

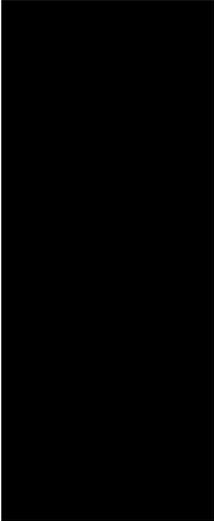
Comparative
Study *of*
Information
Technology
Pay Systems

Executive Summary

A Report by a Panel of the

NATIONAL ACADEMY OF
PUBLIC ADMINISTRATION

MARCH 2001



C Comparative Study of
Information Technology
Pay Systems
EXECUTIVE SUMMARY

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EXECUTIVE SUMMARY

In the current labor market, the challenge of acquiring information technology workers with the right skills has been felt across all sectors of the economy. In the first phase of this study, the National Academy of Public Administration found that many organizations have changed their recruitment and retention strategies to adapt to this tight labor market. At the end of the twentieth century, technology and market forces moved government and the economy toward an increasingly heavy reliance on computer technology and the abundance of information made possible by this technology. Information and its distribution through technology are now primary drivers of the global economy here in the United States, as well as elsewhere in the world. The ability to create, distribute and manage information effectively, to increase productivity and enhance the quality of life is a task faced by private industry and public sector entities alike. Every organization is designing and using information technology to support the use of information in the creation of the new economy, as well as the maintenance of the old one. The accelerating dependence on IT requires not only the engineering and invention to create the tools, but an ever-growing pool of skilled workers capable of learning or adapting to the new tools, thought patterns, and business methods.

Mounting evidence of shortfalls in critical new skills and the dearth of pipelines for development of future workers raise serious questions about the availability of IT workers to meet this new demand. The perceptions of the IT labor market vary by private and/or public sector organization. Some organizations view the current situation as one of a "tight" labor market while others stress the existence of an IT labor market "shortage." Regardless of how one may classify the supply of IT workers to meet the demand or predict the United States and global economies for the next decade or longer, the problem of insufficient numbers of IT workers with the right skills exists and will likely grow, given the strong global and national economies and the currently low unemployment rate in the overall labor market as well as the number of individuals coming out of educational institutions. Even the recent shakeup of the DotCom sector, with a return of the hottest skills to the available pool, has not appeared to change concerns for the long-term shortages.

Compounding this shortage problem is the difficulty in defining the complex and increasingly diverse IT workforce as the technology grows and permeates all business units and

program areas. It is no longer possible to think of a monolithic workforce or singular job series as it relates to acquiring, retaining and developing the necessary skills to accomplish ever-changing, cutting-edge information technology work. The human resources management systems and policies for any organization must be flexible enough to support the current workforce requirements while, at the same time, meeting the needs of the future IT worker, however defined and wherever situated organizationally, as they quickly change or adapt to the advent of new technologies.

Another key factor will be the use of outside contract support in lieu of, or to supplement, in-house staff. Due to the growing complexity of IT applications, some of this new work will of necessity be performed through outsourcing which is a phenomenon expanding in both private and public sectors. Companies and governmental agencies are recognizing the need to rely on outside expert help to keep up with the dynamics of the technologies and to concentrate internal resources on core functions, which will certainly include contract and project management, but may require broad technical skills for oversight and review purposes. Blending internal and external, as well as business and IT, workers into multi-disciplinary teams to accomplish the evolving work will require a balanced view of program and technical competencies, and fair and competitive compensation and rewards. This practice brings into question the balance of core and contingent workforces and the appropriate infrastructure, including contracting and human resource management systems, needed to maintain equity and retain the commitment of the workers.

There are numerous other issues that are raised whenever the adequacy of the IT labor market is discussed. The more pressing issues include the design of effective recruitment and retention strategies, the assessment of the right skills and competencies, and the total compensation approach. To address these issues, private sector companies, state and local governments, non-profit institutions, colleges/universities and the federal government are all refocusing their efforts to reform and refine their traditional approaches.

CIO Council Action

The federal government's Chief Information Officers' Council (CIO Council) has taken a leadership role in this initiative by studying the problem and issuing a report "Meeting the Federal IT Workforce Challenge," as a first step in its action plan to explore new strategies in the IT talent campaign. The judiciary has also paid attention to these issues as evidenced by their request to the Academy for assistance in a review and reporting of its effectiveness in recruiting and retaining IT workers. By their efforts, both the CIO Council and the judiciary have demonstrated their awareness of the workforce planning issues, given the projection that over 50% of all IT workers in the federal government will be eligible to retire in the next five years.

