
Establish and Ensure the Integrity and Economy of DOT's Management Support Systems

Calls for agency heads to ensure the integrity and economy of their agencies' management support systems are coming from all sides, especially given the fiscal choices our government faces. Those charged with the stewardship of public funds are being urged to modernize financial management systems, manage information effectively and use it as a resource in decision-making, and strengthen agency procurement systems. Efficient operation of these systems—in DOT as in other agencies—is key to effective management control over agency resources and to the ability to marshal those resources to accomplish agency missions and successfully implement Secretarial initiatives.

The Department has initiatives underway and is working hard to develop other solutions to financial, information, and procurement problems that continue to cause inefficient and ineffective delivery of programs and services. Determining a continuing course of action requires a strategy that considers available resources, policy and program goals, legal requirements and constraints, and management practices. Such a strategy should lead to a blueprint of actions needed during the tenure not only of this Secretary, but also of those who follow. In this chapter, we provide the beginnings of such a blueprint in the form of an agenda for improving financial, information and procurement systems at DOT. This agenda lists the major challenges that we believe the Department will continue to face now and in the foreseeable future; offers alternative solutions to systems problems, establishes both short- and long-term objectives for implementing the selected solutions, and links improvement efforts to the policy areas that affect, or are affected by, the systems.

DOT's Support Systems Play a Critical Role

DOT's financial and information systems record, process, summarize, and disclose the results of the agency's operations, programs, and administrative functions. The procurement system provides needed goods and services as well as controls over contracts and purchases. Table 4.1 shows by example the size, variety, and range of support systems in DOT.

Table 4.1: Scope and Diversity of Management Support Systems in DOT

Financial management	Information resources	Procurement
16 accounting systems provide funds control for more than \$26 billion in annual obligations according to fiscal year 1986 budget data	\$2.1 billion annually for operating program and administrative support	3,496 contracts and 3,720 contract modifications in FY 1985 having a total value of \$2.1 billion plus small purchases totaling \$306 million
Cash management for more than \$16 billion provided to state and local government through FHWA, FAA, UMTA, and NHTSA grants in fiscal year 1985	Over 200 separate automated information systems and an unknown number of manual systems	Acquisitions of equipment and services to operate and improve FAA's multibillion dollar Air Traffic Control System
Safeguarding assets from fraud, waste, and abuse	Three central computer centers, hundreds of microcomputers, and thousands of telephone lines	57 procurement offices
Setting fees to cover costs of operations at Dulles and National Airports	FAA's inflight air control system is the central nervous system of the nation's commercial aviation system	Coast Guard acquisitions for ships and stations
	Day-to-day support for inspectors who help ensure the safety of the nation's aircraft, commercial vessels, railroads, and highways	

Others outside of DOT also depend on these systems. The Congress, Treasury, OMB, industry, and state and local governments use outputs from the systems to

- plan, budget, account for, and evaluate programs;
- manage and control expenditures; and
- provide contract supplies and services.

Ultimately, the public relies on these systems to ensure safe travel and that tax dollars are well spent

Problems Limit the Effectiveness of Programs and Operations

Our review of GAO reports issued on DOT activities from May 16, 1977, to November 21, 1983, and DOT/OIG reports issued from October 14, 1981, to July 13, 1984, identified 167 GAO and 303 DOT/OIG reports that contained problems related to DOT's financial, information, or procurement systems. In addition, congressional studies, the Grace Commission, and DOT contractor and internal studies have touched upon problems relating to most phases of DOT's financial, information, and procurement systems. For example, these studies and reports noted:

- Financial management problems occurring in the areas of cash management, internal controls, accrual of expenditures, systems documentation, accountability and control over property, internal financial reporting,

- fund control and reporting, development of cost information and integration of the accounting, budgeting and planning functions
- Information management problems involving untimely and inaccurate information, duplicate automated and manual systems and ADP technology (equipment and software) to process, distribute, and maintain data.
 - Procurement problems relating to improper application of procedures and policies, regulatory or statutory violations, and poor performance in the areas of contracting methods, lack of oversight/controls, poor attention to developing definitive contract requirements/specifications, inadequate planning or justifications of certain procurement actions, especially sole-source action, and a work force that needs more training, skills

Our work during this review and other recently completed GAO,¹ DOT/OIG, and internal DOT studies show that problems with DOT's management support systems continue to require management attention. For example, in three states we visited that received funds from FHWA, I MTA, FAA, and NHTSA, excess cash of \$285 million was being held. We identified several internal control weaknesses existing in FAA's accounting system that preclude it from fully complying with the Comptroller General's Accounting Principles and Standards, as required by law.

Our review of three computer systems supporting DOT grant programs and two systems supporting safety programs showed that the systems did not fully comply with DOT's procedures for developing systems. As a result, cost and time overruns have occurred.²

In the procurement area, a May 1985 DOT/OIG report on Coast Guard procurement concluded that Coast Guard needs to (1) begin determining requirements and specifications of major acquisitions sooner and use available standard off-the-shelf designs to avoid excessive delays and extra costs of customer-designed equipment and (2) coordinate acquisition plans earlier and more effectively with the Office of the Secretary.

