

Insider's Guide to Using Information in Government



Strategy



Policy



Data



Cost



Skills



Technology

Topic

Become a skilled information user

Five kinds of "know-how" put information to work

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Become a skilled information user

Five kinds of "know-how" put information to work

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It takes a wide variety of skills to effectively use information in today's technology-enhanced work 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

Key points

Information skills...

- apply to both people and organizations
- start and end with analysis
- include five skill sets
- can be acquired in many ways

Take, for example, a program manager we know in the welfare department. In the mid 1980s the welfare caseload, as measured by individuals receiving benefits, was steadily dropping. But the total cost of benefits kept rising. Since the benefit schedule had not changed, something else was at work.

The manager began to look for other ways to understand the data. She posed new questions, sought out the detail underlying the standard statistical reports, and performed some new analysis. It turned out that the number of individuals on welfare was indeed dropping, but the number of households was rising sharply. Those new welfare households were usually composed of a teenage mother and one child—a social policy problem of important proportions. Once recognized and understood, this information contributed to a welfare reform agenda that is still underway today.

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Like people, organizations use information too. Huge agencies and small work units alike use information to design 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 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 information 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?"

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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?

- Current practice research tools in [Conducting Best and Current Practices Research: A Starter Kit](#) can help identify other organizations working on similar projects.
- Analytical tools that we use at CTG for problem definition, stakeholder analysis, and similar activities are described in [Making Smart IT Choices](#) and in our recent guide to [building a business case](#) for integrated justice information.
- Analysis of information and work flow that lead to electronic records systems are covered in our guide [Models for Action: Practical Approaches to Electronic Records Management & Preservation](#).
- One very good reference for researchers and policy analysts to help build statistical skills is an [electronic textbook called StatSoft](#).

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.

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Clearly, good information management demands a wide array of competencies. Here are a few resources that cover some of them.

- [The Association for Information Management Professionals](#) Web site is a good resource. They have two online publications, the "Information Management Journal" and "InfoPro," and a searchable bibliography of books on information management.
- **The British Computer Society** has an online paper on document management with practical examples.
- **ERIC Clearinghouse** has a page on information management with several links to information management issues, skills, and tools.

Technical skills

Depending on the type of problem your organization is facing, higher order technical skills will probably be required to implement the chosen solution. Many information use 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](#).

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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. In the Homeless Information Management System (HIMS) case, the new system needs to be used by scores of nonprofit service providers, many of them small and unfamiliar with networks and computers. A serious training effort will 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 the applications that HIMS will offer.

The **California State University Technology Training Guides** are good online resources to learn how to use basic office applications, create and publish a simple web page, and perform other basic technical tasks.

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. In our projects on real property services, the statewide accounting system, and the NYC intranet, workshops generated thousands of individual responses to key questions. These needed to be categorized, summarized, and turned into briefings that conveyed the important facts without oversimplifying or drawing conclusions that were beyond the underlying supporting data.

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There are many good resources for becoming a skilled presenter and communicator.

- The University of Kansas offers *a virtual presentation assistant*.
- A paper from Strategic Communications tells you *what to do to prepare for "presentation disasters"* like being forced to give your 45-minute talk in just 15 minutes.
- Read a humorous article from ZDNet to remind you of the *importance of plain language* when you are communicating about technology.
- A site from *Computing and Communications* explains how to present data on the Web.

Project management skills

We recently conducted a survey about the information strategy and management skills that all government managers need in order to be effective. Project management was ranked number one by both statewide and agency-level respondents. Why? The size, scope, complexity, and cost of government projects that depend on IT present many risks for failure. These risks can be better understood and managed, or even minimized or avoided, by applying finely honed managerial experience.

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.

Some well-regarded resources are:

- [The Center for Project Management](#) offers seminars on managing and estimating IT projects.
- [The Project Management Institute](#) is a nonprofit professional organization that establishes project management standards, and provides seminars, educational programs and professional certification.

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

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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 off line 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.

Practical Examples

Analytical skills pay off

[Bringing in the right kind of analysis at the right point in the process](#) helped the NYS Department of Transportation's carry out its new IT investment program. The new method links investment decisions to agency goals and dollars. As a result, project proposers have to link their ideas to business problems, staff analysts compare proposals according to a common framework of required information, and decision makers are responsible for choosing projects that support programs and operations across the whole agency.

Finding the story in the data

In the case of the state central accounting system, staff had to [compile, analyze, and interpret thousands of data points](#) from 13 workshops in order to find the most important user needs. [Different data collection and analysis methods](#) revealed needs related to financial management systems.