In its role as lead coordinator and communicator of the federal government's IT workforce needs, the CIO Council has articulated the importance of a comprehensive approach to

the recruitment, retention and development of all IT workers. A primary part of this approach is a total compensation package that includes a basic pay structure, supplemental authorities and accompanying benefits for all levels of IT staff and managers. The design of an effective, total compensation structure must be predicated on a thorough understanding of the legal, political and economic forces impacting its success. Benchmarking against other governmental entities as well as the private sector's innovative practices will also ensure that any review and recommendations are based on an evaluation of the total picture of the IT workforce, not hypothesized or anecdotal information.

In recognizing the importance of a top-to-bottom review of the current compensation package for federal IT workers as well as potential compensation structures, the CIO Council and the Administrative Office of the U.S. Courts requested the National Academy of Public Administration's (the Academy) Center for Human Resources Management (the Center) to conduct an independent study of IT compensation strategies and to make recommendations on how the government can best compete for IT talent. In undertaking this study, the CIO Council asked that the Academy take a broad view of compensation, including but not limited to:

- salary
- retirement/pension plans
- recruitment and retention bonuses
- "hot skills" bonuses
- overtime/special pay policies
- perquisites

Other issues such as work environment, work-life quality, challenging assignments, career advancement and knowledge growth must be factored into the assessment since they impact the ability to compete for IT talent. The Academy is also carrying out this study in the context of the broader issues of the IT labor market, definitions of IT workers, and challenges to acquiring and developing the right skills in the dynamic world of rapid technological change.

The Academy, the CIO Council and the Administrative Office of the U.S. Courts determined that this project should be approached in multiple phases:

Phase I—Research

Study of IT compensation practices in public and private sectors; benchmarking of those systems and practices for potential application to the federal government; review of existing legislative and regulatory authorities; gathering of data and information through a complete literature review; and identification of other issues impacting the compensation of IT workers. This report addresses the results and findings of the Research Phase.

Phase II—Design of Alternative Solutions

Evaluation of alternative compensation models based upon the research and benchmarked innovative practices; cost-benefit analysis of each alternative;

review of legal issues for each alternative; determination of one or more compensation structures for recommendation; definition of appropriate IT strategies and IT workers as they relate to this project; and identification of processes and organizational changes necessary to implement recommendations. The report on this phase is due in early summer 2001.

Phase III—Report on Recommended Solutions

Description of entire study and methodology employed; detailed findings of the study; recommendations for improving the federal pay system for IT positions; recommendations on other issues impacting the recruitment and retention of IT workers; and suggestions on implementation strategies. The final report is due in mid-summer 2001.

The Study

A Project Team was formed by the Academy's Center for Human Resources Management, under the leadership of a panel of Academy Fellows. Additional guidance and feedback was provided by a Project Leadership Committee, comprised of representatives of the various stakeholders in the IT workforce issue. The results are presented in this report according to research and findings by sector. Other factors affecting this project were explored during the research phase and are also included in the report. These factors pose difficult questions that must be answered before alternative compensation structures can be appropriately modeled for the federal government.

This report addresses only the results and findings of Phase I—the Research Phase. For Phase I the Academy team:

- reviewed IT issues, problems and practices found in the literature
- gathered and reviewed relevant research conducted by public and private sector organization on IT recruitment and retention issues
- interviewed a broad range of public and private sector officials

The public sector included the federal, state, and local levels of government in the United States; international organizations, foreign governments, academia and non-profit organizations. The private sector included large and medium sized firms from all sectors of the economy. These public and private organizations' IT needs and functions ranged from the most common place administrative IT applications such as payroll and financial systems to state of the art applications in scientific and engineering organizations.

The public- and private-sector officials interviewed included heads of organizations, program executives, chief information officers, human resources directors, finance and budget directors, supervisors, and employees.

