

**IDA PAPER P-4200**

**ASSESSMENT OF THE POTENTIAL TO IMPROVE THE  
COST-EFFECTIVENESS OF THE DEFENSE TRAVEL SYSTEM**

**Richard Bleach**

**Daniel L. Cuda**

**Richard Diehl**

**Christopher Hanks**

**Rick Harvey**

**Anthony Hermes**

**R. Royce Kneece**

**Jay Mandelbaum, Project Leader**

**March 2007**

## **PREFACE**

This document reports the work performed by the Institute for Defense Analyses for the Under Secretary of Defense for Personnel and Readiness and the Defense Travel Management Office in partial fulfillment of the task titled “Defense Travel System (DTS) Study.” The study task resulted from a requirement in Section 943 of the *FY 2007 John Warner Defense Authorization Act* calling for an independent study of the DTS to determine “the most cost-effective method of meeting Department of Defense travel requirements.”

The authors wish to thank the reviewers, Thomas Frazier, Priscilla Guthrie, Michael Leonard, and Karen Richter of IDA and Diana Hanson of Travel Management Consultants, Inc, Madison, Wisconsin.

This page is intentionally left blank

# CONTENTS

PREFACE.....	iii
SUMMARY.....	S-1
<b>I. INTRODUCTION.....</b>	<b>1</b>
A. STUDY SCOPE AND BACKGROUND .....	1
1. Study Scope .....	1
2. Background.....	2
B. ISSUES REGARDING THE DTS TRAVEL RESERVATION PROCESS .....	2
C. DTS FINANCIAL INFRASTRUCTURE AND LEGACY SYSTEMS .....	5
D. STUDY APPROACH AND OVERVIEW.....	6
<b>II. THE TRAVEL RESERVATION PROCESS.....</b>	<b>7</b>
A. THE TRAVEL RESERVATION INDUSTRY AND PRACTICE .....	7
B. DTS RESERVATION REFRESH RELEASE.....	9
C. RESTRICTED FARES .....	11
<b>III. DTS ARCHITECTURE .....</b>	<b>15</b>
A. OPERATIONAL VIEW .....	15
B. SYSTEMS VIEW .....	17
C. GOVERNANCE VIEW .....	20
D. SERVICE-ORIENTED ARCHITECTURE APPROACH.....	21
<b>IV. EVALUATION OF ALTERNATIVES .....</b>	<b>25</b>
A. CONSTRUCTING ALTERNATIVES FOR THE DTS RESERVATION PROCESS.....	25
B. THE ALTERNATIVES: DESCRIPTION, KEY FEATURES AND ISSUES, AND COST CONSIDERATIONS .....	27
1. Alternative 1: Use a separate reservation process external to DTS.....	28
2. Alternative 2: Replace the DTS reservations module with an alternative OLBE.....	33
3. Alternative 3: Evolve toward a service-oriented environment and, in preparation, aggressively improve DTS usability.....	35

C.	COMPARISON OF ALTERNATIVES.....	39
1.	Technical Risk .....	39
2.	Management Risk .....	39
3.	Performance in Terms of Access to More Complete Flight Inventories and the Ability to Find Policy-Compliant Low-Cost Fares .....	40
4.	Implementation Schedule.....	40
5.	Usability .....	41
6.	Cost .....	41
D.	SUMMARY OF EVALUATION OF ALTERNATIVES .....	43
E.	EVALUATION OF ALTERNATIVE FEE-FOR-SERVICE CONTRACTUAL ARRANGEMENTS.....	45
<b>V. INCREASING USE OF THE DTS FINANCIAL INFRASTRUCTURE AND PHASE-OUT OF LEGACY TRAVEL SYSTEMS .....</b>		<b>47</b>
A.	INTRODUCTION .....	47
B.	LEGACY TRAVEL SYSTEMS IN USE TODAY .....	48
C.	TRAVEL DTS CANNOT ACCOMMODATE TODAY.....	52
D.	SITES WHERE DTS HAS NOT BEEN FIELDED.....	54
E.	TRAVEL FOR WHICH DTS CANNOT BE USED EFFICIENTLY .....	54
F.	SITUATIONS WHERE DTS SHOULD HAVE BEEN USED.....	56
<b>VI. RECOMMENDATIONS .....</b>		<b>59</b>
A.	RECOMMENDATIONS CONCERNING THE TRAVEL RESERVATION PROCESS .....	59
B.	RECOMMENDATIONS CONCERNING FEE FOR SERVICE .....	60
C.	RECOMMENDATIONS CONCERNING THE FINANCIAL INFRASTRUCTURE AND LEGACY SYSTEMS .....	60

## APPENDIXES

A.	History of the Defense Travel System.....	A-1
B.	DoD Travel Governance.....	B-1
C.	Cost Considerations in the Evaluation of the Defense Travel System.....	C-1
D.	Types of DoD Travel Mission Requirements.....	D-1
E.	Glossary.....	E-1

## TABLES

1.	Summary of Findings from the Comparison of Alternatives.....	43
2.	Brief Descriptions of Legacy Order-Writing Systems.....	49
3.	Brief Descriptions of Legacy Voucher-Processing Systems.....	51
4.	Brief Descriptions of Financial Accounting Systems with Travel Capabilities.....	51

## FIGURES

1.	Categorizing DTS Feedback Comments Received.....	5
2.	Fare Comparison for a 4-Day Trip with 30-Day Advance Purchase.....	12
3.	Fare Comparison for a 4-Day Trip with 4-Day Advance Purchase.....	13
4.	Overview of DTS Process.....	15
5.	DTS Activity Workflow.....	17
6.	DTS Functional Overview.....	18
7.	DTS Systems View.....	19
8.	DTS Governance.....	21
9.	“To Be” Conceptual View of DTS with SOA.....	22
10.	Conceptual Approaches to Alternative Reservation Processes.....	26

