Five kinds of "know-how" make e-government work

Introduction

It takes a wide variety of skills to effectively use information in today’s e-government environment. Think of the most skillful information user you know. Chances are he or she can:

- clearly define a problem or question
- find and select information that addresses it
- select appropriate information management and analysis tools
- recognize and account for weaknesses in both the tools and the data
- conduct analysis and interpret results
- communicate meaningful results to different audiences
- be a discriminating consumer of information produced by others

Like people, organizations use information too. Huge agencies and small work units alike must use information to design e-government programs, manage resources, make decisions, and evaluate services. Your organization may want to create a full-scale internal data repository, launch a Web resource for public use, or devise a new program evaluation process.

If you’re lucky, you’ll have a full team of program, research, management, operations, and technology experts. But you may have to make-do with a smaller staff, perhaps with outside consultants. Or, you may have to go it alone.

Regardless of the size and makeup of your team, you have to do well the same things as the talented person you thought about earlier, including:

- analyze a 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 unlike the lone information user, you may have to

- manage a project that probably involves many people from more than one organization
The "big five" skill sets

Every e-government project needs to put five kinds of skills to work. They are hard to separate in practice, but they do represent distinct abilities that are worth understanding:

- analytical skills
- information management skills
- technical skills
- communication and presentation skills
- project management skills

Analytical skills
Analysis and interpretation skills are necessary at every stage of an e-government project (or any project, for that matter). They start with problem definition, the process by which an organization describes current symptoms and uncovers the processes, policies, and practices that are contributing factors. At this stage, process analysis, system audits, stakeholder analysis, customer satisfaction surveys, performance reviews, statistical trending, and similar activities are needed. They help answer the question – "what’s really wrong here?"

In later stages, analysis of user needs, business process alternatives, work flow, and information flow become more important. Research into what other people and organizations are doing to solve similar problems is also critical. These analyses help you design and build the system or solution.

When a new system is prototyped, tested, and implemented, the analytical skills of system users increase in importance. Can they use the information in the system to perform analytical tasks such as tracking cash flow from a financial management system, or caseload dynamics in a welfare system? Do they know how the data were collected, what its strengths, weaknesses, and quirks might be? Do they apply appropriate analytical tools to answer the questions they and their leaders have about the underlying program or process? Do they know when the data in the system are not suited to their questions?

- Analytical tools that we use at CTG for problem definition, stakeholder analysis, and similar activities are described in Making Smart IT Choices <http://www.ctg.albany.edu/resources/smartin.html> and in our recent guide to building a business case for integrated justice information <http://www.ctg.albany.edu/resources/abstract/abdoj_justice.html>.
- Analysis of information and workflow that lead to electronic records systems are covered in our guide Models for Action: Practical Approaches to Electronic Records Management & Preservation <http://www.ctg.albany.edu/resources/abstract/mfa98-1.html>.
Information management skills
People skilled in information management know how to treat information as a valuable organizational resource. They know that its content, quality, format, storage, transmission, accessibility, usability, security, and preservation all contribute to its value. With so many factors to consider, information management skills show up in many job types.

- Program managers and staff are likely to have the skills and knowledge that ensure valid content, clear data definitions, solid meta data, and many kinds of data quality.
- IT professionals have to be counted on to create the formats, files, and databases that we use to represent and organize information. They also handle the interfaces and security features that assure both usability and integrity.
- Archivists and librarians are skilled information managers, especially when it comes to classification, searching, and preservation.
- Researchers often work with program specialists to construct data definitions, design data collection processes, and institute quality control measures. These activities ensure that data are suitable for the analyses they have in mind.
- Many kinds of staff are involved in developing and implementing mechanisms for information sharing among agency staff and with other organizations.

Technical skills
Depending on the type of e-government challenge your organization is facing, higher order technical skills will probably be required to implement the chosen solution. Many e-government issues can be solved by:

- managing databases and the individual, program, service, and other data they contain
- designing and implementing systems that are compatible with the existing technical infrastructure
- developing user interfaces that make it easier for users to find and use information
- transforming data from one system or format to another so that it can be "fit for use" in new ways
- designing and administering networks of computer systems
- creating data repositories that integrate information from various sources for easy retrieval and wider use

It takes highly trained technical experts to do these things. Some government organizations have enough of them, but most do not. This is the skill set that you are most likely to have to "buy" from private contractors. And when you make this purchase, you need another kind of skill, contract and contractor management, to make the best use of it.

We’ve found two useful guides to material and training resources for some of these higher level skills. One focuses mostly on data warehousing and the other on knowledge discovery and data and Web mining.
In the effort to craft a technically powerful system, we sometimes forget that the technical skills of users can limit its effectiveness. This is especially prevalent when the system will connect to many different organizations. A serious training effort may be needed to be sure that staff in each of them can:

♦ operate a computer
♦ use e-mail
♦ use a Web browser
♦ manipulate word processing and spreadsheet software programs
♦ manage electronic files
♦ understand basic security policies and procedures

All of these are pre-requisites to understanding and using e-government.

**Communication and presentation skills**
Throughout a project, you need to communicate its goals, progress, issues, and results. Presentations about your project are an ongoing requirement. You may need to meet with legislative or executive leaders to obtain initial and continuing funding and support. Meetings with stakeholders can explain how they will be affected and encourage their buy-in and participation. Newsletters, e-mail lists, and formal reports are all ways to communicate about a project.

Presentation skills extend to more than preparing and delivering a talk, with or without visuals. They also comprise the ability to take complex data and distill it into information that is useful for a particular audience. Information needs to be categorized, summarized, and turned into briefings that convey the important facts without oversimplifying or drawing conclusions that were beyond the underlying supporting data.

**Project management skills**
Books, courses, and whole training businesses are devoted to the topic of project management. Project management skills include the ability to plan, organize, estimate and allocate resources, negotiate, track progress, measure results, troubleshoot and, most importantly, to communicate. Another way to think about project management is the way you handle scope, time, cost, quality, and risk. No matter the size of your project, these skills will be needed to guide the work to a successful outcome.

**Getting the skills to do the job**
No organization has the perfect mix of skills, abilities, and experiences for every situation. Start by giving assignments to people with the proper skills to carry them out. Or assign activities to those who have the aptitude, desire, and responsibility to develop the necessary skills. Skills can be acquired through training, mentoring, brokering, contracting, or outsourcing. Consider these sources:

♦ **Traditional classroom instruction:** Employees can take seminars, workshops, and classes on any number of subjects. You can send staff to training centers, or have the instructor come to you and provide a more customized lesson to a whole group.
Hardware and software vendors usually offer training and technical assistance for their products – be sure you include these features in your contracts with them.

- **Computer-based training**: This growing trend is often a cost-effective option, particularly useful for structured topics. Participants can complete the lessons on their own computers and at their own pace.

- **Intranet or Web-based classes**: These can have the same features and benefits as computer-based training, but their real value is in programs that add real time and offline interaction among instructors and students.

- **Learn by doing**: Many people learn best in a practical situation, as long as the situation allows for the inevitable learning curve. When staff acquire a new skill this way, an experienced mentor can make an important difference. Mentors transmit the often tacit contextual knowledge that goes along with a particular skill.

- **Buy skills**: You can also acquire skills by hiring outside consultants, contractors, and vendors. Use their expertise to supplement what already exists in your agency. Let them do the work that you can’t, but add contractor management to the list of skills you need to have in-house.

- **Broker skills**: Government agencies are often in a position to help one another with specific tasks. Small agencies can be assisted by larger ones with more diverse skills and resources. Agencies can share vacant training slots, lend expertise, and form peer review groups to help one another with unusual or risky tasks.