¹Our report, GAO's Analysis of Audit and Investigative Reports Concerning U.S. Coast Guard Procurement (GAO/RCED-85-144, July 16, 1985), identified 60 audit and investigative studies issued between January 1979 and February 1985 showing problems related to Coast Guard procurement.

²In other GAO reviews of FAA's efforts to upgrade the nation's air traffic control system (Federal Aviation Administration's Host Computer: More Realistic Performance Tests Needed Before Production Begins (GAO/IMTEC-85-10, June 6, 1985) and FAA's Advanced Automation System Acquisition Strategy is Risky (GAO/IMTEC-86-24, July 8, 1986)), additional questions about system performance have been raised.

DOT Initiatives for Improving Financial, Information, and Procurement Systems Integrity

DOT's Secretary and her top managers have recognized that problems exist and have initiated actions to make the three systems more supportive and responsive to the needs of the Congress, departmental management at all levels, and other users. Some examples of these actions include

- Financial initiatives to develop a Department-wide accounting system, improve cash management and debt collection; integrate budget and accounting; and strengthen internal controls and administrations' accounting systems
- Information resource management initiatives to develop ADP and telecommunications plans, develop an automated inventory of its computer hardware and software, improve management and support provided by its central computer center; and establish standards for microcomputer acquisitions.
- Procurement initiatives to review large procurements prior to solicitation, conduct systematic evaluations of the Department's procurement offices, and develop a procurement career management program

In addition, DOT is supporting the President's Management Improvement Program known as Reform 88. This program, begun in 1982, is intended to improve, consolidate, and streamline the management systems of the federal government.

An Agenda for Improvement

Improving the integrity of its management support systems represents a challenge to the Department. We believe that the effort requires that DOT not only continue commitment to the tasks, but also establish and work within an approach characterized by both short- and long-term actions. In some instances, this agenda of actions requires clarifying policy and/or decisions, establishing standards and performance criteria, and setting clear priorities. In others, we see the need to continue developing sound systems of internal control, with the attendant monitoring and evaluation to ensure that objectives once set are met.

Overall, what is needed is a systematic and continuing effort to improve the management support systems. Table 4.2 presents an agenda of the major challenges facing the Department. The challenges and actions listed are based on initiatives ongoing within the Department; our analysis of system problems; our prior experience with similar systems, current legislative and executive branch initiatives, and discussions with many DOT officials. The agenda should not be viewed as an exhaustive or

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prescriptive list of changes needed, rather, it should serve as a framework or structure which the Department can continue to build upon in establishing short- and long-term actions for fiscal year 1987 and beyond.

Table 4.2: An Agenda for Enhancing Systems Effectiveness and Integrity

Challenge	Short-range actions	Long-range initiatives
Financial Management		
1 Establish a DOT wide accounting system	<p>Select either a standardized system or a tailor-made DOT reporting system for meeting financial information needs</p> <p>-If a standardized system is selected, options are (1) modifying an existing administration system (FAA's for example) or (2) purchasing a completely new system which may include off-the-shelf software or custom-developed system</p> <p>-If a DOT reporting system is selected then (1) decide how to handle Coast Guard accounting system needs, (2) develop standard controllers' manual, and (3) select off-the-shelf software or a custom-developed system</p> <p>Establish milestones that realistically reflect the magnitude of effort</p>	<p>Increase involvement and support of DOT users</p> <p>Maintain project monitoring system</p> <p>Follow all DOT system development policies</p> <p>Add experienced personnel to project</p>
2 Correct weaknesses in existing accounting system	<p>Continue to enhance the tracking system for monitoring corrective actions on problems identified in FMFIA, DOT/IG, and GAO reports</p> <p>Establish priorities for ongoing and planned efforts for correcting identified weaknesses: debt collection, prompt payments, property control</p>	<p>Test corrective actions to ensure problem resolution</p> <p>Develop and implement new accounting system for Coast Guard or implement the Coast Guard as the first administration on the new DOT-wide system</p>
3 Ensure sound internal controls	<p>Continue enhancing the FMFIA quality assurance process to ensure that it not only defines needed testing, documentation, coordination of Sections 2 and 4, inclusion of prior audit and reviews, and specifies assessable units, but also performs each of these</p>	<p>Continue efforts to make the internal control review process an integral part of program delivery</p>
4 Minimize interest costs associated with cash held by grantees	<p>Continue efforts to improve systems for providing cash to states and other grantees that ensure that excess cash results only from operational considerations</p> <p>Monitor states' cash management practices</p>	<p>Continue work with Treasury, OMB and grantees to recover interest costs associated with excess cash</p>