This page is intentionally left blank

## SUMMARY

### A. OVERVIEW

The Defense Travel System (DTS) is an end-to-end financial system for managing Department of Defense (DoD) travel. Via a single web portal, it provides paperless capabilities for creating authorizations (travel orders), making travel reservations, estimating expenses, obtaining approval, preparing and processing vouchers, monitoring the expenditure of travel funds, transferring funds electronically to the charge card vendor and/or the traveler's personal account for reimbursement of expenses, and archiving travel documents. It utilizes DoD Public Key Infrastructure (PKI) for security. In addition, it helps enforce federal and DoD travel policies, regulations, and business rules by alerting the traveler when an estimated expense or activity may not conform with policy and requiring the traveler to provide a justification to the authorizing official.

Section 943 of the *John Warner National Defense Authorization Act for Fiscal Year 2007* (P.L. 109-364) requires an independent study of DTS to determine “the most cost-effective method of meeting Department of Defense travel requirements.” This study responds to that requirement, focusing on three mandatory elements specified in the legislation:

- 1) The feasibility of separating the financial infrastructure of the Defense Travel System—including voucher processing, accounting, disbursing, debt collection, management accountability, and archival functions—from the travel reservation process.
- 2) The feasibility of converting the travel reservation process to a fee-for-service system or authorizing the use of multiple travel reservation processes, all of which would use the financial infrastructure of the Defense Travel System.
- 3) The feasibility of making use of the financial infrastructure of the Defense Travel System mandatory for all DoD travel transactions. (The legislation also called for a schedule to phase out legacy travel systems made redundant by implementation of the Defense Travel System.)

The underlying premises for the first two elements of the study are that the DTS reservation process is irredeemable and that a superior product can be obtained and



maintained by tapping into the rapidly changing commercial marketplace. These premises derive from congressional testimony and reports about DTS's shortcomings associated with (1) finding the least-cost airfare routing that both meets mission needs and complies with DoD policy, regulations, and business rules, (2) accessing complete flight schedules and pricing data, and (3) numerous complaints criticizing the system's usability.

The third required element of the study deals with the DTS financial infrastructure and legacy travel systems. This element recognizes (1) DTS achievements and benefits in the area of financial management and (2) potential cost savings derived from phasing out legacy systems and eliminating manual processes. As a financial management system, DTS provides a clear, automated audit trail from start to finish. It tracks travel commitments, obligations, and disbursements on a real-time basis; audits can be conducted without relying upon the labor-intensive processes of the past.

The following sections summarize the study findings and recommendations for the three study elements: the travel reservation process, use of a fee-for-service contract, and the financial infrastructure and legacy systems.

## **B. TRAVEL RESERVATION PROCESS**

A new version of the reservations module, called Reservation Refresh, was fielded in mid-February 2007. This version, in development since February 2006, enhances the DTS reservation process and corrects some of the key shortcomings that may have motivated the legislation directing the study. The major improvements over the previous DTS release are that Reservation Refresh:

- Provides lowest-cost routing consistent with DoD policy.
- Accesses a more complete airline flight inventory.
- Improves usability by pricing all flights as displayed, allowing various sort options (including cost), grouping flight choices into easy-to-understand categories, securing reservations at the point of selection, and providing potential policy violation notices at the point of selection.

We believe that these improvements have, in fact, been achieved. This is based on the study team's experimentation with the new system, review of the Army Test and Evaluation Command operational test and evaluation report for Reservation Refresh, and review of the new approach for accessing flight inventory and presenting optimal fares. Furthermore, these improvements had a significant influence on this study's construction

of plausible alternatives to be responsive to congressional direction, since the root causes that gave rise to the study were from previous versions of DTS. An alternative that steps backward from these advances is arguably not worth consideration.

Our study team decided that the appropriate focus should be on the notion of “separation.” Each of the alternatives treats separation in a different way—the first takes a literal interpretation, the second uses an interfaced approach, and the third evolves toward a *service-oriented architecture (SOA)* where all service providers can be separate. (A service-oriented architecture means dividing the functionality of the DTS into discrete services, such as a reservation service and financial services, that can be provided by private-sector or government organizations.)

The alternatives were evaluated on the basis of the following criteria: technical risk, management risk, performance in terms of access to more complete flight inventories and the ability to find policy-compliant low-cost fares, implementation schedule, usability, and cost. The specific alternatives evaluated were as follows:

- 1) Use a completely separate reservation process external to DTS, with two sub-alternatives:
  - a) The servicing *commercial travel office (CTO)* (i.e., travel agent) makes all reservations.
  - b) The traveler makes reservations using a *separate commercial online booking service* adapted for DoD use by incorporating DoD policy and business rules and location data for military installations.
- 2) Inactivate the existing DTS reservations module and establish an interface to a selected commercial online booking agent, which, as in 1b, would be adapted for DoD use.
- 3) Evolve toward a service-oriented environment and, in preparation, aggressively improve DTS usability.

The private sector has demonstrated the potential benefits of an SOA approach where lower costs have been achieved through increased competition for services. While this approach may be best in the long term, it may take years (through a phased implementation approach) before risks are mitigated sufficiently and the potential benefits can be realized. The following discussion therefore focuses on the *interim* part of Alternative 3, aggressive improvement of DTS usability.

The findings are summarized in Table S-1.

