Federal information technology (IT) managers of the future will need to have a more diverse set of skills than their predecessors. They will need to be effective relationship managers, who can work well with contractors and other cooperators who provide an increasing variety of services to their agency. From a technology standpoint, they will need to be nimble generalists who stay familiar with the latest developments in technology. Finally, they will need to be effective communicators with agency programmatic executives. By sharing a common programmatic understanding with those executives, they can advise how new technology development can further advance the agency mission.
American Council for Technology-Industry Advisory Council (ACT-IAC)

The American Council for Technology (ACT) is a non-profit educational organization established in 1979 to improve government through the efficient and innovative application of information technology. In 1989 ACT established the Industry Advisory Council (IAC) to bring industry and government executives together to collaborate on IT issues of interest to the government.

ACT-IAC is a unique, public-private partnership dedicated to helping Government use technology to serve the public. The purposes of the organization are to communicate, educate, inform, and collaborate. ACT-IAC also works to promote the profession of public IT management. ACT-IAC offers a wide range of programs to accomplish these purposes.

ACT-IAC welcomes the participation of all public and private organizations committed to improving the delivery of public services through the effective and efficient use of IT. For membership and other information, visit the ACT-IAC website at www.actiac.org.

Human Capital Shared Interest Group (SIG)

The mission of the Human Capital SIG is to bring industry and government executives together to exchange information, support professional development, improve communications and understanding, solve issues and build partnership and trust, thereby enhancing government’s ability to serve the nation’s citizenry.

The SIG provides a forum for issues related to Human Capital management. We encourage debate about best practices in the human capital management arena. We advise government and industry HR leadership on potential impacts of industry trends on government technology issues related to human capital management. And we serve as a sounding board for changes to federal regulations, aimed at improving the organizational performance of government.

Disclaimer

This document has been prepared to provide information regarding a specific issue. This document does not – nor is it intended to – take a position on any specific course of action or proposal. This document does not – nor is it intended to – endorse or recommend any specific technology, product or vendor. The views expressed in this document do not necessarily represent the official views of the individuals and organizations that participated in its development. Every effort has been made to present accurate and reliable information in this report. However, ACT-IAC assumes no responsibility for consequences resulting from the use of the information herein.

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Further Information

For further information, contact the American Council for Technology-Industry Advisory Council at (703) 208-4800 or www.actiac.org.
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Executive Summary
There are many challenges facing the federal IT community: the rapid pace of technological development including the movement towards cloud computing, competition from the private sector for talent, long-term fiscal challenges which constrain IT budgets, and increasing emphasis on cybersecurity. It is no longer enough for the IT manager to “just know IT”; softer skill development will become as important as technical capabilities.

This report addresses the question of which skills and competencies the future federal IT manager will need to be successful. The findings of this report highlight the following skills and competencies as needed for current and future IT managers, and include the ability to:

- Manage a multi-sector workforce,
- Manage people & projects effectively,
- Hire strategically,
- Develop the workforce,
- Understand the business environment,
- Focus on client/customer service, and
- Understand technology trends.

It will take planning and commitment to develop managers and high-potential employees within the workforce as well as to think strategically about acquiring resources to create a leadership pipeline that possesses the right skills and competencies to manage effectively in a rapidly changing environment. However, certain steps can be taken to help agencies address gaps and develop future IT leaders such as:

- Instituting career modeling,
- Creating a long-term leadership development program,
- Thinking strategically about resourcing candidates, and
- Engaging in succession planning.

Purpose
The ACT-IAC Human Capital SIG received a request from the Department of State CIO, to undertake a study of the competencies that will be needed by federal IT managers in the future to more effectively manage contractors, interact effectively with other federal agency service providers, team with state & local governments, and create & leverage trusted relationships with other cooperators with whom the agency may have no formal written relationship.

The context of the request was the realization that the federal agency IT infrastructure of the future will increasingly incorporate and depend upon hardware, software, and services that are created, owned & managed by third parties. Often, this will happen through the cloud. This means the future federal IT manager workforce will need to achieve an ever-larger share of its responsibilities by effectively working with others over whom it does not exercise direct control.
Background

The federal information technology community faces many challenges. The nature of these challenges, and the strategies pursued by the federal government to address them, are changing significantly over time. This is partly due to the fact that the field of information technology itself evolves so rapidly. It is also due to the fact that federal personnel rules and procurement regulations may limit the range of strategies that IT managers have available to them.

There have been several waves of change in federal IT over the past twenty years. Initially, IT was inward focused on operating email systems and serving internal programmatic needs and primarily comprised of federal employees.