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Challenge	Short-range actions	Long-range initiatives
5 Establish a consistent basis for integrating accounting and program data	<p>Integrate budget and accounting data</p> <p>Develop a standard coding structure that is consistent between budgeting and budget execution</p> <p>-Ensure that changes to standard coding structure are minimized when program and appropriation changes occur</p> <p>Merge responsibility for budgeting and accounting under Assistant Secretary for Administration</p> <p>Increase the involvement of the DOT Steering Committee to ensure membership representing all operating administrations</p>	<p>Integrate budgeting, budget execution and program management information systems</p> <p>Develop data elements that allow accounting, budget and program systems to exchange comparable information</p> <p>Establish performance standards directly related to areas outlined in the budgeting process</p> <p>-Ensure that compatibility exists between the various hardware/software systems to enable efficient exchange of information</p>
Information Resource Management		
1 Improve systems development	<p>Require approval of Office of Information System and Telecommunications Policy (OISTP) before any new administration systems can proceed from one developmental stage to the next</p> <p>Establish a cycle for reviewing administrations compliance with IRM orders</p> <p>Identify options for increasing OISTP's staff time for review of systems</p> <p>Require each administration to develop a consistent process for reviewing compliance with IRM orders</p> <p>Review the staffing needs of the IRM offices</p> <p>Establish schedules for periodic reviews of mature systems</p>	<p>Relax requirement for OISTP approval once administrations are adhering to IRM orders</p>
2 Institutionalize IRM planning	<p>Complete an IRM inventory</p> <p>Review and issue comprehensive IRM order</p> <p>Evaluate each administration's IRM plan for quality and whether it addresses the system's principal operating features</p> <p>Require each administration to include in future IRM</p> <p>-An estimate of benefits, rate of return on investment and an alternative analysis</p> <p>-A description of program or mission requirements to be satisfied by the planned system</p>	<p>Review and consolidate DOT's IRM orders</p> <p>Review and update IRM orders</p> <p>Explore the possibility of an automated system for retrieval of IRM orders</p> <p>Identify duplicative and overlapping systems and seek opportunities for consolidation</p> <p>Integrate program and IRM planning</p> <p>Make the quality of IRM plans an evaluation factor for all administrations</p> <p>Establish milestones and a plan for implementing DOT's interadministration work group recommendations for consolidating information functions and computer systems</p>

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Challenge	Short-range actions	Long-range initiatives
Procurement Management		
1 Establish evaluation and system performance criteria	<p>Continue to update general qualitative system criteria to ensure conformance to changes in procurement regulations</p> <p>Custom tailor evaluation criteria to each operating administration and each procurement office if necessary</p> <p>Decide what evaluation results will permit certification</p> <p>Determine the extent of coverage of 57 offices needed to allow general system certification</p>	<p>Establish performance measurement systems</p> <p>Develop quantifiable system performance measures at each level of each administration</p> <p>Develop information systems to record and track measurement data</p> <p>-Establish performance monitoring and accountability points, establish goals for each measurement period</p> <p>Incorporate performance goals and analysis into periodic system evaluations</p> <p>Link systems or organizational performance goals and analysis to individual performance measurement systems</p>
2 Institutionalize system evaluations	<p>Determine alternative strategies for accomplishing evaluations and certifications organizing committees hiring consultants etc. similar to the long-range plan options described at right</p> <p>Select strategy and marshal resources needed organize committees add staff, hire consultant commit necessary funds etc</p> <p>Set milestones</p> <p>Involve administrations in strategy development and selection</p> <p>Complete evaluations and certification and follow up on findings of evaluations to ensure correction of deficiencies</p>	<p>Continue involvement of the operating administrations in the planning process to promote acceptance and cooperation Options include</p> <p>Establish subordinate procurement executive in each operating administration forming a steering committee to plan and monitor progress</p> <p>-Ad hoc committee to plan and organize</p> <p>-Add staff to the Office of the Secretary or shift priorities to allow accomplishment</p> <p>Contract-out for planning and also possibly for executing evaluations</p> <p>Combinations of above</p> <p>Plan should include certifiability criteria evaluation frequencies performance criteria described above and should have alternative strategies for accomplishment</p> <p>Perform periodic evaluations Options include</p> <p>Add staff to OST or shift priorities for OST staff</p> <p>Use operating administration staff on temporary assignment to OST</p> <p>Use peer review approach among administrations led and supplemented by OST including outsiders and/or consultants</p> <p>-Let administrations review themselves with OST monitoring</p>

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Challenge	Short-range actions	Long-range initiatives
3 Establish effective career management systems	<p>Continue and enhance leadership in establishing centralized training for implementing changes from FAR and CICA</p> <p>Develop and implement a career management system. Options include</p> <ul style="list-style-type: none"> Establish a steering committee ("Career Board") from OST and administrations procurement and personnel work forces to plan or direct planning and monitor or direct development and implementation -Hire consultants to plan and/or develop/implement system To take advantage of work already done use lead-agency concept to plan and/or develop/ implement system especially Coast Guard, FAA or joint project Use experience of other government agencies <p>Outline goals, actions and milestones to develop system. perform analysis of staff backgrounds and skills versus needs, agendas for training, qualifying and cross-training personnel. recruiting goals and strategies to upgrade personnel quality, an active standardized training curriculum including continuing education and training to program managers integrating career management systems with individual and system performance goals and measurement systems, and providing input into budget planning</p>	<p>Career Board monitor effectiveness and direct changes</p> <p>Work with other agencies to obtain joint training/development programs, especially sharing of facilities and costs</p> <p>Evaluate quality of acquisition personnel to ensure they have the skills necessary to perform business/management tasks</p> <p>Link career systems to Department-wide human resource management efforts</p>
4 Strengthen advance procurement planning systems	<p>System development planning should include assessing the state of planning, evaluating what parts of existing systems can be used, who can develop the systems and how, resources needed, and milestones</p> <p>Options for development include</p> <ul style="list-style-type: none"> -Ad hoc committees -Lead agency development—FAA a candidate because of work already done -Hire consultants -Use experience of other government agencies 	<p>Ensure linkage to budgeting system</p> <p>Provide timely information to industry on future DOT requirements</p>
5 Institutionalize Competition Advocacy Program	<p>Continue implementation, recognizing potential organizational problems could exist when competition advocates in the various administrations also have responsibility for procurement actions</p>	