**Table S-1. Summary of Findings from the Comparison of Alternatives**  
(Comparisons are relative to the deployed system)

<b>Evaluation Criteria</b>	<b>Alternative 1a</b>	<b>Alternative 1b</b>	<b>Alternative 2</b>	<b>Alternative 3<sup>a</sup></b>
Technical Risk	Low	Higher	Highest	Low
Management Risk	Highest	Higher	High	Low
Performance	Can be as good as Alternative 3			Demonstrated
Schedule	Faster	Slower	Slower	Fast
Usability	NA	Unknown	Unknown	Superior
Recurring Cost Insights	~\$ +37million	~\$ +17 million	~\$ +28 million	~\$ +6-9 million
Non Recurring Cost Insights	Very low	~\$ 3-4 million		~\$ 2-3 million
Opportunity Cost Insights	Breakeven time ~ 9 minute savings per trip	Improvement expected, but distinctions not measurable		

<sup>a</sup> Based on the interim part of Alternative 3, aggressively improve the usability of Reservation Refresh.

Although Alternative 1a would revert to the pre-DTS practice of having a travel agent make all DoD reservations, would have higher future recurring costs (about \$37 million per year), would run counter to trends in most of the commercial sector, and would generate the highest management risk, it nonetheless could create savings in opportunity costs for DoD. While many travelers are accustomed to using online booking services and may prefer them, others might welcome relief from the task of making reservations themselves. Regardless of personal preferences, if this alternative decreases the time spent by DoD employees making travel reservations, there would be opportunity cost savings associated with the reservations system. Travelers would still use DTS for authorization and vouchers. We considered the *potential* savings in opportunity costs associated with the travelers' time and estimated a breakeven time in making a reservation at about 9 minutes (i.e., the value of the travelers' time vs. the cost of a CTO reservation). Based on our experience with the DTS training system, we believe an experienced DTS user would take less than 9 minutes on average to make a reservation using DTS. Furthermore, the breakeven point will exceed 9 minutes by the amount of time expended to make a reservation through a CTO, which in some instances could be

considerable. Thus, savings in opportunity costs probably would not offset the increase in CTO fees; however, we developed a recommendation, discussed below, that will achieve the advantages of this alternative without the drawbacks.

The study team evaluated the alternatives using the criteria described above. For the factors for which we were able to differentiate, Alternative 3 was superior across the board. Even without the enhanced across-the-board usability improvements of Alternative 3, DTS currently provides performance which may not be equaled by the other alternatives in optimizing flight selection for lowest cost. Alternative 1a would carry substantially increased costs. Alternatives 1b and 2 would be slower to implement than Alternative 3, with higher technical and schedule risk, would entail higher management risk from the additional contracts requiring management and oversight, and would be more costly (about \$17 and \$28 million per year, respectively). Alternative 3 would achieve additional usability improvements faster than Alternatives 1b and 2, and with lower risks since the usability characteristics of the online booking service that would win the contract in those alternatives is unknown.

*The study concludes that separation is feasible using any of the alternatives listed above, but we do not recommend it. **We find no basis for abandoning the Reservation Refresh version of DTS in favor of an alternative approach.** Without evidence that the DTS reservation process is irredeemable, or that a clearly superior alternative exists, there is no argument for discarding Reservation Refresh. Therefore, **we recommend that DoD continue to use the Reservation Refresh version of DTS.** Alternative 3 has a relatively low, well-defined, and controllable nonrecurring cost, estimated at no more than \$3 million. Its recurring costs are less than those of the other alternatives. The approach to making further improvements is low-risk, and those improvements are not necessary for DTS Reservation Refresh to be preferred over the other alternatives considered.*

In the longer term, the Business Transformation Agency (BTA) envisions moving toward a service-oriented architecture approach for all enterprise-wide DoD business activities, to include travel. In fact, steps in that direction are already being taken for DTS. For example, a new commercial product for Reservation Refresh is accessed using a web services approach, which is a modest step toward SOA. We believe these moves are in the right direction. In particular, an SOA for DTS will open up a range of options for taking advantage of advances in reservation technology, multiple reservation processes, and improved financial management. **We recommend that the Defense Travel**

*Management Office (DTMO) and the DTS Program Management Office (PMO-DTS) explore an SOA approach to ensure that the benefits cited above can come to fruition, within the limits of prudent risks.*

In the interim, usability, the study team's most serious concern, could be improved by the following recommended actions:

- The BTA should fund an option that allows the traveler to request the CTO to make reservations for the *entire* trip immediately after the traveler enters the trip parameters into DTS (thus gaining the advantages of Alternative 1a).
- Under Secretary of Defense for Personnel and Readiness [USD(P&R)] and the BTA should implement a focused, proactive program to improve DTS usability across the board. Systematic user feedback, use of leading web design professionals, and improved access to other transportation providers and hotels should be included in that program.

Nonrecurring costs for such an undertaking should be modest (no more than \$3 million).

In addition, given the concerns raised about low-cost fares, the study briefly considered ways to make much greater use of airline restricted fares, since they offer great potential to reduce travel costs. To that end, *the study team recommends that USD(P&R) conduct a study, in conjunction with the General Services Administration (GSA), to determine consistent policy guidelines for using restricted fares, and DTS should be modified accordingly.* Penalties incurred when restricted tickets are changed, management of unused restricted tickets, and the potential impacts on the GSA Contract City-Pair Program must all be thoroughly evaluated.