In addition the Academy team:

- reviewed existing legislation, regulations, policies, and procedures
- identified strategic issues to be considered in designing solution alternatives

A. Public Sector Research—State, Local, International, Non-Profit

Contacts were made, interviews conducted and materials received for 29 state governments, 6 city/county governments, 8 international organizations or foreign governments, and 4 non-profit organizations. Additional information was obtained from several recent studies and reports from professional societies exploring the competitive demand for IT talent. In the aggregate information about the issues, problems, failed initiatives and innovative practices provide a wealth of insight into the efforts of these organizations to develop compensations and other human resources management tools and techniques which support the ability to attract and retain the IT talent needed.

These non-federal public sector organizations are reacting to the IT recruitment and retention challenges in some ways similar to the federal government. They are improving their recruiting and hiring processes, enhancing IT training and development opportunities, developing a wide range of quality work-life programs and offering enhanced benefits. Some have also introduced truly innovative approaches such as broad- or pay-banding, pay differentials, special bonus programs, and competency-based models. Others have resorted to “unclassifying” or contracting with their employees for needed IT services. The non-profit organizations have been successful in marketing their missions and work as meaningful and exciting—a factor that matters most to IT candidates. Some of the state and local governments are attempting to implement similar initiatives to “sell” their work as challenging and resume-building.

Many of the practices introduced in the non-federal public sector organizations were designed and implemented in the face of difficult political, legal and bureaucratic constraints. Those state and local governments geographically located in cities that are highly competitive areas for the private sector have responded to the tight labor market by offering more training opportunities, providing a state-of-the-art working environment, focusing on quality of life programs, and increasing pay. When these practices have not successfully increased the IT labor pool, then outsourcing has been implemented for such functions as programming and systems analysis.

B. Public Sector Research—Federal

The review of federal agency issues, problems and practices included organizations in all three branches of government—executive, federal and legislative. In all, more than 30 federal agencies contributed their experience to this research effort—by the studies they had conducted and made available as well as through interviews with their program, information technology, human resource, and financial executives and employees. In the aggregate these agencies represent more than 75% of the federal civilian workforce and a broad cross-section of the great variety of information technology needs and applications found in the federal sector. These needs and applications range from maintenance of legacy systems, to development and implementation of administrative support applications in human resources, finance and procurement, to state of the art applications in research organizations such as the Centers for Disease Control, the National Institutes of Health, or the Department of Defense.

Agencies whose human resource programs are governed by the requirements of Title 5 of the United States code, as well as a number of agencies that have different legislation gov-

erning the human resources management programs, were surveyed on their use of existing flexibilities to meet their IT recruitment and retention needs. Title 5 agencies tended to have the same answer. Even with the efforts to increase flexibilities, agencies found it difficult to compete successfully under the current pay structure. The new special rates made available by the Office of Personnel Management are helpful but do not go far enough to address the range of recruitment and retention issues with which Title 5 agencies are dealing.

A sentiment generally expressed across agency lines is the negative effect that the federal hiring process has on the ability to recruit IT candidates. Most agency officials indicated that a direct hire authority should be considered across the board for the IT occupation, which corresponds with a suggestion put forth by the CIO Council in recent reports and interviews. In their opinion, this authority would reduce the lengthy recruitment and examining processes that now must be followed. In the meantime, many agencies are trying to use the cooperative education program and other internship programs as a means of attracting college-level students into entry-level IT positions. While these programs have been historically successful in hiring new IT professionals, they do not address the problem of finding and convincing middle- and senior-level IT workers to seek federal employment, and do not address retention in general. In combination with hiring ceilings, the failures in the federal employment process are accelerating efforts by agencies to implement outsourcing as a short term solution to skills gaps, further unbalancing efforts to reach the proper government versus contractor mix of management and skills.

In the federal sector, the more successful organizations tend to be those which have streamlined hiring procedures to allow speedy decisions, identified their strategic IT skills needs and use the compensation incentives such as recruitment and retention bonuses to attract and retain employees. Agencies which have provided development programs to assure the maintenance of current or the acquisition of new IT skills, and who have developed and implemented quality of work-life programs, such as telecommuting, have also had much success.

C. Private Industry Research

In the face of a shortage of qualified IT candidates, many companies in the private sector are using alternative strategies for getting work done. These include outsourcing, use of contract and temporary employees, job restructuring, and rapid integration of new employees. When these strategies are not successful, or are inappropriate, private industry approaches its recruitment using strategies such as "branding" (treating recruitment like sales for a unique identifier), reducing hiring times, expanding advertising (both paid and unpaid) and cooperating with other corporate recruiters.

