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Training the IT-savvy public manager: priorities and strategies for public management education

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***Abstract:** Despite big budgets, political endorsement, and formal frameworks for information policy, technology, and management, government IT projects continue to falter or fail. This paper argues that public management education must include information strategy and management topics as core concerns. MPA programs should be teaching the next generation of public managers to appreciate how deeply embedded IT is in every aspect of government—and to appreciate their own roles and responsibilities with respect to it. The paper reviews practical experience and academic research on information systems in government and identifies five kinds of competencies that are most needed to build successful information strategies and systems in the public sector. These include strategic thinking and evaluation, system-oriented analytical skills, information stewardship, technical concepts, and complex project management skills. The article concludes with a variety of approaches for bringing these competencies into the Master of Public Administration curriculum.*

In all professions, competent practitioners possess core knowledge of their domains. In medicine for example, physicians study the principles of anatomy and physiology whether they are cardiologists or pediatricians. Attorneys are trained in the fundamental nature of contracts and court procedures regardless of their individual specialties. Such core knowledge is the common foundation of the profession; it is necessary for basic competence and underlies all specialties. In the profession of public administration, core competencies have traditionally included expertise in governmental institutions, public finance and budgeting, policy analysis, program management and evaluation, and human resource management. This paper contends that today's public manager needs an additional area of core knowledge— information strategy and management.

Information content, policy, and technology are inextricably woven into the fabric of public management. Information content and policy date back to the First Amendment as governmental concerns. Information technology (IT) is a relative

newcomer, but for more than 40 years, government agencies have applied IT to administration, policy analysis, and service delivery. At first, it was used simply to record, organize, and retrieve highly structured data such as census information or mailing lists. Later, applications systems began to be used to actually carry out governmental programs. Over time, simple applications evolved into complex ones. In human services, for example, advanced systems record personal and household data, calculate financial eligibility for benefits, and cross-check information with other systems. These large centralized systems are still very much part of the landscape of government. With the advent of the personal computer, data sources and analytical tools were no longer centralized, but spread throughout public organizations. Then networks allowed much wider communication and information sharing. Today, the Internet allows individuals and organizations all over the country to find government information, communicate with government agencies, and transact many kinds of business electronically. In addition, agencies use the Internet for internal operations and for cross-agency processes

and communications. IT is now everywhere in government—and it exists simultaneously in all of these forms. As a consequence, IT and its associated human resource requirements represent a substantial and increasing part of the budget of every jurisdiction.

The Office of Management and Budget (OMB) reports that the federal government alone will spend \$45 billion on IT in FY 2002 (OMB, 2001). State and local governments spend about \$50 billion a year, with large states spending on the order of \$1 billion each. But IT consumes more than dollars. Every kind of public manager spends considerable time, energy, and attention on information systems and their organizational and policy impacts. Government professionals interact daily with the information, processes, preferences, rules, and assumptions that are embedded in the information systems that now underlie the vast majority of public programs.

The pressure to perform

Today, information strategies are high on the agendas of elected leaders. Under the banner of “electronic government,” political leaders are promising radical changes in public services and performance. In his last year in office, President Clinton announced that all federal government services would be available on the World Wide Web by 2004. In his first year, President Bush endorsed 24 e-government initiatives and appointed a federal e-government leader in OMB. Governors have made e-government a management and service priority (see State of Washington, 2000, State of New York, 2001, for example) and intergovernmental coalitions such as “Government Without Borders” which involves the federal government, Virginia, and Washington, DC area municipalities (GSA, 2001), are making similar pledges. Cities of every size are doing the same, as are counties, school districts, and many other local jurisdictions.

While political pressure and public expectations for e-government rise, effective mechanisms for achieving it and other IT-supported goals continue to elude us. Despite huge investments, there is little satisfaction with the results. IT projects falter and fail with alarming regularity. The US General Accounting Office has produced scores of reports criticizing the cost, management, and performance of federal agency IT initiatives (GAO, 1997, 2001(a), 2001(b) for example). Congress has enacted laws specifically designed to reform and improve IT use and management including the Clinger-Cohen Act (P.L. 104-106), the Government Paperwork

Elimination Act (P. L. 105-277), and the Government Performance and Results Act (P.L. 103-62).