### **C. USE OF A FEE-FOR-SERVICE CONTRACT FOR DTS**

Under Alternatives 1b and 2 above, use of fee-for-service contracts would be appropriate, and that arrangement could also be used for Alternative 3. The current DTS contract for operations and sustainment of DTS is firm, fixed price. The issue is whether converting to a fee-for-service contract would add value for DoD. A fee-for-service contract could add value if it would enable competition in providing services. Such is not the case with DTS. DoD owns the rights to DTS and must pay for its operation, maintenance, and improvement. Since there is no competition except periodically for the operations and sustainment contract, a fee-for-service arrangement has little potential to add value for DoD.

The introduction of a service-oriented architecture for DTS would facilitate moving to a more competitive environment that *could* have value for DoD. If a service

provider in the architecture performed poorly or adopted an inferior technological approach, DoD would be in a position to replace that provider relatively easily. Under those conditions, a fee-for-service arrangement would be an appropriate contracting mechanism.

#### **D. FINANCIAL INFRASTRUCTURE AND LEGACY SYSTEMS**

Three types of legacy systems of consequence are in use today: order-writing systems, voucher-processing systems, and financial management systems with travel capability.

We have found that legacy systems are being used even when DTS could be used, but there are three situations today that *require* use of legacy travel voucher-processing systems:

- Processing types of travel that DTS cannot accommodate
- Supporting sites where DTS has not been fielded
- Processing travel for which using DTS is not efficient because of extenuating circumstances in the organization using it

These three situations must be changed before the DTS financial infrastructure can be made mandatory. These changes are on the critical path of phasing out legacy travel systems. The travel order-writing systems continue to exist only to support the use of the voucher-processing systems for these situations. Both would become redundant if DTS had the requisite capabilities. Eliminating the use of legacy systems when DTS *could* be efficiently used is mostly a management issue. Management Initiative Decision (MID) 921 (October 2004) and implementing directives issued by the Military Departments require termination of use of legacy travel systems, but they contain loopholes that have permitted local commanders to justify continued use of legacy systems even when DTS could be used.

A near-term objective should be to eliminate the use of legacy systems for the types of travel DTS *can* support. To that end, ***we recommend that USD(P&R) establish a clearer mandate for the use of DTS for all travel that it is currently capable of efficiently supporting.***

In addition, *USD(P&R) should establish a process to collect complete, reliable, centrally available, and timely DoD travel information needed to support effective DoD travel management.*

To enable the eventual elimination of all redundant legacy travel systems, we recommend that *DoD fund the establishment of a DTS capability to support all types of DoD travel as soon as possible by adopting a proactive strategy for interfacing with 1) legacy voucher-processing systems using automated interfacing where feasible, and 2) legacy order-writing systems to permit users to access the front-end system needed.* Spending the time and money to redevelop a similar capability within DTS should be done only where it would be more cost-effective. In support of this, we recommend:

- USD(P&R) should review DoD's travel regulations comprehensively with the objective of substantially reducing the number of travel types.
- PMO-DTS should investigate several technical or administrative changes to facilitate processing of all vouchers:
  - Support batch-process vouchers from Navy ships at sea.
  - Overcome problems with multiple federal appropriations for National Guard training.
  - Overcome PKI security issues with the Reserves and the National Guard.
  - Resolve management issues related to funds accounting for active duty for training.
- The DTMO should be given the responsibility and the funding to field DTS at the remaining DoD sites. Full deployment will be facilitated by using the organizations with the greatest expertise.

To make the use of the DTS financial infrastructure mandatory, *we recommend that once a date can be projected when DTS will have the capability to support a very high percentage of all DoD travel, a mandate should be issued to discontinue use of all legacy systems by the appropriate authority. Discontinuance should be effective after a period of time sufficient to close out any travel initiated under the legacy system.*

# I. INTRODUCTION

## A. STUDY SCOPE AND BACKGROUND

### 1. Study Scope

The Defense Travel System (DTS) is an end-to-end financial system for managing Department of Defense (DoD) travel. It includes paperless capabilities for creating authorizations (travel orders), making travel reservations, estimating expenses, obtaining approval, preparing and processing vouchers, monitoring the expenditure of travel funds, transferring funds electronically to the charge card vendor and/or the traveler's personal account for reimbursement of expenses, and archiving of travel documents. It utilizes DoD Public Key Infrastructure (PKI) for security. In addition, it helps enforce federal and DoD travel policies, regulations, and business rules by alerting the traveler when an estimated expense or activity may not conform with policy and requiring the traveler to provide a justification to the authorizing official.

Section 943 of the *John Warner National Defense Authorization Act for Fiscal Year 2007* requires an independent study of DTS to determine “the most cost-effective method of meeting Department of Defense travel requirements.” This study responds to that requirement, focusing on three mandatory elements specified in the legislation:

- The feasibility of separating the financial infrastructure of the Defense Travel System—including voucher processing, accounting, disbursing, debt collection, management accountability, and archival functions—from the travel reservation process.
- The feasibility of converting the travel reservation process to a fee-for-service system or authorizing the use of multiple travel reservation processes, all of which would use the financial infrastructure of the Defense Travel System.
- The feasibility of making use of the financial infrastructure of the Defense Travel System mandatory for all DoD travel transactions. (The legislation also called for a schedule to phase out legacy travel systems made redundant by implementation of the Defense Travel System.)



## **2. Background**

The Under Secretary of Defense for Personnel and Readiness [USD(P&R)] has overall management responsibility for DTS; functional oversight is performed by the Defense Travel Management Office (DTMO) in the P&R organization. The DTS Program Management Office (PMO-DTS) is responsible for developing, operating, and sustaining the system; the PMO-DTS reports to the Business Transformation Agency (BTA) under the Under Secretary of Defense for Acquisition, Technology, and Logistics [USD(AT&L)].