Private industry also approaches retention in ways different from the traditional federal view. Companies seek talent when they need it and think in terms of short-term arrangements with the employees. With this paradigm is a redefinition of compensation systems and practices that offer salaries and benefits competitive with the market. Companies are adding to their competitive salaries and benefits programs by also using new compensation approaches such as: market-based pay systems; broad-band pay ranges; basing pay on the person, not the job; annual pay increases based on merit, not length of service;

linking pay to company's goals and objectives; setting up separate pay systems for IT professionals; and, other various mechanisms to increase total compensation (including stock options, bonus programs and skills pay premiums). New market survey instruments that quickly assess the ever-changing IT technology world produce benchmarked job information for use in shifting compensation accordingly.

While competitive pay is vital, factors other than pay also play a significant role in the ability of the private sector companies to recruit and retain IT workers. Good management within the company, good work environment, challenging work, flexible working arrangements, and enhanced training and development are cited as most important to IT candidates in private industry. Most private sector companies are keenly aware of the impact of these factors on their success to attract and retain IT workers who feel strongly about maintaining their professional reputations. To supplement their traditional offerings to potential employees, companies are designing creative programs around the non-pay factors in an effort to "stand out" in this highly competitive market place. Offerings of concierge services, equipment to use at home, reverse mentoring and family care days are just some of the new benefits being provided to the private sector IT workers.

D. *Academia Research*

Universities, such as the large, research-based ones studied for this project are addressing the problem of recruiting and retaining quality IT workers by virtue of non-traditional pay systems. Broad- and pay-banding systems have been developed for their IT positions, with significant band widths (often 100%-150% in each band). Progression through the bands and other pay increases are dictated by market conditions, benchmarking against similar jobs, increases in market pay levels, individual and team performance, and individual skills and competencies. Approval of changes to an individual's pay is usually delegated to an appropriate manager, not centralized in another organization.

Colleges and universities are also focusing on improvements in the technical training and development offered to IT workers. Some universities, such as the University of Texas, are partnering with state governments, private companies and other stakeholders to form cooperative arrangements for training and educating potential IT candidates as well as existing workers. As with all other labor sectors, academia is also turning to outsourcing to meet the IT skills gaps and to deliver services.

E. *Other Research*

Compensation/Salary Surveys

There are traditionally five formal compensation or salary survey approaches available to all employment sectors and conducted by: consulting firms; local human resources professional groups; private group of companies; industry or professional groups; and, government agencies. In the fast-moving IT labor market, pay rates change constantly and the trends over time are specific to narrowly defined job skills or expertise. All surveys are by definition a snapshot of the prevailing market pay rates at a point in the past but IT surveys that are perhaps more than six months old are suspect at best. The advantages and disadvantages of each type of survey were explored as well as the frequency with which

they are conducted. These survey instruments provide a wide knowledge base of IT workforce related data for the alternatives and strategies analysis in the next phase of this study.

Review of Existing Laws and Regulations

The initial research on existing laws and regulations revealed two significant pieces of information. First, nearly 50% of the federal civilian workforce are covered by laws other than Title 5 of the United States Code for the human resources management programs. Examples include the General Accounting Office in the legislative branch; the Administrative Office of the United States Courts and the Appellate, District and Bankruptcy Courts in the judicial branch; the banking regulatory agencies, the Federal Aviation Administration, nearly half of employees in Department of Veterans Affairs, and a variety of engineers, scientists, and acquisition professionals in the executive branch of the federal government. Second, those agencies with greater compensation and hiring flexibility tended to be more successful in attracting and retaining the IT talent needed to carry out the works of the organization.

As the study proceeds to identifying and designing alternative compensation and other solutions, the Project Team will examine the existing laws, regulations, policies, and procedures in more depth.

Growth of Information Technology

The growth and evolution of IT has occurred over the last 30-40 years at a relatively rapid pace, with real explosive growth during the last decade. The evolution from centralized, mainframe systems to client server platforms operating at the desktop has drastically impacted the skills needed to work in and manage IT. The widespread adoption of the Internet with Web-based systems has contributed to this change in IT skill requirements. IT now may be a function in its own right, but it is also the enabler of business and mission-related activities in all facets of an organization.