Similar audit reports, laws, and guides can be found in states across the nation. California, for instance, developed an explicit risk analysis model to try to prevent repetition of multi-million dollar failures (Newcomb, 1998). The key risk categories include strategic alignment with agency goals, cost, the experience and capabilities of project managers, technology assessment and capacities, and the extent of and plan for managing organizational and operational change (State of California, 1998).

Vermont’s highly customized Human Resource Management System came in two years late, \$1 million over budget, and without all its promised capabilities. A subsequent case study identified key lessons for future projects: align IT projects strategically with departmental objectives, know the limits of your capabilities, improve business processes before developing systems, recognize and manage complexity, and understand political and operational risks (Cats-Baril and Thompson, 1995).

A review of a dozen IT-based public initiatives in New York identified strategic factors that cannot be ignored when applying IT to public programs. These factors emphasize that program needs must drive technology choices, that the external environment and all its stakeholders are powerful influences, and that system development must be treated as an unfolding learning process that demands ongoing evaluation. (Dawes, et al, 1999a). In short, study after study of IT failures in both the public and private sectors cite strategic, organizational, management, and leadership issues, not technology itself, as the main reasons for this dismal record (see for example, Ewusi-Mensah and Przasnyski, 1991; Standish Group, 1995).

IT and public management education

Given the widespread and unabated legacy of disappointment and poor performance, it seems fair to ask if the way we train public managers about IT contributes to the problem—or might contribute to a solution. Since 1986, the National Association of Schools of Public Affairs and Administration (NASPAA) has searched for an effective way to incorporate education about information technology and its influences into curriculum standards for the Master of Public Administration (NASPAA, 1986). Despite fifteen years of attention to the effect of information technology on public management and governmental performance, today’s typical public administration curriculum is still a long way from

adequately addressing these challenges. Brown and Brudney (1998) point out that the forward-looking standard developed in 1986 (Kraemer and King, 1986), with its emphasis on understanding basic technology concepts and management functions, has become increasingly inadequate in the face of rapidly evolving technologies and more complex management challenges. Instead, they recommend a program that focuses mainly on the IT planning and management concepts of the Clinger-Cohen Act. These include planning and coordinating information systems, system life cycle concepts, evaluating system outcomes, developing system policies, integrating systems across organizations, and attending to the legal implications of system technologies. They further recommend a set of three courses that address strategic information resource management (IRM), IRM planning methodologies, and information policy. Of the 106 public affairs schools they surveyed, 64 percent believed they should offer instruction in these topics, but only ten had a course dedicated to them. Less than one-third of the MPA schools offered any instruction in these topics and in those only a fraction of students were actually exposed to them. And progress is likely to be slow. Only about half of those who did not offer these topics at the time of the study hoped to do so within five years.

More recently Kim and Layne (2001) assessed the emerging demands of e-government and recommended adding certain topics to the public management curriculum. These would address an information-centric view of government, new forms of collaboration and service delivery, emerging human resource issues, advances in organizational theory, and computing competencies necessary for working in a networked environment. The authors further recommended a special leadership curriculum focused particularly on the transformational aspects of advanced e-government which challenge traditional organizational forms and citizen-state relationships.

In 2001, the NASPAA technology committee drafted a recommendation that information technology be added to the core list of common curriculum components for the MPA, acknowledging that this domain is no longer a specialty area, but one that all well-trained public managers must understand and be equipped to handle. Still, given the low level of current investment and the limited resources of most PA programs, focus and prioritization are needed. What are the most important IT-related topics that should be covered in MPA education? Some recent studies shed light on this question.

Lessons from field research

The National Science Foundation (NSF) Digital Government Research Program was created to foster more rapid development and deployment of innovative, information-based government services. In a 1998 workshop, leading practitioners identified the greatest needs with respect to creating a “digital government.” These included secure and trusted systems that are integrated with both business processes and other systems, methods and measures of citizen participation, new public service delivery models, new models for networked organizational forms, decision support tools for leaders, archiving and electronic records tools, and better methods of IT management (Dawes, et al., 1999b). The workshop report also points out that “policy guidelines, organizational forms, and technology tools constantly interact with one another--generating many questions and conflicts about what is technically possible, organizationally feasible, and socially desirable (p. iii).”