The recommendations of a 1995 report on reengineering DoD travel (also known as the Redbook) formed the original basis for the DTS development effort.<sup>1</sup> DTS development formally began in September 1998 with a contract awarded to BDM, International. BDM was subsequently purchased by TRW, Inc., which in turn was acquired by Northrop Grumman Mission Systems (NGMS), the current development and support contractor.

While DTS was initially deployed in May 2000 to 8 sites, a formal 3-phase plan to field it actually commenced in January 2002. In phase I, DTS was installed at approximately 30 pilot sites. Phase II, the primary deployment effort, made DTS operational at approximately 250 high-volume and high-visibility locations. Phase II was completed in September 2006. Both of these phases were funded by the PMO-DTS. Phase III, which encompasses the remainder of DoD, is to be implemented and funded by the military services and Defense Agencies, with limited PMO assistance. Approximately 2.2 million DTS travel transactions were processed in fiscal year 2006<sup>2</sup>—twice the number processed in fiscal year 2005. DTS accounts for about 25% of the 8.9 million annual travel transactions for DoD today. Appendix A contains a more complete history of DTS.

### **B. ISSUES REGARDING THE DTS TRAVEL RESERVATION PROCESS**

To better understand the requirements for the first two elements of the study, the study team contacted government and private-sector travel professionals, congressional

---

<sup>1</sup> Report of the Department of Defense Task Force to Reengineer Travel, January 1995.

<sup>2</sup> The 2.2 million transactions are based on the FY06 Defense Finance and Accounting Service (DFAS) Electronic Transfer Report. In some cases there are multiple transactions for one voucher as reported by DTS.

staff, the Government Accountability Office, DoD Inspector General, and DoD travelers. Based on the information gleaned from this exercise, we identified three key issues that led to the congressional language about the DTS.<sup>3</sup>

*1. Is the DTS reservation module consistently finding the least-cost airfare meeting mission needs, in compliance with DoD policy, regulations, and business rules?*

Annually, the General Services Administration (GSA) negotiates two types of unrestricted, refundable fares between city-pairs. The lower fare is capacity-limited – a variable number of seats are made available at this price on the airline awarded the contract for the specific city-pair. The higher fare gives federal government travelers access to any open coach seat on the selected airline. On average, these fares are 60–70 percent lower than commercially available refundable, unrestricted fares. Government policy requires travelers to use the city-pair carriers unless an exception is granted.

Relative to these city-pair fares, we identified route optimization to obtain lower-cost fares and inventory access as two specific situations where fares paid by DoD travelers could have been too high.<sup>4</sup> There were instances where DTS did not determine the low-cost solution when constructing a route between two cities where no direct city-pair fare existed. For example, there is no city-pair fare between Portland, ME and Miami, FL but there are city-pair flights from Portland to Atlanta and from Atlanta to Miami, as well as several other possible combinations.

There were also instances where a traveler may have made a reservation to fly to a destination airport with no city-pair fare, without being informed of an option to fly to another nearby airport where a (lower-cost) city-pair fare was available. For example, a traveler may have flown from Washington, DC to Hilton Head, SC (no city-pair exists) without being told of an option to fly to Savannah, GA (using a city-pair rate) and then drive to Hilton Head.

---

<sup>3</sup> Prior to the current DTS software release, major DTS software releases have been named after US presidents, starting with Washington. The Monroe version, released in April 2006, was the deployed system for most of this study and was in use when these issues were raised. A new version recently fielded, “Reservation Refresh,” alters the situation considerably. It is discussed in detail later in this report.

<sup>4</sup> Based on Government Accountability Office reports along with interviews and tests conducted in the course of this study.

2. *Does DTS provide full access to flights (and prices) that are consistent with DoD policies and business rules?*

There were instances where (low-cost) flights were not displayed to the traveler because they were not listed in the Global Distribution System (GDS) used by the traveler's commercial travel office (CTO).<sup>5</sup> For example, Southwest Airlines is not listed in all GDSs, yet it has been awarded some city-pair routes.

For international travel, there were instances where flights were not displayed because DTS did not recognize the fare class. This may have led the traveler to select more expensive flights or to needlessly ask for CTO assistance. This last point is also an example of the third key issue behind the study.

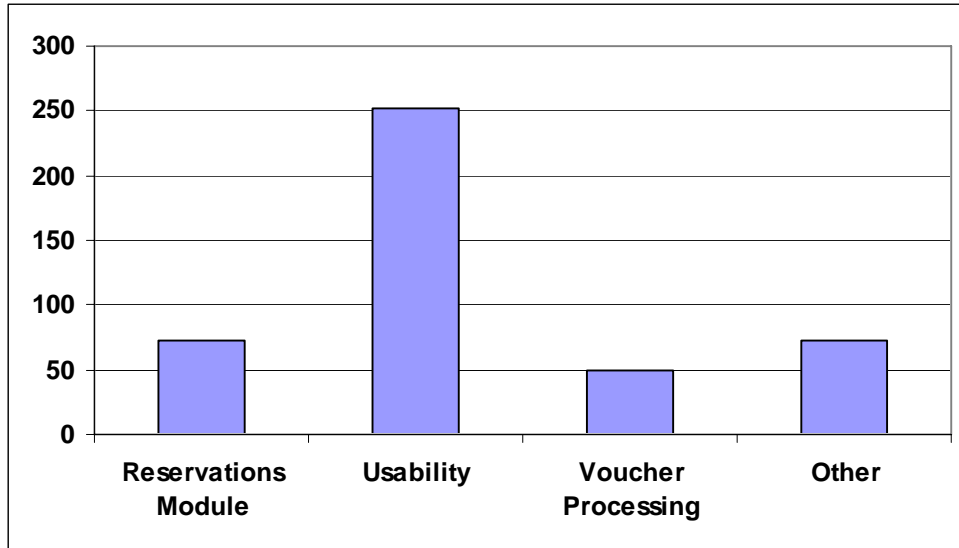
3. *Do usability issues with the end-to-end DTS process result in an inefficient use of traveler time, resistance to using the system, and a potential drop in productivity?*