As new business requirements are being introduced, there is a need for strong partnerships between IT and program departments to improve organizational effectiveness and to solve business challenges. Concurrently, as organizations move toward new technologies, they must often continue to maintain and support older “legacy” systems. This creates a dual challenge for IT departments that must first support the older “legacy” systems with the requisite skills, while building new modernized and technological innovations with a new skill set. This situation is particularly true in the federal agencies that cannot abandon their older “legacy” systems since many of them are linked with customers’ systems. Yet, at the same time, new systems that are more user friendly and often Web-based are being designed and implemented within the same agencies still maintaining the older systems. Skill sets to support both levels must be available to federal agencies and their IT managers.

The IT challenge can be summarized in a series of opposing trends, each with its own set of strategic and organizational decisions to address: centralized vs. decentralized management; new systems vs. legacy systems; division of labor between IT and program areas; and strategic planning-IT specific vs. mission-driven. How an organization addresses these trends will dictate the future IT requirements for that organization. For the foreseeable future, the IT environment for federal agencies will continue to be a series of opposing

trends. The compensation and other human resources management programs and policies must be sufficiently flexible to respond to this environment.

Demand for IT Workers

The U.S. Department of Labor's Bureau of Labor Statistics has projected that between 1996 and 2006 the United States will need more than 1.3 million new IT workers in three core occupational classifications: computer scientists and engineers, systems analysts, and computer programmers. Despite estimates of a less IT worker-intensive government in the future, the federal government's size alone presents enormous problems for IT managers in hiring highly skilled IT workers.

Other studies, including ones by the Information Technology Association of America and the Gartner Group, provide evidence that the problem is even more severe than the BLS projections present. "Hot skills" jobs in such areas as Web systems administration, electronic commerce analysis, database administration, Internet architecture and Web applications programming are where the largest gaps between the supply and the demand for IT jobs exist. The need to hire into "hot skills" jobs as well as other IT positions has forced organizations to offer highly competitive compensation packages to meet their skills requirements.

Compensation Packages to Attract and Retain IT Workers

Numerous studies, surveys and polls have been conducted to assess what motivates IT candidates to accept certain job offers. While the results were mixed, most of them clearly reflect the need to offer competitive salaries in order to be considered by well qualified IT applicants. These same candidates also desire challenging work, advancement opportunities, knowledge growth through training and on-the-job developmental assignments, flexible work schedules, satisfactory work environment and other benefits (pay and non-pay).

New approaches to recruiting IT workers are being tried at all employment sector levels, with mixed success. Compensation offerings over and above base pay must be offered to be competitive. Research is showing that advancement opportunities, base salary increases and signing bonuses are considered the most effective options offered by private industry today. Non-federal public sector organizations and academia also use similar offerings, as well as other options such as referral bonuses and pay differentials, to attract and retain their IT workforces. Research indicates, though, that recruiters and IT managers must be flexible in what they can offer from one year to the next since, given the quickly changing IT landscape, the most highly sought-after skills may change during that period of time.

Salary Differences Between Private Sector and Federal Government

The annual salary survey conducted by Computerworld provides an index of the annual salaries paid out by various industries, including government (collectively at all levels), for specific IT jobs. The most recent survey results (for year 2000) provide the opportunity to compare the government's annual average salary with other industries for 15 entry-level jobs, 7 mid-level management jobs and 8 senior management/executive positions. At the entry-level, 7 out of the 15 jobs surveyed were at or slightly above the industry average. However, at the mid-level and senior management levels there was not one position where government meets the industry average and most were significantly less.

Summary of Findings

The chart below provides a general assessment of the status of IT recruitment and retention practices of the various sectors included in the research. The level assignments (high, medium, and low) are based on an overall evaluation of data and information obtained for organizations in each sector, in comparison to the other sectors. This chart is meant to serve only as a general evaluation and does not attempt to account for successful individual practices.

Table 1: Overall Comparison of Compensation and Work Factors

	Salary Levels	Work-Life Benefits	Rewards/ Recognition	Advancement/ Training	Use of Recruiting Tools*
Federal	L	H	L	L	L
State	L	M	M	M	M
Local	L	M	M	L	L
Non-Profit	M	M	M	M	H
Private	H	H	H	H	H
Academia	M	H	M	M	M

* includes branding or selling the mission of the organization

Due to differences among countries, international governments were not included in the comparison.

