Q1. What are the most important impacts of information technologies on the structure and processes of government organizations? Which impacts are already discernible? Which are likely to emerge during the next decade?

- The impacts of information technologies (IT) on the structure and processes of government operations vary by resources available, and by level of government.

- Impacts on organizational effectiveness and efficiency – Mixed results.

- Impacts on organizational power. Information management is political in nature, and people want to maintain their control over information in their possession.

  Possessing information brings with it power and given digital information is so easy to copy organizations are often hesitant to give such data away. In my own empirical work I have found this to be true -- I have tried to gain access to GIS data from local government agencies. They often are hesitant to give data away in digital form. In addition, when contractors have been involved in developing a significant database, there are conflicts about the availability of data and whether it is appropriate for fees to be charged.

- Impacts on the efficiency and increased capabilities for analysis of information.

  IT, networking and standardization has made it much easier for organizations to be able to collect substantial amounts of data and analyze or mine them for information.

  In addition, new IT capabilities provides information and analytic functionality previously unavailable (e.g., better scientific information for decision-making). The impact and proliferation of Geographic Information Systems in all levels of government is a prominent example. A study I recently completed studying a Habitat Conservation Plan in California provides a specific example. We applied GIS and landcover change analysis based on Landsat TM images. This analysis provided new information on the structure of the habitat of the endangered species – information that was not readily available when the HCP was first implemented.

Recent or emerging impacts:

- A concern about the loss of institutional history.

  The move toward increased digital record keeping and less paper (e.g., paperwork reduction act, Clinger-Cohen Act) may ultimately lead in a long-term loss of the history of government processing because of the medium on which they are stored. Historically, paper records outperform digital records in terms of their ability to be accessible 10 or 20 years later. We can easily read paper-based books or reports, whereas recovering something (much less finding it) from a 5 ¼ floppy disk or a 8mm tape is often substantially more difficult. For example, a colleague of mine lost tens of thousands of dollars of Landsat MSS data because the media they were stored on,
tape, gradually disintegrated as they hung in a storage locker. The move during the 1980s and 1990s toward personal computing has likely accentuated this problem given that records are highly distributed.

Similarly, it has become apparent that in some (perhaps most) electronic newspaper websites that they do not archive the site as it existed from day-to-day. I expect for very dynamic digital government portals this may also become the case. What are the ramifications, from a historical records standpoint, if a sizable amount of dynamic e-government material is not archived?

- New questions and tensions related to government-citizen relationships and the acquisition and use of digital data on citizens.

For example, there are publically funded and privately funded sources for remotely-sensed landcover data that can be easily acquired over the Internet. Questions arise in the use of this data as it is related to personal privacy. To what extent should government agencies be using this kind of data for environmental management and at what point does it literally become a situation of “big brother watching over you”? Similarly in the digital government realm, Federal and State portals are beginning to develop “Constituent Relationship Management” (CRM) functions where the portal can be tailored for customer interests and needs. Since private contractors with expertise in the “e-commerce” realm are often contracted to develop these portals, it is highly likely that some of these approaches to CRM follow the same kind of design as e-commerce websites. The problem is that government is fundamentally different than business in that relationships between government and its customers (citizens) are governed by the U.S. Constitution. CRM in the government sector then must be cognizant of citizen privacy issues that arise when government-citizen relationships are involved.

- There will be slow, but continual growth in the development of “virtual agencies” at all levels of government (see question 3).

**Q2. Reversing the causal arrow, how are public managers and policymakers using information technologies to craft new organizational forms or to make important modifications to present forms? What decision making and problem-solving processes are emerging as the principal means of mutual adjustment?**

Answers here are based upon recent empirical research we at UMass, Amherst (Schweik, Sondheimer and Osterweil) conducted over the last year reviewing e-government portals at national, state and local levels (Schweik, 2001a; Schweik 2002) and work resulting from a collaboration with the Information Technology Division at the Commonwealth of Massachusetts who are primary developers of the new Mass.gov portal (Schweik, 2001b). This work has involved some reviews of existing web portals of other states and process analysis of the Commonwealth’s effort to develop online license renewal services. The States reviewed included: Arizona, California, Florida, Illinois, Michigan, Minnesota, Ohio, Pennsylvania, Virginia, and Washington (reasons for this sampling are described in Schweik (2001b).

Based on this research, How public managers are using IT (and more specifically the web) to craft new organizational forms or to make modifications to present forms?

- There is a substantial push toward “intention-based” web portal design at national, state levels and in some local government instances.
Web portals are being designed around customer needs and not around agency structure. This is a move toward “the virtual agency or state” where the customer (citizen, business, or tourist/visitor) can find information around their specific need and not need to understand how that level of government is structured. When services involve several organizations, this requires at the very least, collaboration, and in some instances some reorganization around how services are delivered by agencies.

One interesting aspect of intention-based approaches is that most portals we have reviewed have differing ways of designing customer-centric interfaces, and there were some inconsistencies between sites in terms of the use of terminology. For example, some utilize the term “business” to mean that specific customer group; others use the term to reference any customer, business, citizen, visitor to “do business” or transact with government.

- Many States appear to have made progress toward “transaction” processing services over the web, but few appear to have reached the “integration” or “transformation” stages of e-Gov. (Following Forester Research’s five phases of e-government: publishing, interaction, transaction, integrate and transform.)