A study by the Harvard Policy Group on Network-Enabled Services and Government produced “Eight Imperatives for Leaders in a Networked World.” Prepared to advise newly elected and appointed officials at all three levels of government, the report urges leaders to engage actively in the development and implementation of information technology strategies for their jurisdictions and departments. Despite the inevitable uncertainties and risks, the report argues, information technology, especially in the form of networks, is simply too powerful and pervasive for leaders to ignore or delegate to technical staff. The imperatives urge leaders to focus on how IT can shape work and public sector strategies; how it can be used for strategic innovation, to make use of best practices, to improve IT financing and budgeting, to protect security and privacy, to stimulate economic development, to promote communities, and to prepare for digital democracy (Harvard, 2000).

A longitudinal study of seven information-intensive program initiatives in New York identified a consistent set of skills necessary to succeed. They included the ability to analyze a complex situation and identify the problems it contains; find, assess, and use information and technical tools to address the problems; produce and communicate a usable product; evaluate the results; and manage the project using tools and strategies that are suited to its level of complexity. Other conclusions emphasized the ability to think strategically, to recognize the hidden costs of complexity and coordination, and to harmonize policy considerations with technical and

managerial ones (Center for Technology in Government, 2001)

These and other studies consistently suggest the nature of the knowledge, skills, and capabilities that public managers need today if they are to make effective use of information technology. They must recognize that IT adoption and government reform are interacting processes (Scavo and Shi, 2000) and that IT implementation visibly affects agency performance (Heintze and Bretschneider, 2000). Public managers need to appreciate the strategic possibilities that technology presents for creating, improving, or streamlining government functions and programs (Kim and Layne, 2001; Andersen, et al, 1994). Conversely, they must guard against the common tendency to expect technology to solve problems that actually demand managerial, organizational, or policy solutions (Klein, 2000). They need to understand that information technology itself generates new policy problems and unintended consequences (e.g., Roberts, 2000) that may have few past models as guides. As more programs demand information sharing across agencies and levels of government, managers need to understand the attendant benefits and risks (Dawes, 1996). They will need to create and control integrated systems that cross these boundaries (Landsbergen & Wolken, 2000). In addition, public managers now work in an environment characterized by significant private sector involvement, making the management of public-private and public-nonprofit engagements more prevalent and more important (Globerman and Vining, 1996).

Priorities for effective practice

The practical difficulties and field research summarized above highlight a significant gap between real needs and even the most forward-looking prescriptions for educating public managers about IT. Clearly, e-government is now the most visible and politically attractive government IT management trend. But important and extensive as it is, e-government actually adds to, it does not replace, the layers of IT uses and concerns that came before. If we focus too much on e-government, our students will be poorly prepared for the many more common information and technology issues they will face in day to day operations.

While the Clinger-Cohen mandates for planning, life cycle management, and policy are undeniably important, they mostly represent ways to manage the IT function itself. Yet, only a tiny fraction of MPA-educated public managers will work in positions where they will actually manage the IT function of an

organization. The vast majority will work in other jobs whose main focus will be in such areas as budget or policy analysis, legislative affairs, program management, evaluation, service delivery, auditing, public finance, or community relations.

These professionals nevertheless have substantial influence over the way technology is incorporated into agency operations and programs. As program managers they will help design systems that support their service programs and will use them daily to carry out program administration and evaluation. As budget or legislative analysts, they may be called upon to recommend whether systems should be initiated, continued, or killed. As field representatives, they will depend on IT to stay connected to the people and information resources of their organizations. They may be members or leaders of projects charged with developing and deploying new technologies to improve operations or offer new services. They will engage in electronic forms of public participation in rulemaking and other venues. They may be freedom of information officers or records managers in addition to their other assignments. As a consequence, the first goal of IT-oriented MPA education should be to prepare students to manage government programs *with* technology, rather than training them to manage technology itself.

The lessons of the research and experience presented above suggest five clusters of concepts and skills that public managers need in order to be effective in the information-rich and technology-intensive environment of modern government (Table 1). Although all five categories are important, they are presented in rough order of importance for most public managers. In the discussion below, each cluster is described in general terms and then elaborated by an illustration drawn from the action research program of the Center for Technology in Government (CTG) at the University at Albany/SUNY. Since 1993, CTG has worked with state, local, and federal government agencies on more than two dozen projects designed to understand how information and technology choices can support public programs.