Figure 1 categorizes feedback received on the DTS website from the beginning of September through the end of November 2006.<sup>6</sup> The DTS receives approximately 50,000 logins each day, so the 447 comments reflected in the chart over 3 months represent only a small, non-random sample for gauging the general experience of DTS users. Still, for the users of DTS motivated enough to provide feedback, *usability issues clearly dominate*. (For every response, it must be assumed that a substantial number of people might feel the same way but do not submit feedback.) While many of these comments may be the result of moving (what turns out to be) complex work from a small group of experts to a very large group of non-experts, these data support a need for DTS to be made much more user-friendly as far as DoD travelers are concerned.

---

<sup>5</sup> This is not an error of omission on the part of the GDS. It is a function of the business arrangement between the airline and the GDS. The GDSs and CTOs are explained in more detail in Section 2.

<sup>6</sup> Based on an IDA review of the main thrust of each comment; this is different from DTS's categorization.



**Figure 1. Categorizing DTS Feedback Comments Received**

Many complaints were about screen formats, navigation, presentation, and arrangements, including comparisons with consumer online booking engines (OLBEs), such as Expedia, Orbitz, and Travelocity. Some usability comments were clearly related to travel-policy enforcement. There were fewer (but still a significant number of) comments on voucher processing. Two specific usability issues may also have implications on the least-cost airfare situation discussed above:

1. The version of DTS then in use encumbered seats only after the traveler had completed the entire reservation process, estimated expenses, completed pre-audit checks, and digitally signed the travel order. In some instances a (low-cost) seat was lost before this process was completed. This leads to rework on the part of the traveler as well as the possibility that there may be no remaining seats at the original price or at all.
2. On multi-leg flights, DTS sometimes did not clearly indicate that the lower-cost capacity-controlled city-pair fares were available, allowing the traveler to book at the unrestricted city-pair fare.

### **C. DTS FINANCIAL INFRASTRUCTURE AND LEGACY SYSTEMS**

The third congressionally mandated element of the study deals with the DTS financial infrastructure and legacy travel systems. By including this study element, the Congress recognized (1) DTS achievements and benefits in the area of financial management and (2) potential cost savings opportunities derived from phasing out legacy systems and eliminating expensive manual processes. As a financial management system, DTS provides a clear, automated audit trail from start to finish. It tracks travel

commitments, obligations, and disbursements on a real-time basis, and audits can be conducted without relying upon the labor-intensive processes of the past.

In addition, the voucher-processing component of the financial infrastructure reimburses travelers much more quickly than is possible with a manual voucher-processing system. Data collected from January 2006, June 2006, and January 2007 show similar results: it takes, on average, 5 days for the traveler's authorizing official to authorize payment. Once authorization occurs, the traveler receives payment within 3 days on average. Opportunities for further cost efficiencies exist to the extent that voucher processing is still done manually today.

#### **D. STUDY APPROACH AND OVERVIEW**

A forward-looking approach has been taken in the analysis of the three mandatory study elements. It treats all prior investments in DTS as sunk costs in order to determine a cost-effective course of action for the future. Situations and events in the past are only discussed to the extent that useful lessons can be learned for determining the most appropriate way ahead. The report proceeds as follows:

- Section 2 briefly discusses the travel industry as the environment in which DTS must function and discusses the recent Reservation Refresh release.
- Section 3 describes the DTS architecture.
- Section 4 describes findings related to the analysis of alternative reservation processes and associated fee structures.
- Section 5 describes the legacy travel systems that are still in use and discusses approaches to phasing them out.
- Section 6 lists our recommendations.

## II. THE TRAVEL RESERVATION PROCESS

As a basis for assessing the ability of DTS to make reservations for DoD travelers, this section examines the travel industry today and how DTS interfaces with it. It describes the latest version of DTS, which was deployed in mid-February 2007 with the name Reservation Refresh, and how it addresses some of the issues that gave rise to this study. The description is simplified, but the process is remarkably complex.

### A. THE TRAVEL RESERVATION INDUSTRY AND PRACTICE

The DTS travel reservation process has been designed, developed, deployed, and operated as an integrated end-to-end system. However, the first two issues identified by the Congress for this study concern the reservation process. That process includes the following functions:<sup>1</sup>

- Using trip parameters including dates, locations, and itineraries input by the traveler
- Displaying transportation, rental car, and lodging availability information for selection by the traveler
- Exchanging information for authorization of travel, funds availability, and commercial travel office assistance processes

Commercial Travel Offices play a key role in meeting DoD travel requirements.<sup>2</sup> With respect to the DTS travel reservation process, CTOs—

- Retrieve the passenger name records (PNRs), which DTS places in the CTO's queue on the GDS and which contain information about the traveler and the selected transportation, rental car, and lodging
- Ensure that travelers' selections are booked (confirmed in the wholesaler system used to make reservations)
- Provide any assistance requested by the traveler

---

<sup>1</sup> Based on definitions provided by the DTMO.

<sup>2</sup> The use of CTOs is dictated by the Joint Travel Regulations (JTR) and Joint Federal Travel Regulations (JFTR). In the future, the Defense Travel Management Office will be the single source for procuring and managing CTO services for DoD. See Appendix C, Section E, for more information on the CTOs.