The explosion of the internet as a resource for agency programs brought with it an increasing emphasis on cybersecurity and use of the agency’s technology as a tool for communicating with the public about the agency mission and subsequently satisfying citizen customer service needs through a wide variety of e-government initiatives. At this point, federal agencies began to directly compete with the private sector for IT talent, often unsuccessfully, as the broader economy experienced a technology boom. As a result, agency CIOs became increasingly reliant on contractors for IT support, taking advantage of the private sector’s ability to pay more for technology experts than agencies could typically afford. Agencies also found it advantageous to hire contractors in order to get access to cutting edge talent without having to make the personal or financial commitment of a long-term federal career by hiring a government employee whose skills would become outdated within three to five years of being hired, unless the agency invested in the employee’s professional development. Agency-specific systems multiplied, and the technology infrastructure became more server-based and less desktop-oriented.

With the first decade of the 21st century came the realization that agencies were spending a great deal of money on IT, and much could be gained from standardization, centralization, and leveraging the power of networks. Shared service centers and the OMB-sponsored lines of business received great emphasis as tools to simultaneously improve levels of service and save money. The federal agency IT community became much more of a broker of services delivered to the agency by third parties, whether those parties were contractors or other federal agencies, under the aegis of OMB’s various lines of business initiatives. Most agency CIO operations were truly a multi-sector workforce, with a relatively small number of federal employees overseeing a large number of contractors who would turn over on a regular basis. The CIOs also found themselves negotiating service level agreements with other federal and non-federal providers.

The last few years have seen an acceleration of the trend of acquiring services from third parties, with the emphasis on the cloud as a source of both data and capability. At the same time, budget pressures have driven agencies to professionalize their internal IT project management capability to both reduce costs and risks. Budget pressures and a string of large, expensive, and embarrassing failures of large system deployments have created a bias against large new customized IT systems deployed through the traditional Waterfall methodology\(^1\). Instead, agencies are leveraging business intelligence data warehousing capabilities that leave most legacy systems intact and pursuing Agile development approaches that are less ambitious in design and focused on producing a series of

\(^1\) Waterfall development usually involves planning of a large project as a series of sequential steps, followed in a specific order, with the desired end product, capability, or service not being functional until the project is fully complete.
iterative short-term, low-risk, and modest successes. Agencies have been able to accomplish this through active and frequent interactions with their contractors.

The non-technological side of agency CIO operations is also in a great deal of flux. Attrition is at an all-time high with an aging federal workforce that is retiring at an accelerated pace\(^2\) and the younger workforce seeking opportunities in the private sector where they can continue to develop and leverage their technical skills and receive higher pay. In the midst of these institutional pressures, there is an acute need to attract and retain new federal IT workers.

The government is also hindered by large and expensive legacy systems that require institutional knowledge and it does not have the resources to invest in much innovative new technologies. For both these reasons the government is a less attractive employer for IT than the private sector.

This is the broad context in which the ACT-IAC Human Capital SIG decided to undertake this project.

### Approach

The team employed a data collection approach which included input from three main sources: research conducted by the Human Capital SIG volunteers, interviews conducted with federal CIOs and input and advice provided by Human Capital SIG Government Advisory Panel (GAP) members.

The team worked with GAP members to identify leaders in the federal CIO community, industry, and state & local government to interview for this project. In addition, members of the team identified others in and outside government whom we believed would be worth interviewing. In order to ensure a breadth of perspective, the team strove to interview leaders at agencies varying in size and complexity, from a wide variety of mission areas. The team developed a list of interview questions, crafted primarily with the federal CIO community in mind (attached in the Appendix) which were vetted by the project sponsor. The focus of the interviews was on competencies and skills the next generation of IT managers would need to accomplish their work.

### Key Findings

The key findings from the interviews are summarized below. The federal IT manager of the future must:

<table>
<thead>
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<th>Manage a Multi-Sector Workforce</th>
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<td>• Communicate effectively to manage performance of widely dispersed external parties</td>
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<tr>
<td>• Understand what motivates the various components of the workforce and how to manage each sector successfully, leveraging both federal employee strengths and the</td>
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\(^2\) Reasons cited include: age, length of service, prevalence of early outs & buyouts, reduced funding for awards & fewer or no pay adjustments, programmatic pressures from budgetary sequesters, and a political environment that many view as unfriendly to federal employees.
strengths of other multi-sector workforce components

- Be comfortable dealing with contractors and other teaming partners over whom the manager has little direct control

### Manage People & Projects Effectively

- Develop strong project management skills
- Be not only technologically savvy, but skilled in managing people
- Be an adaptable IT generalist
- Learn to recognize, develop, and supervise employees with a diverse array of skills and talents
- Develop meaningful metrics to measure outcomes and performance