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Challenge	Short-range actions	Long-range initiatives
6 Instill decision discipline	Continue linking review of justifications to budget process	<p>In conjunction with procurement planning, establish a program review function in OST that analyzes procurement needs and strategies as part of the budget review process</p> <p>Eliminate special review of all procurement prenotification actions, using spot checking or systems evaluations</p> <p>Develop a program monitoring capability, linked to or coordinated with building a program analysis capability in budgeting to feed into the Transportation Systems Acquisitions Review Council (TSARC) process</p>

Recommendation to the Secretary of Transportation

Given the various mandates and continuing need to strengthen the integrity of the Department's financial, information, and procurement systems, we recommend that the Secretary establish an agenda or action plan for short- and long-term improvements. The agenda we have provided could be the basis for developing a blueprint for the future. We recognize that many factors must be considered, yet we believe that with the Secretary's continued support and commitment, such a blueprint can guide the building and maintaining of sound financial, information, and procurement systems across the Department.

Agency Comments and Our Evaluation

In commenting on our draft report, DOT generally agreed with the agenda we outlined for meeting the challenges at hand to improve the integrity and management of its financial, information, and procurement systems. The Department points to progress to date resulting from Department-wide initiatives in accounting systems, cash management, information resource management, and procurement as measures of the benefits to be derived in both the short and long term. It further said that DOT's management support systems will continue to receive management attention to modernize them and improve their effectiveness and efficiency consistent with the agenda we outlined. We believe the Department's approach and commitment to an agenda or action plan for short- and long-term improvements is responsive to our recommendation.

Effective Human Resource Management Can Help DOT Adapt to Its Changing Environment

Our work has shown that many forces for change are operating within and without DOT. Prior chapters have dealt with some of the factors giving rise to change, including technological developments, changes in the composition, attitudes, and expectations of the work force, and government-wide policies involving deficit management, deregulation, privatization, and redefinition of the role of the federal government. We believe that adoption of a strategic human resource management (HRM) emphasis by top OST and operating administration management could substantially aid the Department in managing this change.

Under a strategic human resource management approach, managers up to and including those at the top of the organization are actively involved in planning for the future of the organization and for the mix of management and employee skills that will be required if the desired future is to be realized. Such an approach aims at relating all aspects of "people management" to organizational effectiveness and productivity, in particular to long-term success in carrying out the organization's mission. Traditional "personnel" functions such as recruitment, training and development, performance appraisal, rewards, and promotions are viewed strategically and are related to the attainment of strategic organizational goals and objectives.

The Federal Aviation Agency is one part of DOT that has embarked on a major HRM effort to achieve organizational adjustment and renewal. Faced with the increasing obsolescence of many of its technical facilities and operations, under pressure to increase productivity, and confronted with a variety of work force problems that could not be ignored, FAA undertook this effort beginning in 1985.

By its very nature a long-term endeavor, HRM has yet to produce dramatic changes in the way FAA manages itself and conducts its business. We believe, however, that HRM's potential for increasing the efficiency and effectiveness of operations over time calls for support of FAA's efforts from DOT's top leadership. In addition, the similarity of FAA's change-related problems to those facing other DOT administrations calls for use of the approach in managing change throughout the Department. In this chapter, the FAA experience is used as a case study to demonstrate the applicability of HRM to the Department as a whole.

Forces for Change Call for Adopting Strategic Human Resource Management

The stage is set for strategic human resource management when organizational leadership recognizes change-related problems, crises, and opportunities and responds proactively to manage the organization's adaptation to change and ensure effective performance of basic organizational missions. Such problems, crises, and opportunities can emerge in a number of areas:

Environment—DOT, no less than other federal departments and agencies is affected by the current fiscal crisis and resulting competition for limited funds. All of its operating administrations are faced with pressures to justify continuance of established programs and activities. Many also are challenged to show why functions they perform could not be performed just as well (or perhaps even better and at less cost to the public) by private sector organizations. Besides the change potential inherent in current government policies favoring deregulation, defederalization, and privatization, the current preference for user charges (or earmarked excise taxes) to defray the costs of government services may tempt some DOT administrations or their clients to think in terms of organizational options designed to free them permanently from the vagaries and uncertainties of the budget/appropriations process. The recent proposal of the Air Transport Association, to create out of the FAA a public corporation with assured funding from the user tax-financed Aviation Trust Fund, constitutes one example of an organizational option which, if found feasible and politically acceptable, could end up being widely imitated.