Similarities Among All Sectors

There are similarities among all sectors in some respects. Broad banding, pay banding and bands of pay ranges are being used by private sector companies, state governments, academia, some local governments, non-profits, and even some federal agencies with special authorities. Special salary rates and pay differentials for IT workers, signing bonuses and bonuses for mission-critical projects are other offerings by these same employment groups. Outsourcing is an approach receiving more attention and action by all groups, particularly in the areas of programming and systems analysis.

Advantages of the Private Sector

Private industry has many advantages over the other employment sectors included in this research. Offerings of stock options and stock grants, pay above the market, paid time-off and more lucrative signing and referral bonuses are just some of the benefits that private sector companies can, and do, use. In addition to the pay differences, the public sector suffers from a less than favorable image. This perception, whether right or wrong, is supported by numerous surveys and reports. The lengthy hiring processes and bureaucratic civil service rules do nothing to diminish this perception.

Another lesson learned from the private sector is its move away from a one-size-fits-all, internal-equity based compensation approach to one that emphasizes pay-for-performance and external competitiveness. Major changes in reward design focus now on paying for individual competencies versus jobs and moving from a commodity view to one of investment. Public sector, including the federal government, continues to base compensation structures on labor market surveys with little room for individual or occupational fluctuation. Special salary rates are only implemented after lengthy political and administrative negotiations and by the time they are implemented, the data on which they are

based is no longer valid. The recent introduction of special salary rates by the U.S. Office of Personnel Management (OPM), while welcomed by the federal IT community, is the result of such a lengthy design and implementation strategy.

Use of Competency Models

Private industry has effectively used competency models for a number of years as the foundation for hiring and compensation decisions. Research has shown that this approach supports the private sector's philosophy of rewarding individual performance and targeting special skill sets for recruitment into IT positions. Some state governments are moving to competency-based systems and are working in partnership with OPM to design and implement assessment and selection competency models and occupational studies.

Importance of Non-Pay Benefits

One trend that is important to all employment sectors is the desire for challenging work in a supportive environment. Exposure to new technologies through training and on-the-job exposure, career advancement opportunities, family-friendly benefits, flexible work schedules, good working relationships with supervisors and co-workers, and meaningful recognition for individual and team performance are non-pay benefits that can close the gap for those organizations that are unable to offer lucrative, high-paying compensation packages.

Changing Roles and Skills

The definition of who is an IT professional poses difficulties to the federal government, in trying to recruit and retain IT skills. The competencies now most important to the workplace are a combination of technology, business process, project management, interpersonal skills and other competencies necessary to be successful in the IT work environment. At the same time the organizational placement of the IT worker is changing from a centralized designation to one that is dispersed throughout the business and program offices. This shift reinforces the movement in all sectors to outsource more of the highly technical development and support work.

Need for Greater Measurement

Many innovative practices to improve the recruitment and retention of the IT workforce have been introduced in all employment sectors. However, there appears to be a lack of solid information on what gains have been, or are expected to be, achieved. Most success stories are based on anecdotal information, not specific measures or indicators with corresponding baseline data. Concurrently, there is a lack of actual or projected cost data to be used in comparing these innovations. In the next phase of this study, the Project Team will determine the availability and applicability of data that may serve as a basis for assessing the impact attributable to any given innovation.

Next Steps

The research conducted in Phase I provides a useful and solid foundation of issues which must be resolved, and innovative practices which can be considered in designing alternative compensation and other human resources management solutions to the problems of attracting and retaining the IT talent needed for federal agencies.

The research and the deliberations of the Academy Panel of Fellows, the Project Leadership Committee and the Academy Project Team have also identified a series of strategic issues that must be explored in order to design compensation alternatives and other human resources management programs and policies that will allow federal agencies to recruit and retain the IT talent needed now and for the foreseeable future. These issues are:

- **How Should IT Positions Be Defined?** —Are these positions in the traditional computer analyst, computer engineer, computer programmer series? Or is there a broader definition, which is more appropriate in the world of today and tomorrow?
- **What is the Future of Information Technology?**
 - What does the future look like?
 - What is the impact on organizations?
 - What is the impact on human resources management programs and policies?
 - What does this mean for the design of compensation and other human resources management strategies and policies?
- **Should/Must Pay Equity Be Redefined?** —The private sector is moving away from a one-size-fits-all, internal equity based compensation approach to one that emphasizes pay-for-performance and external competitiveness. What lessons are there to be learned from this for the federal sector?
- **How Does/Will the Cultural Shift in Today's Workforce Impact Recruitment, Retention, and Promotion Strategies and Procedures?** —Many surveys show that the attitudes of young workers entering the workforce have shifted significantly over the last 30 years. How should these changes be reflected in human resources management policies and practices?
- **How Can Compensation Be Structured as a Motivator?**
- **Are Competency or Skill Based Compensation Models More Appropriate than Qualifications which are Defined in Terms of Type and Length of Experience?**
- **How Can Compensation and Other Human Resources Management Solutions Be Linked to Outcomes and Outputs Rather than Inputs?**
- **What is the Most Effective Way to Forge the Partnerships Needed to Bring About Change?**
- **Between and among IT, Human Resources and Financial managers and employees?**

- Between and among agencies and organized labor?
- Between and among the executive, judicial and legislative branches of government?
- Between and among the public and the private sector?

- How Can Federal Managers and Interested Organizations (such as the CIO Council) Keep Up-To-Date on Innovative Practices in IT Recruitment and Retention?
 - What methodology should be used?
 - What information sources are available?
- What is the Best Way to Measure the Success/Failure of IT Recruitment and Retention?
 - What is currently available?
 - What techniques need to be developed to evaluate new approaches?
 - How can organizations make valid judgements as to cost effectiveness of various approaches?

These issues will be explored and resolved in Phase II as part of the analysis of alternatives and design of solutions.

INNOVATIVE PRACTICES

Many of the organizations contacted in the research portion of this report provided the Academy team with innovative examples of ways their agencies are adapting to meet the demand for IT workers. While more detailed information can be found in the body of the report, a short summary of innovative changes made in several organizations is included below.

Table 2: Innovative Practices-State Government

	Changes to Pay Approaches	Special Bonus Programs	Quality of Life Programs	Training/Work Enhancements	Recruiting & Hiring Processes
NJ	X			X	X
SC	X	X		X	X
VA	X	X	X	X	X
KS	X	X	X	X	X
MN	X	X	X	X	X
WS	X	X			X
MO	X		X	X	X
NV	X	X		X	X
OR	X		X	X	X
UT	X	X	X		X
WA	X		X	X	X
AZ	X		X	X	X
TX	X	X	X	X	X

The categorizations of the states' practices in the chart above does not do full justice to the level of innovation and flexibility included in some of their approaches.

Virginia has reduced its 1650 job classifications to 275 broader job grouping called roles. Jobs are grouped into 8 pay bands with a band width of 100%. Twenty-five hundred IT workers are included in this new classification and pay structure.

Wisconsin's senior and advanced IT job classes have been broad banded to increase the spread of those pay ranges and to provide for more flexibility in setting starting salaries. State agencies can also adjust compensation levels for these job classes through the use of discretionary compensation adjustments which provide for total increases in a given year of up to 12% of base salary as either lump sum or base-building.

Kansas has implemented new bonus programs specifically tailored to ensure the availability of IT staff: skills bonus of up to 13% of base salary; skills acquisition bonus of up to 10% of salary; and project bonus of up to 10% of salary. Kansas has also introduced an Employee Contracting Program that provides for employees to opt out of civil service coverage and sign contracts that guarantee salary increases of 10 - 15% and additional training to keep skills up-to-date with changing technology.

Table 3: Innovative Practices—Local Government

	Changes to Pay Approaches	Special Bonus Programs	Quality of Life Programs	Changes to Training/Work Enhancements	Changes to Recruiting and Hiring
Fort Worth, TX	X	X	X	X	X
Phoenix, AZ	X		X		X
Virginia Beach, VA	X	X			
San Diego, CA	X			X	X
Charlotte, NC	X	X		X	X
Fairfax County, VA	X		X	X	

Some local governments have developed new forward-thinking approaches to address the recruitment and retention problems of the IT occupation.

Charlotte, NC emphasizes the use of COTS and outsourcing while also providing significant pay increases (16-17%) for its IT staff who work under a broad banding and pay-for-performance system.