Strategic thinking and evaluation	Align IT with mission goals Develop a business case for IT-supported initiatives Make IT investment decisions Assess performance impacts
Analytical skills	Stakeholder analysis User needs analysis Business process analysis Information policy analysis Information and work flow analysis Modeling techniques Risk assessment Best and current practice research
Information stewardship	Data management concepts and techniques Data quality concepts and techniques Records management concepts and techniques
Technical concepts	Fundamentals of information and system security Fundamentals of system design Fundamentals of networking Fundamentals of databases Fundamentals of application development
Complex project management	Communication and presentation Negotiation Intra-agency coordination Inter-agency coordination Intergovernmental coordination Risk management Private sector roles and relationships

Strategic thinking and evaluation. Four topics (aligning IT with the mission of the organization or policy initiative, developing a substantive “business” case for an IT-based initiative, making wise IT investment decisions, and understanding how to assess the impact of IT-based initiatives on program performance) represent the larger strategic issues surrounding the use of IT in government. They emphasize the importance of having program and policy goals drive the selection and use of IT. They also encourage broad consideration of the public service impacts of IT-based initiatives as well as careful decisions about what kinds of efforts are worthy of initial and continued public funding. Finally, this kind of thinking makes it more likely that organization-wide interdependencies and priorities are understood and supported.

Case illustration: Until recently, the New York State Department of Transportation (DOT) made its IT

investment decisions as many other agencies do – either by delegating them to the technical staff who had to choose among the many requests for support that were sent to them by the program units each year, or by asking top-level policy makers to choose the best projects. Neither method works very well because each omits the key link between technology use and policy goals – the need for detailed understanding of the business processes and program operations of the agency. At DOT, these programs include responsibility for the state’s highways, bridges, rail system, aviation facilities, public transit systems, and ports. By instituting a comprehensively designed new IT investment process, DOT brought its program managers and their knowledge of transportation program into the heart of these decisions. The new DOT strategy focuses sharply on the business or program goals that an IT investment is supposed to help achieve. The strategy uses the rubric of a “business case” prepared by program

managers to establish need, set performance targets, assess risks, and present alternatives. It also establishes a well-defined set of information requirements needed to evaluate these proposals, and an internal training program for staff from all parts of the agency. A completely re-designed governance and decision making structure places technical experts, program experts, and policy makers in appropriate roles with information and decision requirements appropriate to their responsibilities. Program managers make the substantive business case for budgetary investment, technical staff investigate and propose suitable IT applications, and policy makers make needed choices among well-defined competing proposals. (Center for Technology in Government, 2001b)

System-oriented analytical skills. These skills allow analysts to delve deeply into the relationship between IT and the functioning of an agency or a program. “System-oriented” in this sense means being aware of the organization, its functions, and its environment as an interconnected whole. These kinds of analytical approaches address the importance of knowing how to work with people in different roles to craft systems that really work, make sense, and deliver value. They recognize that IT strongly shapes work processes and is embedded in daily operations. Because these processes often cross work units, agencies, and levels of government, process and workflow analysis are powerful tools for identifying the conflicts, overlaps, gaps, and mismatched expectations that so often lead to poor performance. All information systems also raise information policy issues (about access, confidentiality, or preservation for example) that need to be identified and assessed. In addition, various modeling techniques and risk assessment methods allow for low-cost consideration of alternatives before committing to a particular course of action.

Case illustration: In a project focused on the evaluation of programs and services to homeless people, the NYS Bureau of Shelter Services (BSS) worked with several local governments and about 20 nonprofit service providers to prototype a shared data repository that would contain information about their collective activities and caseloads. The overall goal was to use this information to understand overall program performance and to identify and promote best practices. The project quickly encountered two crucial information policy issues: how would confidential personal information be handled and would the state agency use the data in the system to publicly criticize individual shelters? These two questions led the project participants through a long

and thorough examination of their working relationships, legal obligations, and separate and shared goals for the project. While these issues were being resolved, a third information issue was encountered – the different organizations defined key data elements in different ways and had significant data quality problems stemming from the stressful conditions under which client intake is conducted. In addition, the shelters varied dramatically in their use and understanding of technology. Some were units of large sophisticated organizations, others were store-front operations with no computing at all. These issues made it necessary to understand the business practices and work flows of the different kinds of organizations that make up the shelter “system” and to choose the few areas of commonality where a shared information resource would be of some benefit to all. None of these information issues could have been solved by (and most were not even discernible) to the IT specialists assigned to the project. They all demanded close and continuing attention from the program managers and policy analysts. (Center for Technology in Government, 2001c)