Diversification/Evolution—Diversification often requires organizational change. It is common in the private sector where, for example, a small company might decide to branch out into new lines of business unrelated or only marginally related to its traditional business. While such diversification may be less common in the public sector, it is not unheard of for a public organization to diversify the scope of its activities, to be assigned new responsibilities and programs by the Congress or the President (often at its own behest, as in the case of DOT's new responsibility for commercialization of expendable space launch vehicles), or to inherit the functions of another organization that goes out of business (as in the case of DOT's absorption of residual Civil Aeronautics Board functions after that agency was abolished).

Probably more common in the public sector, but no less significant as a potential trigger for strategic change, is the gradual evolution or shift in activities over the years that can eventually result in incongruence between an organization's structure and staffing on one hand and the

things it actually does on the other side of the coin. The metamorphosis of the grants management process into examples of this kind of evolution is evident in the staffing, and other discrepancies.

Technology—The FAA is a conservative organization, and will continue to be, but it is embracing technologies that alter the relationship between the FAA and the public. This includes the call for new skills, new attitudes, and new methods of conducting work. The FAA is not alone in embracing the enormous potential of computers to transform the way of a variety of operating administrative functions. Rethinking, restructuring, and reorganizing organizations, and staffing patterns are being explored. Consolidation of dispersed activities is being done efficiently on a large scale, and the Department organizes itself and the individual operating administrative functions.

People—A fourth important trend is the change in people. Over time societal attitudes and expectations as work and authority undergo change. As new people enter the organization, their expectations, and status (for example, women and minorities) may change. People change too as a result of training.

The evolution of FHWA away from a centralized oversight process that depends on the force of civil engineers and for the future of the FHWA. While FHWA continues to rely on younger engineers, explicit recognition of the nature of FHWA's work and the implications of increased automation of the air traffic controllers. The multi-billion-dollar National Transportation System has significant implications for the number of air traffic controllers and perhaps even the organization of the air traffic controllers.

The FAA Experience

The Strike

In 1981 about 11,000 of FAA's 17,000 air traffic controllers went on strike. The strike exposed serious personnel management problems in FAA that necessitated top management attention and action. A panel of outside experts charged with assessing the causes of the strike and identifying needed changes reported that FAA suffered from inadequate human resource systems, poor interpersonal and intergroup relationships, and serious weaknesses in the way it managed its work force. The panel recommended that FAA emphasize employee development, management development, employee relations, and more effective planning for change.

In reviewing the events leading up to the 1981 strike, the panel's report, as well as other outside and internal FAA studies, identified the following major change forces at work in FAA:

- Rapid advances in technology, requiring reassessment of how best to manage U.S. airspace in future decades.
- A new generation of employees whose attitudes and values differ from those of the work force recruited in previous decades.
- Changes in government-wide policies relating to deregulation, privatization, and redefinition of the federal role in transportation.
- Fiscal retrenchment within FAA and attendant pressures to justify program activities and increase organizational effectiveness and productivity.

FAA Human Relations Emphasis: 1982-84

In response, in 1982 FAA initiated a human relations effort aimed at changing its management practices and policies to achieve a more informed and involved work force and foster the concept of "One FAA." Although management explicitly recognized the need for FAA to adapt to a changing environment and plan for a future different from the present, the principal emphasis in this period was on improving the climate of employee-management relations, encouraging teamwork and esprit de corps, and communicating a people-oriented management philosophy that recognized FAA's people as the organization's most important resource. The specific objectives of this program were:

- improved communications throughout FAA,

- improved planning and decision-making through increased employee participation,
- enhanced management proficiency in developing and maintaining individual and group performance,
- increased cooperation and collaboration, and
- improved ability to manage internal change and the impact of external change

Beyond Human Relations to Human Resource Management

Several assessments of the FAA situation have been made. In 1984, an FAA attitude survey of all employees noted continuing problems, such as planning for human resource needs. Follow-up by the outside experts in July 1984 on the air traffic controller function noted that morale was low and continuing to decline. In January 1985, officials from the Office of the Secretary and FAA, dispatched by the Secretary to FAA facilities, found continuing concerns regarding awards and appraisal systems, among other areas. A 1985 GAO survey of air traffic controllers and supervisors at FAA's 74 busiest facilities and our discussions with 29 FAA headquarters and regional officials and with employee representatives at two air traffic facilities also confirmed that problems still existed.

Even before the 1984 attitude survey, top FAA officials recognized that something more comprehensive and strategically oriented than a human relations emphasis would be required to bring about the desired lasting changes in the way FAA manages itself and develops and uses its people. In its 1982 statement of a new management philosophy, "One FAA: A Vision of Excellence," top agency management formally articulated a vision of FAA's future and initiated a process aimed at achieving a consensus among interested parties on the need for change and the direction that change should take. Viewed as a "living document" and a basis for dialogue among FAA's managers, employees, and customers, this document restated FAA's historical mission and discussed the strategic goals and objectives FAA needs to pursue to fulfill its mission in the future. The document spoke of the need to change the culture of FAA and to view its human resources as strategic assets to be managed and developed to the mutual benefit of employees and the organization.