Managing knowledge and information for the benefit of users

When the New York City Department of Information Technology and Telecommunications took on responsibility for the City's new strategic information technology plan, it knew that much of the information that would help agencies move toward their goals already existed. They just couldn't find it in any reasonable way. Their

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project to create [intranet-based knowledge repositories](#) based mostly on information agencies already have demands information management skills of many kinds.

Technically complex projects demand serious technical expertise

The Kids Well-being Indicators Clearinghouse project presented a number of technical challenges. The biggest was combining data from the 13 member agencies of the NYS Council on Children and Families with different standards and definitions into one Web-based information repository. This task required [team members with strong technical skills](#) in data analysis, database management, and Web-based information access technologies.

Communicating through a business case

The Division of Municipal Affairs in the Office of the State Comptroller set out to change the way its regional offices interact with local governments and each other in the Municipal Affairs Contact Repository Operating System. The envisioned changes would rely on a very different set of information rules and resources that would change everyone's job. This idea had to be "sold" to many people and units in the agency. Would it be cost-effective? Would it result in better service? Would it help local governments become more capable of managing their financial affairs? To answer these and other questions in a coherent, convincing way, the project team developed a complete business case and presented it to agency leaders and staff alike. It was so successful in [communicating the goals, alternatives, and benefits](#) that it has become a model for other projects.

Recruit the people who have the skills you really need to succeed

It takes a lot of different experiences, skills, and knowledge to bring a project to successful completion. So when it comes to assembling the project team, it's important to recruit the right people at the right time. The NYS Bureau of Shelter Services [worked hard to select people](#) with in-depth knowledge of the data issues, homeless services programs and providers, and state systems. These people were tapped to work on various phases of the project when needed. The Homeless Information Management System project succeeded in great part because the right people were involved from the beginning.

Skills Links

[Conducting Best and Current Practices Research: A Starter Kit](#)

When facing a problem in your organization, it's helpful to find out how other groups confronted and solved similar issues. This guide teaches you different methods for researching best and current practices. The starter kit contains step-by-step instructions

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on how to do best and current practices research. It also has helpful Internet resources, databases, listservs, publications, and professional associations.

[Making Smart IT Choices](#)

This CTG handbook (in PDF format) helps government managers evaluate and choose the best technology solutions for their business problems. A variety of practical tools for analysis and interpretation are also presented.

[And Justice for All: Designing Your Business Case for Integrating Justice Information](#)

This CTG guidebook was written for the justice community, but is applicable to all government organizations. The guide leads readers through the analysis, design, and presentation of project business cases. It also contains appendices of useful tools, references, examples, and resources.

[Models for Action: Practical Approaches to Electronic Records Management and Preservation](#)

This CTG report (in PDF format) describes tools that show how analysis and work flow can help agencies incorporate electronic records requirements into the design of new information systems. These tools link an organization's business objectives to its records management processes.

[StatSoft](#)

This electronic textbook helps build statistical skills by explaining basic concepts like variables and significance. It also covers more advanced statistical processes.

[Association for Information Management Professionals](#)

This not-for-profit association provides good information management resources. The Web site includes two online publications, "Information Management Journal" and "InfoPro." It also has a searchable bibliography of books on information management.

ERIC Clearinghouse

Part of Ohio State University, ERIC is a clearinghouse for adult, career, and vocational education. This section of ERIC provides links to information management issues, skills, and tools.

Data Warehousing Knowledge Center

This resource is provided by the Foundation for Strategic Enterprise Knowledge Centers. This site is a comprehensive source book and information center about data warehousing technologies.

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[KDnuggets](#)

This newsletter covers data mining and Web mining. The site includes links to such topics as education, training, standards, publications, and solutions.

California State University Technology Training Guides

These online guides teach people how to use Microsoft Office 2000 applications, operate e-mail, create and publish Web pages, and perform other basic technical activities.

University of Kansas Virtual Presentation Assistant

This site is a tutorial designed to help people become better public speakers. It covers basic preparation and presentation skills and includes useful links.

Strategic Communications

This article tells you how to handle presentation disasters. You'll learn what to do if "you find you have 15 minutes instead of the 45 you planned on to present" or "the decision maker is forced to leave before you have gotten to your key points."

University of Newcastle upon Tyne - Presentation Skills

This site provides information on different presentation skills, from preparing your presentation to tips for effective communication with your audience. Written specifically for people in technical fields.

Computing and Communications

This site explains how to present data on the Web. It's based on Edward Tufte's books: "The Visual Display of Quantitative Information," "Visual Explanations," and "Envisioning Information."

[The Center for Project Management](#)

The Center site offers project management information including a project process model and an article on how to monitor the vital signs of your IT project.

[The Project Management Institute](#)

The Institute is a nonprofit professional organization that establishes project management standards, and provides seminars, educational programs and professional certification. The site has a list of relevant articles on project management. "PM Network," the Institute's journal, is also online.