Information stewardship. Anyone who has ever tried to use a data set created by someone else probably knows the frustration of working with inadequately described, poorly maintained information. Information stewardship skills for the public sector pay special attention to quality, transparency, and usability issues, as well as to the maintenance of the public record over time. Clear and explicitly stated data collection strategies, data definitions, records management protocols, and technical migration strategies are all necessary components of stewardship. Sound data management and quality control techniques lend themselves well to stewardship goals, but they need to be practiced by everyone who handles information, not just by technical system designers, or by the original data collectors. In addition, different kinds of technology platforms bring different possibilities and problems to the fore. A closed system that can be used only by designated staff in a single agency presents far different stewardship demands than a publicly accessible information resource offered on the World Wide Web.

Case illustration: The NYS Council on Children and Families has been a national leader in the use and promotion of indicator data about the health and well-being of children. Until recently, it carried out this part of its mission by annually publishing a book of statistical tables prepared by thirteen state agencies that have some responsibility for children’s issues.

The tables present data on such topics as health insurance coverage, school attendance, and family income levels and are used by researchers, advocacy organizations, community groups, and others. When the Internet became a feasible vehicle for distributing this information, the Council began to consider how it could replace the printed book of prepared tables (with its attendant costs and availability limitations) with a Web-based clearinghouse of actual data sets available to anyone. The project soon faced substantial information management and policy issues that program managers in all the participating agencies needed to address. First, Web users would need accurate and comprehensive descriptions (i.e., metadata) for the data sets; these did not exist in most instances. Second, by offering the data itself, some users might be inadvertently led into making invalid comparisons due to lack of understanding about time frames, sampling techniques, or geographic breakdowns. Much more advice from program experts, as well as some technical protections against these kinds of errors, needed to be created. Third, the clearinghouse would be continuously available and therefore should be updated regularly. This need required new technical skills for Council staff, and required that the Council and the other agencies collectively understand how and when data were collected from each of their separate programs and to agree on a data preparation and delivery scheme that would affect their individual work processes in new ways. In sum, these changes in stewardship responsibilities caused the Web version of the indicators to actually cost more than the book, requiring the Council to assess and communicate how additional benefits to users justified this cost. (Center for Technology in Government, 2001d)

Technology concepts. Graduates of MPA programs need to have some grounding in IT concepts in order to be effective partners in or leaders of programs that depend on IT for their operation. This is not to say they need to be technical experts, but they do need to understand, for example, how networked, web-based systems differ in nature and capability from closed internal processing systems. They need to understand the principles of system and information security in order to protect sensitive data and systems from misuse. They will also benefit from familiarity with the basic principles of data bases, system design, and application development so they can participate as well-informed users and overseers.

Case illustration: In a project to explore the feasibility of a government-to-government portal, New York State and local government agencies are considering the implications of moving away from

many separate systems that link state agencies and local governments to a single, secure Internet gateway. While all participants understand the potential benefits of a uniform, predictable Web interface between state and local levels, they are also wary of the many related effects of that technical choice. For example, today every state agency defines its own security needs for each of its system applications. In a G-to-G portal, agencies will need to agree on a standard set of security protocols. Today, local governments use a wide variety of technical platforms or mixtures of computing and manual operations to comply with state-mandated systems. In a fully-implemented G-to-G portal environment, all local governments must have the same minimum level of technical capability, yet there is no agreement about how that capability will be acquired, implemented, or financed. When all state and local agencies share certain data resources, such as official contact information, they will have a single authoritative source for important information, but they must also agree on the key elements of the database, rules for update and access, and roles for various users. These consequences stem from the both the capabilities and the limitations embedded in the choice of technology. (Center for Technology in Government, 2001e)

Complex project management. The ability to manage complex IT-supported program initiatives goes well beyond the basic ability to plan, schedule, and budget against a work plan. It emphasizes appreciation for the special requirements of large scale, high-risk, high-visibility projects whose participants often do not report to the same leaders. This kind of management requires the ability to negotiate and communicate with a variety of players; and to recognize, manage, and mitigate the risks that are inherent in the highly interdependent, multi-organizational settings that characterize so many public programs. Many mid-career students face these issues every day. Newly-minted MPA's may not lead such risky projects, but appreciation for these issues will make them much more effective participants.