Although not formally implemented until March 1985, in early 1984 the Administrator announced plans to adopt a human resource management orientation. The objective was to institutionalize the ongoing human relations effort while at the same time providing a method for linking

strategic planning for human resources with the agency's technical planning. To facilitate the transition to HRM, FAA Administrator Engen created an interim position of Deputy Associate Administrator for Human Resources, under the Associate Administrator for Administration. The responsibilities of this position included human relations, organizational development, personnel, training, labor relations, human resource planning, and executive development and selection.

In October 1984, as a result of a decision to elevate HRM to a level that would give it maximum visibility and credibility and demonstrate top management's firm commitment, the Administrator established a new position of Associate Administrator for Human Resource Management and named the former Associate Administrator for Administration to fill the job. The Associate Administrator for HRM reports directly to the Administrator, has direct authority over human resource planning, recruitment, utilization, and development and plays a key part in defining what FAA needs to do over time to increase its overall effectiveness.

FAA's HRM effort is intended to directly relate traditional personnel functions to the attainment of strategic organizational objectives and to help the agency plan for and develop the work force of its future. As an example of this in practice, FAA staff responsible for human resource planning work directly with line management in airways facilities and air traffic to integrate planning for human resource needs with planning for and implementation of the National Airspace System Plan (NAS). Since the massive and costly technical innovations envisioned by this long-range plan will have important implications for the numbers, duties, skills, organizational roles, and developmental requirements of air traffic controllers, technicians, and others involved in this future system, planning for the human side of the organization must proceed hand-in-hand with planning for the technical side. By enabling the agency to anticipate and meet the human resource requirements of a changing environment, HRM is expected to ensure—and ideally to enhance—FAA's productivity and organizational effectiveness.

Other Administrations Face Similar Changes

FAA is not alone among DOT administrations in facing the challenge of change. Other administrations face budgetary and cost-cutting pressures no less compelling. Moreover, as pointed out by the Secretary's Safety Review Task Force, rapid and significant changes in the transportation environment resulting from technological advances and economic deregulation have raised concern whether the new environment created by

these changes could result in a reduction in transportation safety, the advancement of which is one of the Department's basic reasons for being. The Safety Review Task Force has identified a number of instances in which a variety of forces for change are necessitating strategic reassessment of agency activities and fundamentally revised approaches to carrying out agency missions. These reassessments and revisions, in turn, have significant implications for acquiring, developing, and using human resources.

For example, in its February 1986 report on the hazardous materials program of the Research and Special Programs Administration (RSPA), the Safety Review Task Force observed that

"Today RSPA continues to regulate, for the most part, by issuing exemptions from its regulations, just as the ICC [20 years earlier] issued special permits, and dedicates a large portion of its staff to that process."

The Task Force concluded in this regard that in the nearly 10 years since its inception RSPA has "not made adequate progress toward extricating itself from the regulatory quagmire that it inherited from the ICC."

As part of its solution to this problem, the Task Force recommended that RSPA consider dedicating additional personnel to rulemaking activity as well as adjusting existing staff activity and setting new priorities. The Task Force also found that RSPA lacks the staff depth to carry on its primary activities when key personnel leave or retire. In some areas, particularly technical ones, it found a number of personnel nearing retirement with no one adequately trained to take their place. The Task Force concluded that "a more conscious effort must be made to train personnel in more than one area of expertise" and recommended that RSPA act to ensure that backup personnel are available to meet the agency's future needs.

In other findings, conclusions, and recommendations that we believe have significant implications for strategic human resource management, the Task Force Report on RSPA commented as follows.

"It is important that RSPA explore alternative means of enforcing [its] regulations and develop improved enforcement methods. In addition, by establishing uniform inspection procedures and goals, the efficiency levels of the entire hazardous materials inspection force could be improved. Enforcement efforts could also be improved through effective targeting of inspection resources to those areas where most needed."

“Lack of uniform training [of hazardous materials inspectors from mode to mode] leads to lack of uniformity in interpreting and enforcing the regulations. To alleviate this problem the Task Force recommends that RSPA, with the cooperation of other operating administrations, implement a program to ensure that the entire DOT inspector work force is uniformly and adequately trained.

Like the Safety Task Force's report on hazardous materials regulation by RSPA, its September 1986 report on FHWA's motor carrier safety program contains a multitude of findings and recommendations with far-reaching implications for strategic human resource management. Overall, the Task Force concluded that the motor carrier safety program had historically been ineffective and remained in need of substantial improvement. Staff was too small and the program too poorly planned, the Task Force stated, to have more than a very limited impact on the motor carrier industry. Recognizing the need for a long-term strategic reorientation of the program, the Task Force identified a need for FHWA's Bureau of Motor Carrier Safety (BMCS) to

“begin a new way of doing business [by refocusing its safety effort] and direct[ing] its resources toward identifying high risk and problem carriers, targeting them for strong enforcement actions, close monitoring of their safety performance, and technical assistance to bring them into compliance.”