National and State portals have to some degree moved beyond the “publishing” phase of e-government and are now working on “interaction” or “transaction” processing phases. Transaction processing appears to be largely still confined to within existing agency lines. Some States appeared to be working on some integration activities (defined by Forester as: “process, system and organizational integration”) but very few, if any, appeared to be transforming their operations from the existing agency process/service structure to some new form that might include cross-agency activities. This may be because it is too early in the e-Gov activities, or, more likely, they are running into challenges as described in Fountain (2001).

- We are beginning to see web portals that have some intergovernmental functionality.

For example, the Canadian national portal is designed around customer intentions. There are some information publishing functions that actually, almost seamlessly, take the user from the national portal to the correct information page on the corresponding provincial portal when it is clear that the information needed is not under the jurisdiction of the national government.

One major challenge ahead is whether “deeper” intergovernmental applications and services can be developed that cross not only organizational boundaries but also governmental levels.

- In some instances, there are efforts to develop common core e-gov applications that are needed.

In Massachusetts, common applications being developed include: security; e-payments; customer relationship management; and Geographic Information Systems. There are challenges developing the “middleware” that bridge these common functions to existing legacy systems.

Related to the “decision making and problem-solving processes” question, I can only base my answers on what we’ve seen from the Commonwealth of Massachusetts case: It is likely that new decision-making bodies are being organized to help design an e-government strategy for particular organizations. Depending on the organizational and political context, they may be more or less likely to achieve their objectives.
In the Massachusetts case, they have assigned their Information Technology Division with the charter to develop the Mass.gov portal. They have established substantial bond money to support the development of this portal (~90M$) (Commonwealth of Massachusetts, 2001). This division controls the funding and makes decisions about what projects are selected for e-government development. An advisory board comprised of public officials and private sector and academic consultants defined the e-gov strategy and helped prioritize projects (Commonwealth of Massachusetts, 2001). Once the strategic plan was developed the decision-making body for the web portal appears to have shifted to ITD. One challenge ITD officials are up against is that they have to work with existing agencies to get them to help develop and support the new portal. Incentive structures for participation are critical here for this involves situations where, in some instances, other agencies are willing to participate because this portal function will help them better meet customer demands. In other instances tension will exist where agencies fear losing power, jurisdiction or other resources. This involves many of the organizational challenges Jane Fountain describes in her book (Fountian, 2001).

Q3: What is the impact of increasing use of information-based, networked forms of organization on the institutional structures -- for example, oversight, budgeting, accountability systems -- that regulate governance?

From our recent work with the Commonwealth of Massachusetts, Norm Sondheimer, Lee Osterweil and I at UMass Amherst have developed some hypotheses on the impacts of digital government on institutional structures and processes. Here are a few we have identified:

**H1: The more virtual agency processes differ from actual agency processes the more investment will be required.** As governments move from an agency-based to intention-based portals and services, there will likely be the need for new or additional call centers, computer centers, audit systems, finance structures, and physical offices to support the initiative.

**H2: There will be process consistency problems as governments move toward virtual agencies.** New online publishing and transaction processes must be consistent with offline processes. Maintaining the structural equality of online and offline processes such that they mirror one another will be challenging. Moreover, at any time, customers will need to be able to stop an online process and pick up the process in the offline system. This will require existing offline processes to accept and integrate online processes.

**H3: Online processes that successfully cross agency or organizational boundaries will be explicitly defined and negotiated.** In many cases there will be substantial transaction costs to develop successful digital government services that cross organization or agency boundaries.

Finally, there is a substantial gap in capabilities between what national, state and some city IT organizations can develop in terms of a digital government capability, compared to that of local governments. If one major goal of digital government is to reach constituents across wide geographic areas, then this may be reasonable. But some recent studies of citizen/web use have found that citizens tend to want to interact first with local or state governments. Their “government portal” to digital government services may be, in fact starting with their local government first. This raises a substantial e-gov development question: Should local governments be trying to move beyond simple publishing? What is the role of higher levels of government (e.g., state governments) in supporting local e-government development? How do might e-government portals be developed to move seamlessly up and down levels of government?
Q4: What perspectives, theories, conceptual frameworks, and methods seem particularly useful for the study of the developmental processes and organization of digital government?

The barriers to the successful development of digital government applications are deeply rooted in organizational politics and processes. Studying the developmental processes and organization of digital government require perspectives that will capture the elements of organizational structure while at the same time providing the opportunity to move from case study to larger databases where statistical analyses can be performed. For this reason, I think the institutional analysis approach used by some political scientists and economists (see for example, Ostrom, Walker and Gardner, 1994) may be particularly valuable.

In addition, Computer Science Professor Leon Osterweil raises an interesting question when he asks: What is Software? His answer, coming from a computer scientist, is surprising: intangible logic or process flows. He argues that the foundation of human collective action and organization is centered on processes; processes that are often only documented in the minds of humans who do these processes day to day in their work. The question then turns to how we can clearly and formally articulate and describe processes. Process analysis tools seem particularly useful in analyzing processes that are candidates for digital government and also may be important for comparing online versus offline processes that are supposed to mirror one another. There may be additional challenges on how one captures other elements such as accountability, transparency, public trust in government, constitutional protections, etc., in the documentation of processes.

References