Case illustration: After eighteen years of operation, the NYS Central Accounting System (CAS) had outlived both its underlying assumptions about financial management and several generations of advancement in information technology. As the Office of the State Comptroller (OSC) considered how best to update the system, it faced a project of extraordinary complexity due to the nature of the services the Central Accounting System offered and the very large number of separate organizations and

public management functions that depend on it. These functions include monitoring and controlling agency spending, issuing payments, tracking contracts, and generating financial reports that all together represent more than 17.5 million transactions a year involving more than 150 different state organizations and thousands of local governments. Each state agency depends on the CAS for core functions, but at the same time most have also invested heavily in either their own internal processes, or even separate information systems, to compensate for the financial management and data manipulation capability that the CAS lacks. In addition, the project design and results had to satisfy not only OSC itself, but all the state's oversight agencies, both houses of the Legislature, and the private financial community. Because of this complexity, visibility, and risk, the project was led by a top-level program executive. Two key management strategies helped the project move forward. First, the project leader formed a strategic partners group including all the executive and legislative bodies who could make or break the project and kept them involved every step of the way. Second, the project team engaged in an extensive year-long stakeholder analysis to document and understand the specific needs of the many different users of the system. This was accompanied by an investigation into the purposes served by the separate agency financial management systems as well as a set of detailed process analyses that laid the foundation for eventual evaluation of technical approaches. In a project like this, each stream of work needs to be well-planned and managed, while their interdependencies pose extraordinary coordination and communication challenges (Center for Technology in Government, 2001f).

Curriculum strategies

The history of IT experience, the lessons of field research, and evolution of thinking about incorporating IT issues into public affairs education, all support the proposition that MPA programs should be teaching the next generation of public managers to appreciate how deeply embedded IT is in every aspect of government—and to appreciate their own roles and responsibilities to with respect to it. By placing IT in the mainstream of MPA education, we can treat technology as an integral part of public management, and can present these topics within the critically important context of values, politics, institutional constraints, and democratic principles.

Research tells us that it is not the technology itself but our failure to understand and guide its use that

leads to repeated failure. In government, this guidance must come from well-informed policy leaders and program managers who take responsibility for the IT dimension of public programs, just as they take responsibility for policy choices, human resources, and financial management. In order for them to play this role effectively, they must be trained for it.

With this outcome (and limited resources) in mind, individual MPA programs can offer instruction that takes advantage of research findings, responds to practical priorities, and makes the best use of their faculty and institutional resources. A variety of strategies can be used:

- A foundation course could be devoted to the strategic value of IT in government and the dynamic interplay among policy, management, and technology. Such a course should introduce students to a wide array of IT uses, information policies, and management strategies. Case studies and research findings could be used to show how real systems affect real programs and why. They could demonstrate how different players did or could have influenced the outcome of IT initiatives, and show how asking different questions at the outset of a project can influence its outcomes. Many key topics could be introduced here including how to align IT use with mission goals, the importance of focusing on the needs and abilities of system users, how to assess and improve business processes, ways to recognize and manage interagency and intergovernmental considerations, what to look for in a business case for IT spending, how to recognize the policy tensions in information-related decisions, and so on.
- Many topics can be incorporated into existing courses. For example, information policy problems pertaining to privacy, access, and free expression can be used in a course on policy analysis. Budgeting courses can focus attention on the factors that need to be taken into account when considering funding for big IT initiatives. Any course that focuses on federalism can look at the information systems, processes, and data flow that link multiple organizations and jurisdictions together. Courses in program evaluation are excellent places to consider how technology decisions and system designs affect program performance. Courses in substantive policy areas like health care or the environment offer many opportunities to explore information policy, technology, and management topics in