San Diego faced such a challenge with regard to the recruitment and retention of IT personnel that the city determined that it needed a way to pay IT personnel outside of the city's civil service system. Therefore, the city created a non-profit organization for IT support. This organization has a Board appointed by the City Council and is a separate organization in terms of management, pay policies, etc. The non-profit corporation provides the full range of IT services including applications development, desktop support and network support. It uses a market based pricing system to pay its employees.

Fort Worth, TX has expanded salary ranges for IT jobs to 70% compared to 58% for non-IT jobs. Skills bonuses (5-10% of salary) are paid annually for IT workers and are based on contracts signed at the beginning of the year or at the beginning of a person's employment.

Innovative Practices-Federal Government

At the Federal Reserve Board, the Division of Information Technology (IT) provides a broad range of automation, telecommunications, and statistical services to the Board. College students who have completed their sophomore, junior, or senior years and who are majoring in computer science, economics, business administration, finance, or a related discipline are encouraged to apply for summer internships. IT interns perform one or more of the following activities: write and test software for the Board's mainframe and workstations; assist IT staff with installations of hardware and software; use various software packages, such as C, C++, and UNIX, and applications, such as SAS, Word, Excel, dBaseIII, and FAME; design web pages and Powerpoint presentations and graphics; run and review edits of statistical series for clarity and completeness; review test results for hardware and software; write documentation for applications being developed or modified; perform routine office functions.

The Fed's Cooperative Education Program also offers a variety of opportunities for students aspiring to become IT professionals. Assignments include creating public and Intranet web pages and assisting application developers in program maintenance, design, and coding.

The State Department has instituted a computer specialist recruitment bonus matrix which pays from 10 to 25 % of salary to IT professionals with appropriate credentials. Bonus eligibility is determined by the following factors:

- AAS Degree, BS/BA Degree in the field of computer science, computer information systems, telecommunications or data processing
- Technical Certificates of completion from any accredited Technical School (military or commercial in related fields)
- Microsoft Certified Professional Certification, Microsoft Certified Systems Engineer, Cisco Certified Internetwork Expert, or Cisco Network Professional
- Engineer Equivalent in the field of computer science, computer information systems, telecommunications, data processing

CDC is building a new IT Human Resources Model to reflect the changing nature of IT positions. A crucial element of the model is the development of specific IT occupational competency development tracks for the eight IT specialties that reflect the competencies needed to perform the IT aspects mission work of CDC's eleven centers-- now and in the future. Also, a goal of the project is to formalize the development of the informatics professional at CDC, a multi-disciplinary approach reflective of the growing emphasis on developing public health professionals who have in-depth competencies in both programmatic and IT specialties. In the first versions of the IT Human Resources model, core competencies span each of eight specialties. Development from entry through journey levels can be specialty oriented or can cross specialties, including programmatic specialties. The numbers of positions above journey level that are a mix of IT and programmatic com-

petencies is growing although opportunities for pure IT specialists remain for positions as high as the CIO level. Nevertheless, there is clearly a trend at CDC to place high value on specialists who have sought to develop multi-specialty and multi-program competencies.

Innovative Practices-Private Sector

The CEO of a large banking company explained that they used long distance telecommuting for a number of “highly desirable,” experienced IT professionals who lived in locations far away from any of the company’s offices.

A large defense contractor has implemented a “Reverse Mentoring” program, where a junior IT professional works with a senior leader in the company and provides guidance to the senior leader on how to use technology tools. Usually, the IT professional and leader are paired up for nine to 12 months. The company has seen very positive results so far. For example, in one case the junior IT professional showed a manager how to get information from the Internet about the competition. The senior manager was so impressed he made it a part of the regular responsibilities of his full time staff.

The CIO of an IT consulting firm explains their innovative twist to their referral bonus program. In addition to paying referring employees from between \$300 and \$1,200 (with the amount based on level of experience of new hire), every quarter all employees who have successfully made a referral are entered into a contest for a prize like a night out or a piece of equipment. In addition, at the end of the year anyone who has made a referral is entered in a lottery for a prize drawing. Last year the top end-of-the-year prize was \$50,000. Last year, this company hired 40 percent of their new employees through their referral bonus program.

One large defense contractor sponsors more and more training on-line. In the latest year, the company sponsored 700 different courses online. They purchase the courses from training and educational organizations. Employees and their family members can take any course they want, all of it on the employee’s own time. Courses include those that are job-related and those that are not. The company says that it costs them almost nothing.