- Perform quality control procedures to ensure compliance with DoD travel regulations
- Issue tickets

To obtain airline flight inventory and pricing information, CTOs interface with a “wholesaler,” known as a Global Distribution System (GDS).<sup>3</sup> There are currently four GDSs in operation, but due to mergers the number will likely soon drop to three. The existing four are Sabre, Apollo/Galileo, Worldspan, and Amadeus. Amadeus operates primarily in Europe. Galileo is owned by Travelport; Apollo is its North American brand. Travelport has recently (December 2006) announced the purchase of Worldspan, and, presumably, its operations will eventually be merged with those of Galileo/Apollo. The government customer has little influence over these systems, since federal government travel comprises only about 2.2 percent (DoD is about half of that) of total US travel.

Normally, a CTO will use only one GDS, and DTS has to know which GDS is used by the CTO servicing the traveler’s organization. Prior to the release of Reservation Refresh there were time delays in the process, and because seat availability and pricing is in constant flux,<sup>4</sup> an identified seat reservation could easily disappear before it could be confirmed.

To compound the complexity of the GDS situation, the air flight inventory can be accessed by new mechanisms—known as “Genies” for “GDS new entrants (GNE).” One company in particular, ITA Software, Inc., offers a product that appears to be unique in the industry at this time,<sup>5</sup> and Reservation Refresh makes use of the product. By compiling a database from 3 different sources,<sup>6</sup> ITA constructs an inventory of domestic

---

<sup>3</sup> Not all airlines list all flights with all GDSs. For example, Southwest Airlines only lists flights on Sabre, whereas Spirit Airlines reportedly does not list flights on any GDS. See Appendix C, Section G, for additional information in the context of DTS finding the lowest-cost unrestricted airfares.

<sup>4</sup> Inventory and pricing data may undergo up to 400,000 changes per day. Brad Seitz, “Measuring Up,” *Business Traveler Executive*, February 2007, pp. 23–28.

<sup>5</sup> A claim made by the company that the study group believes is credible based on discussions with several industry experts.

<sup>6</sup> The Official Airlines Guide database of scheduled flights (more than 300 airlines offering more than 100,000 flights per day); the Airline Tariff Publishing Company database of origin-destination fares by booking class (updated seven times a day); and the Availability Status/Numeric Availability Status/Airline databases, which contain the highly dynamic “availability” information (seats classified by booking class) the airlines use to do “yield management.” The latter data are what the airlines manipulate more or less continuously over time to come as close as they can, based on the demand they are experiencing, to filling every seat on every flight with customers paying the most possible for those seats.

airline flight data that appears to be as complete as is possible today.<sup>7</sup> ITA Software was built around a new algorithm for producing low-cost airfares that meet traveler needs.<sup>8</sup> The Genies also provide flight and fare information substantially cheaper than the traditional GDSs, because the GDSs charge about four times more for pricing information than for availability information. This is not the case for the Genies.

## **B. DTS RESERVATION REFRESH RELEASE**

The Reservation Refresh version of DTS is a complete rework of the DTS reservation process. It corrects some of the important shortcomings that gave rise to the study and incorporates the following major improvements:

- Accesses the airline flight inventory through ITA Software, Inc.
  - Prices all flights and allows sorting by cost
  - Provides “constructed city-pair” routing
  - Looks for city-pair fares going to alternate, nearby airports
- Incorporates “book-as-you-go” functionality
- Uses a rebuilt, more user-friendly set of website screens for selecting reservations for booking, including:
  - A guided process for initial reservation selections and better navigation
  - Flights grouped into easy-to-understand categories
  - Policy information provided immediately at point of selection

As discussed above, Reservation Refresh uses a relatively new “shopping engine” for travel reservations provided by ITA Software, Inc. The search algorithm has optimization logic that enables “constructed city-pair” routing. That is, if there is no city-pair fare between two cities but a route using city-pair fares can be constructed with an intermediary stop, the software will try to find it. Constructed city-pair fares could produce a large cost savings (see the exhibit below). Reservation Refresh also displays city-pair fares that go to alternate, nearby airports at both origin and destination cities, again offering potential for considerable savings.

---

<sup>7</sup> Sabre claims that it has made equivalent arrangements with the airlines.

<sup>8</sup> This algorithm was written by computer scientists at the Massachusetts Institute of Technology; it is used by the Orbitz online booking product.



**Exhibit**

**AN EXAMPLE OF THE COMPLEXITY OF FINDING LOWEST COST AIR FARES AND THE BENEFITS OF CONSTRUCTED CITY-PAIR FARES**

The trip chosen was from Portland, ME (airport code PWM) to Miami, FL (airport code MIA). No GSA city-pair fare exists between those specific cities. The best flight that could be found for an unrestricted one-way coach seat was \$431 on Continental Airlines through Newark. The three principal consumer OLBs (Travelocity, Expedia, and Orbitz) all produced that fare, but the Continental website did not.

As discussed elsewhere, there are two types of city-pair fares—“YCA” fares, which are limited only by seat availability, and “-CA” (“dash CA”) fares, which have a limited number of available seats determined by the airline. Other government “me too” fares are also offered by airlines to compete with the city-pair fares.

The point-to-point city-pair fares found (offered by Delta Airlines) were:

	<u>YCA</u>	<u>-CA</u>
<i>PWM-ATL</i>	\$527	\$289
<i>ATL-MIA</i>	\$77	none offered

Thus it should be possible to construct a total fare of \$366 (plus taxes and fees) through ATL (a check of flight times indicated several combinations were feasible). In fact, DTS constructed a \$385 fare using a Delta city-pair fare from PWM to ATL and an American government fare from ATL to MIA, with an elapsed trip time 27 minutes shorter than the best Delta combination flight and 20 minutes shorter than the Continental combination.