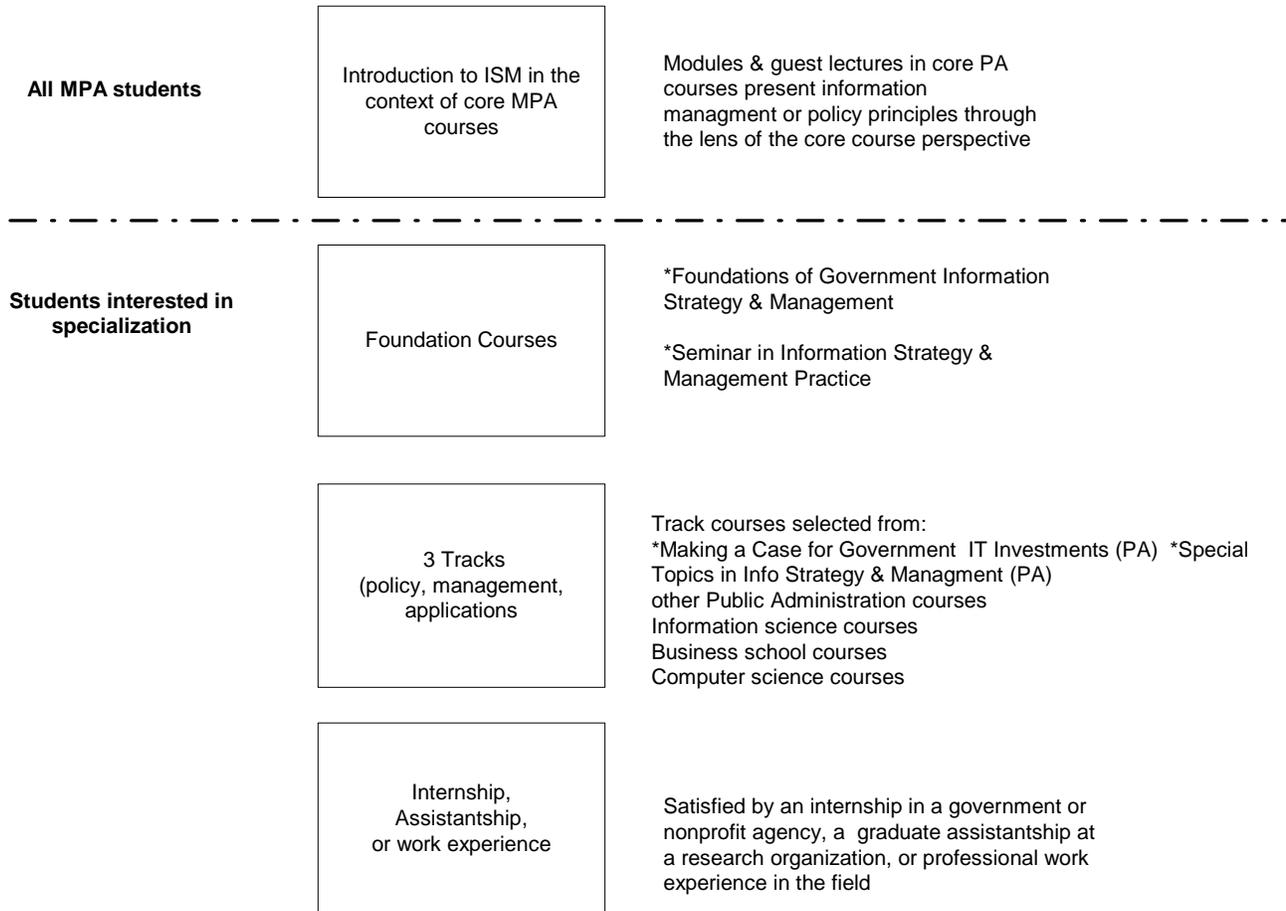
the context of particular policy problems or program goals.