The Task Force also identified a need for 150 safety specialists to be added to BMCS' field staff of enforcement personnel as part of the overall program enhancement effort as well as a need to develop the information bases necessary to permit BMCS to identify priority safety problems and develop effective countermeasures. In this latter regard, the Task Force recognized that collecting, standardizing and integrating information are only the first steps. To ensure effective use of the information, BMCS needs the staff technical expertise to perform the data analysis necessary to conduct program planning, resource allocations, and program evaluations. The Task Force recommended that FHWA “make a major commitment” to updating its information collection and analysis activities and allocate sufficient resources to ensure that the system is maintained and enhanced and that data analyses essential to effective program management are performed.

Our own work in the area of grants management and safety programs also provides illustrations of changes that, we believe, have important HRM implications. The following examples drawn from NHTSA and FHWA further demonstrate the pervasiveness of change within the Department as well as the Department-wide need to adopt a strategic approach to

managing change and human resources in pursuit of strategic organizational objectives

NHTSA In 1981 the emphasis in highway safety shifted from altering the design and equipment of automobiles for crash resistance to emphasis on measures to alter operator behavior and performance. As a result of this and other changes, NHTSA's program in support of state and community traffic safety is changing from a grant-in-aid, standards-achievement type of program to one in which the federal government seeks to play a "catalyst" role, promoting safety efforts and innovative program development at the local level. In the process, NHTSA's role has evolved from one of administering grants and monitoring standards achievement to promotional efforts that stress locally developed solutions to local problems.

This transition has been accompanied by shifts in a number of other dimensions. Limited federal funds, formerly viewed as seed money to start new programs, are now viewed as a means of leveraging additional local resources and encouraging interorganizational collaboration, including the participation of private-sector groups. Where formerly grants were awarded to single agencies, the trend is increasingly to multi-agency projects. NHTSA staff roles at both the federal and regional levels are also shifting from basic administration and monitoring to planning, development, and promotion. Consistent with the catalyst role that NHTSA now seeks to play, regional staff are being called on to get involved in program development and "selling" NHTSA concepts. This entails such activities as giving speeches, conducting seminars, testifying before state legislatures, and organizing or assisting private groups and committees in their highway safety efforts.

This new role for NHTSA staff represents a departure from its traditional and rather passive role of grants administration and calls, in many respects, for skills, training, and experience that have not been needed before. NHTSA headquarters officials appear to have recognized the substantial change in the regional role that this represents, the frustrations and stress that it causes for some staff members, and the need to develop employee skills and abilities that have not previously been called for. They have discussed the new role with regional employees at conferences and seminars to air concerns and assist staff in making the transition. These officials told us that the performance in some regional offices has been good while that of others has been less so. They also told us that new employees are being hired with the requirements of the new regional role in mind.

FHWA As discussed in chapter 3, the FHWA-administered federal-aid highway program also has undergone change, and additional changes are in prospect, such as those envisioned by the proposed Surface Transportation Reauthorization Act of 1986 and successor legislative proposals pending in the current Congress. The substantial experience gained by the state highway departments, the increasing flexibility and responsibility given them in many areas, and the shift in program focus from constructing new roads—in particular, the Interstate Highway System—to restoring and preserving existing roads are examples of changes that have already occurred.

Both FHWA and the Office of the Secretary of Transportation (OST) have taken actions in recent years that recognize the need to develop changes in management and human resource management strategies. In 1982 an OST Strategic Planning Group examined FHWA organization and staffing in terms of changes that had taken place in FHWA-administered grant programs. It concluded that FHWA needed to rationalize and trim its field structure for the 1980's and beyond, giving consideration to ways of eliminating nonessential positions, including the possibility of transferring staff to state departments of transportation. In 1983 FHWA reorganized and streamlined selected aspects of its regional operations, including eliminating some supervisory positions that OPM had determined were overgraded and/or unjustified in terms of existing staffing patterns and work requirements. More recently, OST and operating administration task forces, responding to OMB "management initiatives," have examined DOT's regional structure and are evaluating what regional reorganizations and consolidations might be appropriate to the changed circumstances and requirements of grants administration and to the imperatives of deficit reduction.

HRM in the Private Sector and Elsewhere in Government

The importance of human resource management as a major force in improving organizational performance has been recognized for some time in the private sector. The technological, economic, and demographic pressures on firms seeking to maintain—and to increase—their competitiveness and profitability have led many of them to examine the congruence between their strategies and human resource systems. As a result, they are adopting more sophisticated and effective approaches to select, appraise, reward, and develop employees in both the short run and over the longer term. Firms such as IBM, AT&T, General Electric, Chase Manhattan, General Motors, and others have adopted strategic human resource management in one form or another to enable them to

improve productivity and meet the challenges of a changing environment. IBM and General Electric, for instance, both require a human resource section in their strategic plans, and in these firms, as well as others that have embraced HRM, line management at all levels, including the very top, devotes a considerable amount of its time and attention to planning for human resource requirements. From the mid-1970's to 1980, Chase Manhattan Bank undertook major managerial changes that transformed it from a troubled bank to a successful one. A systematic effort was made to strategically manage senior-level selection and placement decisions so that managers would be installed who could understand and focus on an aggressive growth strategy more appropriate to the changing nature of banking. Similarly, AT&T's move into the competitive electronic communication and information business necessitated its developing internal promotion systems for profit-driven people able to innovate and deal with competitive markets. This represented a major change from the regulated telephone monopoly that had been service oriented and had not been managed competitively because its profit was regulated.

