sessions and reference materials. User training needs to demonstrate not only how the system works, but how it fits into the larger work picture. It also needs to take place at the right time and be offered by methods that take into account the different ways that people learn.
- **Support users.** The time period surrounding implementation is a critical one for user support. Offering immediate, appropriate support at this point in time will relieve anxiety and will encourage willing and effective users. But there are always new users and most systems continue to add or change features throughout their life cycle. User support needs to be continually updated and continuously available through such methods as a formal help desk, newsletters, online help features, and lists of frequently asked questions.
- **Review and evaluate performance.** A formal evaluation tells how well the system supports the purpose and goals of the project. A comprehensive evaluation is attractive to funders, policy makers, and taxpayers alike by answering questions such as: how well does the system meet customer needs? how well does it contribute to integrated service delivery or other service system goals; how well does it meet time-savings, streamlining, and other operational improvement and user effectiveness goals; and how well does the system meet cost-savings or revenue goals? The answers to these questions lead to decisions about changes, improvements, refinements, and lessons for future initiatives.

## **Appendix B. Project Participants**

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### ***Governor's Task Force on IRM, Special Work Group on State-Local Information Systems***

Co-Chairs        Stanley France, Director, Schoharie County Central Data Processing  
                      Thomas Griffen, Executive Director, Office of Real Property Services

Pamela Akison, Department of Health  
Joseph Cain, Department of Health  
Edward DeFranco, Division of Criminal Justice Services  
JoAmy Guild, Department of Agriculture and Markets  
Richard Harris, Office of Real Property Services  
Terry Maxwell, NYS Forum for Information Resource Management  
Anne Marie Rainville, Governor's Task Force on IRM  
Mary Redmond, New York State Library  
Gary Rinaldi, Department of Health  
Peg Sauer, Department of Environmental Conservation  
Bonita Scott, Office of Real Property Services  
Jeffrey Swain, Office of the State Comptroller  
Paul Szwedo, Office of Real Property Services  
Steve Walter, State Office for the Aging  
George Warner, Department of Social Services  
Bill Wray, Department of Social Services

### ***State Agencies***

Department of Agriculture and Markets  
Department of Civil Service  
Department of Environmental Conservation  
Department of Health  
Department of Motor Vehicles  
Department of Social Services  
Department of State  
Division of Criminal Justice Services  
Division of Probation and Correctional Alternatives  
Empire State Development  
Governor's Task Force on IRM  
NYS Library  
Office of Real Property Services  
Office of the State Comptroller  
State Archives and Records Administration  
State Board of Elections  
State Office for the Aging

## ***Local Government***

### *Associations*

Association of Town Clerks  
Local Government Information Technology Directors Association  
NYS Association of Towns  
NYS Government Finance Officers Association

### *Counties*

Albany	Oswego
Chautauqua	Orange
Chemung	Otsego
Columbia	Rockland
Cortland	Saratoga
Dutchess	Schoharie
Delaware	Suffolk
Monroe	Ulster
Nassau	Westchester
Onondaga	

### *Cities*

Binghamton	Rome
New York City	Rye
Oswego	Yonkers
Rochester	

### *Towns*

Bergen	Malta
Byron	Marcellus
Canton	Mendon
Champion	New Lebanon
Clifton Park	North Hempstead
Cobleskill	North Collins
Cortlandville	Perth
East Fishkill	Pittsford
Edinburg	Putnam Valley
Ellery	Schodack
Hamburg	Somerset
Huntington	Unadilla
Lancaster	Union
Lebanon	Williamson

### *Villages*

Garden City	Port Chester
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***Other Participants***

National Center for Health Statistics  
Upper Hudson Primary Consortium  
NYS Forum for Information Resource Management

***CTG Staff***

David Connelly, Graduate Assistant, Public Administration  
Sharon Dawes, Director  
Ann DiCaterino, Project Support Manager  
David Filbert, Graduate Assistant, Political Science  
Darryl Green, Project Support Manager  
Jung-Sub Lee, Intern, National Computerization Agency, Republic of South Korea  
Claire McInerney, Information Coordinator  
Theresa Pardo, Project Coordinator

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**Center for Technology in Government  
University at Albany / SUNY  
1535 Western Avenue  
Albany, NY 12203  
Phone: 518-442-3892  
Fax: 518-442-3886  
[info@ctg.albany.edu](mailto:info@ctg.albany.edu)  
[www.ctg.albany.edu](http://www.ctg.albany.edu)**