- As for practical learning, field projects in which students design and build systems are invaluable for teaching the difficult lessons of design, project management, contracting, user involvement, change, and complexity. This kind of experience could be offered in faculty-led projects or through internships. While such projects need to be small and focused enough to fit into one or two academic semesters, they offer students a method of learning that simply cannot be replicated in the class room. Even small projects demonstrate the crucial issues of alignment with mission, attention to user needs, process thinking, and project management. Depending on the topic, students may have to grapple with information quality and confidentiality issues, cross-boundary information sharing, or the need to develop a business case for investment in a system. All of these experiences will give them skills and insights that cannot be acquired in the abstract. A secondary benefit of this kind of student experience is the opportunity for faculty to develop working relationships with practicing managers in local agencies. These relationships can contribute to student job placements, good quality internships, and practical advice for ongoing curriculum improvements.
- Sharing courses or entire programs with other departments may be possible, either in traditional MPA format or as certificate programs. Project management training might be offered in a variety of ways, including professional adjuncts or a shared course with business administration programs. Information policy courses could be offered in public administration or in an information science or library school. Fundamentals of IT and networking are often available in business schools and information science or computer science programs. Partnerships with these programs can bring more teaching resources to the table than most PA programs can offer on their own. These teaching have the added benefit of giving students a multidisciplinary perspective through which they can compare and integrate various theories and frameworks.
- For those programs with the resources to mount multiple courses, a specialty concentration in information strategy and management could be constructed using any combination of the above

approaches. Individual courses could be devoted to such topics as IT strategies for public services, making a case for government IT investments, government information policy, and government information resource management concepts. Specialized interests could be met by relevant courses in other departments. These could be augmented by planned field experiences, internships, and research opportunities.

The University at Albany's Rockefeller College uses all of these strategies in its Public Administration and Policy program (Figure 1). In designing our program, we set out to build a program that is distinctive, relevant to current practice, and responsive to emerging issues. To achieve this goal this we tried to maximize existing Departmental resources and to take full advantage of relationships with campus-based research programs (such as the Center for Technology in Government), the government IT practice community (represented by the NYS Forum for Information Resource Management), and the formal IT agencies of state government (especially the NYS Office for Technology). We also made extensive use of other academic programs on campus including the Schools of Business and Information Science. As a result, we offer a concentration in information strategy management in the Master of Public Administration, Master of Public Policy, and Ph.D. programs, as well as in Certificates in Public Management and Advanced Study.

Figure 1
Government Information Strategy & Management Curriculum
for Master of Public Administration
Rockefeller College of Public Affairs and Policy, University at Albany/ SUNY



*Foundations of Government Information Strategy and Management focuses on the interplay of policy, management, and technology, making extensive use of case studies and guest lecturers.

*Seminar in Information Strategy and Management links students to local events and key people in the field and offers a discussion forum for linking practice with course work.

*Making a Case for Government IT Investments introduces a formal methodology for making IT investment decisions that students apply in agency-based practical projects.

*Special Topics in Information Strategy and Management is offered based on student interest and faculty availability to explore emerging issues.

However, it is not necessary to build a comprehensive program in order to introduce the key concepts of information strategy and management into the Public Administration curriculum. Other institutions may find just one or two of these strategies offer feasible and affordable introductions to this topic and a basis for building larger efforts when they are warranted. A good place to begin is in

existing core courses. At UAlbany, we devote substantial time to these topics in core courses on Data, Models, and Decisions (public administration core) and Policy and Politics (public policy core). In the first case, students learn to use information technologies such as databases and modeling tools. They then work through an IT-oriented case study and related exercises and hear a guest lecture from a

faculty specialist or expert practitioner. In the public policy course, a guest lecture is combined with selected readings and a class discussion of current information policy issues. Our Professional Applications course includes IT strategy and management as a career path for students to explore.

After these introductory exposures, students who want to specialize enroll in one or two dedicated Public Administration courses and then choose from other courses campus-wide. For example, a student may take “Foundations of Information Strategy and Management” and “Making a Case for Government IT Investments” in Public Administration and might then enroll in the “Government Information Policy” course in our School of Information Science and Policy and engage in an internship with a State agency focusing on the planning, implementation, or evaluation of an information policy or system.

For most PA programs, taking advantage of core courses, other departments and schools, community and government partnerships, and unique local resources are all viable strategies. For some, dedicated courses and research programs may also be feasible. By choosing the strategies that best fit local conditions, any public administration program can begin to build high impact IT topics into existing curricula--with the goal of sending IT-savvy managers into every corner of public service.

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