### Hire Strategically

- Hire new federal employees based on their leadership potential in addition to their ability to perform the technical tasks required for their initial position
- Pay attention to technology trends, in order to focus hiring in those areas
- Be comfortable acquiring and managing talent with specialized expertise that the manager lacks
- Value a variety of experiences in and out of government

### Develop the Workforce

- Develop a diverse pool of future leaders, by focusing on a pipeline of junior managers and first-line supervisors
- Pay attention to succession planning and go out of the way to create career paths that enrich subordinates professionally and improve their ability to succeed at higher level positions

### Understand the Business Environment

- Work as a partner with program leaders to meet mission imperatives and ensure that IT solutions satisfy programmatic needs
- Be familiar with ongoing activities at the agency and consider what impacts they may have
Focus on Client/Customer Service

- Make customer service a priority
- Identify and define what clients really need and not simply accept what they say they need

Understand Technology Trends

- Be intellectually curious about new technology developments in government and industry and consider how they might be exploited to save the agency money or improve efficiency
- Think creatively about how to leverage the cloud and other IT delivery models

Discussion

As a generalization, federal IT managers need to transition from a role of designing, building, and operating the services they deliver to their agency customers to a role of a broker of services that are increasingly delivered by others. While this trend has been underway to varying degrees in many agencies for quite some time, it is rapidly accelerating and becoming increasingly common across all federal agencies.

The two most significant drivers of this change are:

1. **Budgetary pressures** – Congress and OMB are discouraging costly, homegrown, unproven, customized, immense systems secured through a unique procurement and have an uncomfortably high failure rate, and
2. **Cloud computing** - software, infrastructure, platforms, desk-tops, and back-end services as well as knowledge and capabilities are accessed relatively easily through the cloud.

Budgetary pressures and the emphasis on acquiring IT from third parties suggest that a number of non-IT competencies, knowledge, and skills are an important part of an IT manager's capabilities. Some of these competencies include the ability to:

- Communicate and collaborate – IT managers need to be able to communicate clearly with both their internal clients as well as their external service providers. Internally, they need to work closely with their internal clients to understand their business needs and develop requirements that meet those needs. Externally, they need to be able to communicate the requirements to the service providers and negotiate acquiring the most appropriate solution at a reasonable price.
- Consult – IT managers need to have more than a superficial understanding of the programs of their customers, so they can better intuit internal client needs, and appreciate the context in which those needs are expressed. These consultative skills are necessary in order to ensure that they are acquiring precisely the IT that clients really need to get, no more and no less. They need to communicate clearly so that ambiguity or uncertainty around their requirements does not pose unnecessary risk to potential external service providers, who mitigate that risk by increasing prices to the government.

- Manage performance and hold others accountable – IT managers need to clearly define performance and service delivery expectations to partners, whether these are other agencies, other levels of government, or contractors. Clear expression of performance expectations will limit the number of potential providers with which the IT manager needs to interact, by more effectively screening out those who do not meet expectations. This will not only save time and money but will also establish a clear set of parameters by which the chosen service provider’s performance can be measured and evaluated with corrective actions identified before minor issues become major and expensive problems.

- Understand the budget process – with funding getting ever tighter, the ability to manage to a budget and interact effectively with the agency Chief Financial Officer will become increasingly important. IT certainly has its own jargon, but the wise IT manager needs to understand the specialized vocabulary of other functional specialties like budget and procurement. An IT manager who is not familiar with terms like budget authority, obligation, obligation limitations, sequester, and expiration date of the particular sources of funds available for obligation for the work, is a manager exposed to considerable professional risk. Historically, there has not been much tolerance for significant cost-overruns in federal IT. However, in the current fiscal climate, spending by IT managers is being even more closely scrutinized by OMB, GAO, and congressional oversight and appropriations committees. Similarly, agency program managers, who rightly or wrongly view every dollar that goes to IT as a dollar that could be going more directly to support the agency’s mission, are less likely to give the CIO the benefit of the doubt when their own budgets are being cut.

- Understand the acquisition process – with contractors providing a large percentage of federal IT needs, whether it is in terms of staff, software, infrastructure, data, or services, the effective federal IT manager needs to understand how to structure and manage the procurement process to get the greatest value at the lowest acceptable risk and cost. The federal procurement process is arcane and full of regulations, and so the IT manager needs to have an effective working relationship with acquisition professionals to understand how to navigate effectively through the regulations to acquire services in a cost-effective way that meets business needs.