While the private sector has clearly been in the forefront in embracing strategic human resource management, several public sector organizations, in addition to FAA, have recognized the important impact of human resource activities on individual performance and hence on productivity and overall organizational performance. These organizations, including the Internal Revenue Service (IRS), the Environmental Protection Agency (EPA), and the U.S. Forest Service, have all adopted a proactive stance toward managing change and the strategic future of the organization. As an example, the IRS, faced with the need to increase productivity and to adapt to technological advances in information processing, has studied human resource management techniques, has put in place the nucleus of an HRM planning activity, and is now reorganizing its personnel management activities. As part of this reorganization, IRS has created a new Office of Assistant Commissioner for Human Resource Management and Support. At EPA, in response to recommendations made by a study panel of the National Academy of Public Administration (NAPA) and as a result of internal assessments of personnel management problems and needs, a new Office of Human Resource Management has been established within the Office of Assistant Administrator for Administration and Resource Management. This organization will be responsible for implementing recommendations made by the NAPA panel, including initiating a plan for acquiring necessary skills as well as the training and development activities required to satisfy projected agency needs.

We believe that the Department of Transportation could benefit substantially from following the examples of other organizations that have adopted human resource management to deal with the challenge of change and the need to effectively carry out organizational missions. We see specific benefits from Department-wide adoption of HRM, such as (1) improved ability to take advantage of the productivity-enhancing potential of technology and to ensure the availability of technically trained personnel needed to operate high tech systems, (2) greater flexibility to achieve economies through consolidating activities and functions and redeploying staff to more productive and important uses; (3) improved ability to address the requirements of changing federal roles in such areas as grants management, regulation, and transportation systems management, and (4) greater flexibility in bringing the staff's skills and expertise to bear on problem solving and program management needs DOT-wide. In this latter regard, the flexibility to shift key managers and staff to wherever their talents and competencies are needed is one of the hallmarks of organizations that practice HRM. In DOT such a practice, employed on a sufficiently broad scale, could result in wider sharing of successful ideas, techniques, and strategies, and acquisition of broader and more varied experience by managers. Over time there could emerge a unifying DOT culture, in contrast to the separate modal administration cultures, affiliations, and loyalties that have characterized the Department for most of its history.

Developing the Information, Organization, and Planning Bases Needed for Effective Human Resource Management DOT-Wide

DOT has established within the Office of Personnel a Personnel Planning, Research and Systems Division responsible for conducting many of the data collection, systems design, automation, research, and planning activities that are essential first steps in developing strategic human resource management. Still new and quite small, the division has concentrated on inventorying the types and sources of data available on the DOT work force, evaluating the quality, reliability, and comparability of those data, and developing automated systems to provide timely accurate, and consistent work force information to support the data needs of internal DOT users (e.g., the Office of the Secretary), as well as the demands of external users (e.g., the Congress, the Office of Personnel Management and the Office of Management and Budget). The division has also responded to ad hoc requests for work force statistics from other OST analysis groups such as those examining field staffing issues, retirement forecasts, and issues of procurement career management. In addition, the division recently completed its first independent analysis of departmental resource needs, i.e., DOT civilian staffing in overseas locations. We were told that over the longer term the division plans to

acquire the requisite informational bases, analytical capability, and substantive expertise to engage in activities more directly related to strategic human resource management. These include developing automated forecasting techniques for modeling future work force changes, formulating long-range resource plans and conducting research projects related to productivity improvement and innovative methods for managing human resources.

While its human resource management activity is not now comparable in substance, scope, and magnitude to FAA's, the new division does provide the nucleus for building such a DOT-wide capability. Division staff members acknowledge that DOT has historically been, and largely remains, a loose federation of highly independent and essentially self-sufficient organizations. This has begun to change in recent years as a result, among other things, of tight budgets, a determination to achieve resource economies by adopting a more centralized approach to managing human resources, and OMB management initiatives requiring staffing reductions, consolidations of support functions, and development of centralized systems for accounting, payroll, and other activities. Recent efforts cited by division staff include (1) consolidating operating administration personnel and payroll systems DOT-wide, (2) developing a DOT-wide Performance Management and Recognition System, (3) establishing a Professional Exchange Program as part of the Secretary's Initiatives for Women, and (4) initiating a DOT-wide approach to implementing the new Federal Employee Retirement System.

The forces driving these developments are likely to grow even stronger in the future. Division officials shared our view that budgetary pressures as well as pressures for greater productivity and improved management effectiveness and efficiency will accelerate the trend toward integrating and consolidating various administrative functions and support systems. This, in turn, could give the Office of the Secretary the opportunity to play a larger, more direct, and more effective role in identifying, planning for, and meeting the Department's human resource needs.

Conclusions

Like most organizations today, DOT operates in a rapidly changing environment in which a variety of forces challenge its ability to adapt. These forces, internal and external, require DOT managers to think strategically and to adjust their organizations, their organizations' goals and objectives, and their management practices to changing circumstances and