- Understand the vendor community – to get the most out of a relationship with a private sector vendor it is advantageous for the federal IT manager to have had some practical experience with the vendor community. This may be acquired several different ways. One might spend a few years of one’s career working in the private sector for a vendor to the federal government, through a rotational assignment or detail to a procurement office, or by being active in organizations like ACT-IAC, where it becomes possible to interact regularly and informally with
the vendor community, and therefore develop an appreciation for how that community thinks and reacts to situations presented by the government.

- Understand strategic approaches to recruit, develop, and retain talent – the federal IT manager of the future needs to do a better job of identifying, recruiting, retaining, and nurturing talent. With increasing federal retirement rates and an expanding private sector technology job market, the federal IT manager needs to get the most productivity possible out of the leaner federal IT workforce by creating a work environment that is conducive to high levels of engagement. To accomplish this, agencies will need to emphasize the “people-side” of management development by focusing on interpersonal, communication, and management skills of first line supervisors and their managers. Federal IT executives need to be increasingly willing to promote the best “people person” on their team into subordinate IT manager roles, even if that person does not also have the best technical skills.

**Recommendations**

The explosion of innovation and rapid change in the IT marketplace means that there are always new opportunities emerging that may offer benefits to the federal IT manager’s agency. To become aware of, appropriately evaluate, and potentially take advantage of these innovations requires both an intellectual curiosity on the part of the federal IT manager and a corresponding willingness to seek out opportunities to be exposed to new IT developments. Travel and training budgets will always be under pressure in times of fiscal constraint, and federal employee participation in conferences of any sort has become a target of Congress. However, this simply means that federal IT executives need to be more creative and thoughtful about giving their staff opportunities for intellectual stimulation and staying up to speed with the latest technology developments in the marketplace.

The recommendations outlined below are just a few steps that IT managers can undertake to address current and future challenges:

*Institute career modeling*

- Define career paths and tracks for IT positions; be sure to include technical tracks for those who are not interested in managing people.
- Encourage and support rotational assignments within the government as well as in the vendor community.

*Create a long-term leadership development program*

- Focus on soft-skills development such as interpersonal, communications, and team-building.
- Ensure that participants gain experience with the federal budget and procurement processes.
- Emphasize managing virtual and multi-sector workforces.
- Build mentoring programs for potential leaders with current leaders.

*Think strategically about resourcing candidates*

- Establish relationships with IT-focused colleges and begin the recruitment process early in the student’s career.
• Leverage the options available for hiring recent college graduates through the Office of Personnel Management’s Pathways program.
• Build feeder programs starting at the high school level to get students excited about the vital and diverse missions of government such as curing cancer, national defense, and environmental protection.
• Target candidates who identify with the agency mission and do not appear to be primarily motivated by compensation.

Engage in succession planning
• Identify critical positions and skills for succession planning.
• Plan ahead. Knowledge management and transfer must be planned and systematically addressed well before senior experienced employees retire.

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Appendix

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Pamela Glass, Project Manager, Department of Homeland Security
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Douglas Robinson, National Association of State Chief Information Officers
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Interview Questions
We are_____________________ and_________________________ representing the ACT-IAC Human Capital Shared Interest Group. The SIG is undertaking a project on the competency requirements of federal government IT managers (GS 14, 15, and SES) in the next 3 years (2015). Our project sponsor recommended that we interview you.

1. Let us begin with a general question. How would you characterize the IT environment in the federal government in 2015?

2. What do you think are the competencies that federal IT managers will need to be effective in this environment? This includes both technical and non-technical competencies.

3. What might be the right balance of technical and non-technical competencies for federal government IT managers in 2015?

4. One expectation for the federal IT managers in 2015 is that they will oversee more performance-based contracts with 3rd party providers (e.g., cloud providers). What competencies will IT managers need to take on this responsibility?

5. Federal IT managers may also have to accomplish their work in cooperation with state and local governments, or other federal agencies, over whom they cannot exert the same control that they can over contractors. What are the implications of these partnerships in terms of federal IT manager competencies?

6. What strategies can be used to keep IT managers motivated when they may be primarily excited by technology but have limited opportunity to use their technical skills in managerial positions?

7. How can mid-level IT staff be trained and developed now to become effective federal IT managers in 2015?

8. Do you know of ways that the private sector or state and local government agencies are using to select and prepare their IT staff to be effective managers in 2015?

9. What types of competencies should federal agencies look for now in entry- and mid-level IT new hires to create a pipeline of effective future IT managers?

10. What are the challenges facing CIOs and the federal human resources management community in preparing and supporting the federal IT manager cohort needed in 2015?