Two observations are of interest:

- DTS Reservation Refresh was able to produce a lower-cost fare than any other unrestricted fare found.
- There appears to be some unpredictability in the appearance of fares in various inventories over time; the Continental fare of \$431 initially appeared in the three consumer OLBs, **but later the fare also appeared on the Continental website.**

In light of these improvements, the study team believes that Reservation Refresh can provide the best access to flight inventories and optimum flight selection available in the marketplace at this time. No other government travel process currently utilizes that approach. Regarding the first question raised in section 1, we believe the DTS reservation module can consistently find the least-cost airfare to meet mission needs while in compliance with DoD policy, regulations, and business rules. Reservation Refresh essentially solves the difficulties with flight inventory and selection of lowest-cost fares cited in previous studies as well as can be done today.

Reservation Refresh has also made progress in enhancing usability. A drawback of the previous DTS release was that the reservation remained incomplete until the traveler signed the travel request. Even if the traveler proceeded immediately to signature, there was a significant chance the selected flight would no longer be available. Reservation Refresh corrects that fault by booking reservations immediately upon their

selection (a feature called “book as you go”). Also, with the new software, it is economically feasible to obtain pricing data for all flights listed, thus avoiding the large cost increment with the traditional GDSs for obtaining pricing data and thereby no longer forcing the traveler to request pricing data as an extra step.

Reservation Refresh has improved upon the international travel situation where previous versions of DTS could not recognize the fare class. The new software is now capable of determining the cabin where a seat is located and consequently can distinguish between coach and premium-class tickets.

Usability has also been improved by implementation of a first-step “wizard” approach to navigation through the website. Frequent criticisms of previous releases include difficulty in navigation because of the lack of a “Back” button and cumbersome procedures for making changes. (Technical reasons related to security dictate the unavailability of a Back button.) A new guided flow process and consolidated display of all travel reservations on one screen allow the user to navigate more easily to the desired function. Since Reservation Refresh has only recently gone online, we are unable to say anything about acceptance. Limited experience with the test system by members of the team indicates that additional improvements in usability are desirable.<sup>9</sup>

### **C. RESTRICTED FARES**

DTS searches for the lowest *unrestricted* fare, normally a city-pair fare. Many believe that the use of *restricted* fares (the same types of fares offered at popular consumer-oriented travel websites such as Expedia, Orbitz, or Travelocity) could be a better deal for the government. While it is beyond the scope of the study to investigate this subject fully, the following provides some considerations regarding the use of restricted fares within DTS.<sup>10</sup>

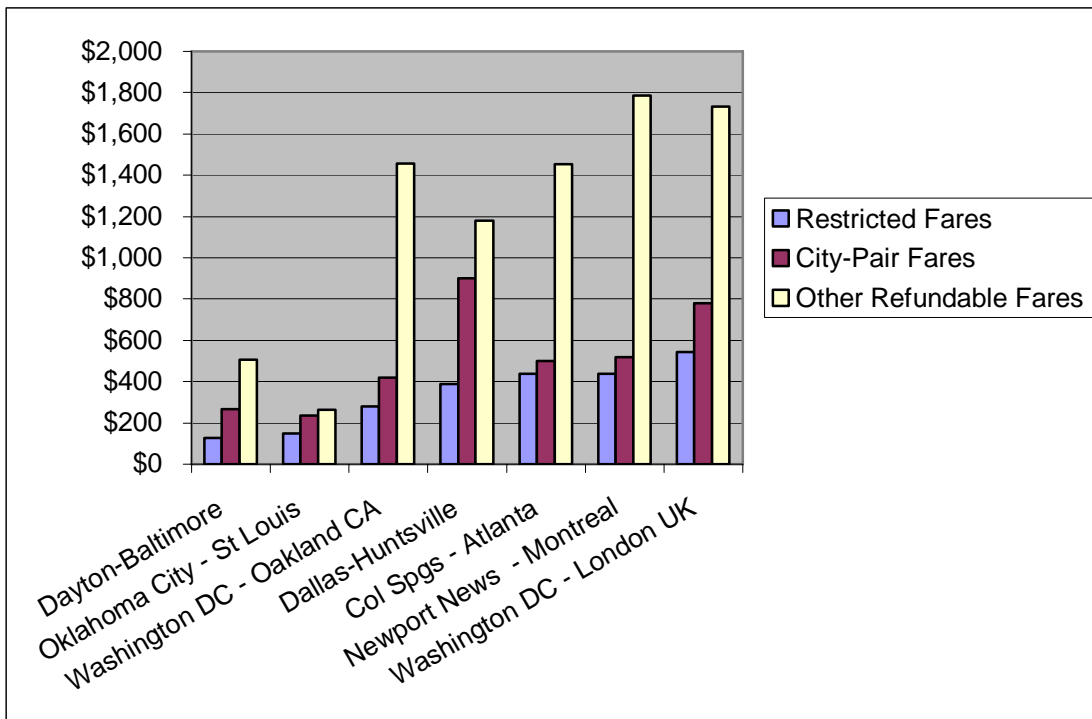
The use of restricted tickets is not contrary to DoD policy. DoD travelers are required to purchase city-pair tickets unless there is a lower-cost fare available to the general public. While restricted tickets may meet that criterion, widely variable local business rules place additional restrictions on their use. Therefore, DTS does not currently support the use of restricted fares.

---

<sup>9</sup> That conclusion is confirmed by the Army Test and Evaluation Command (ATEC) in the results of its System Assessment of the DTS Reservation Refresh release.

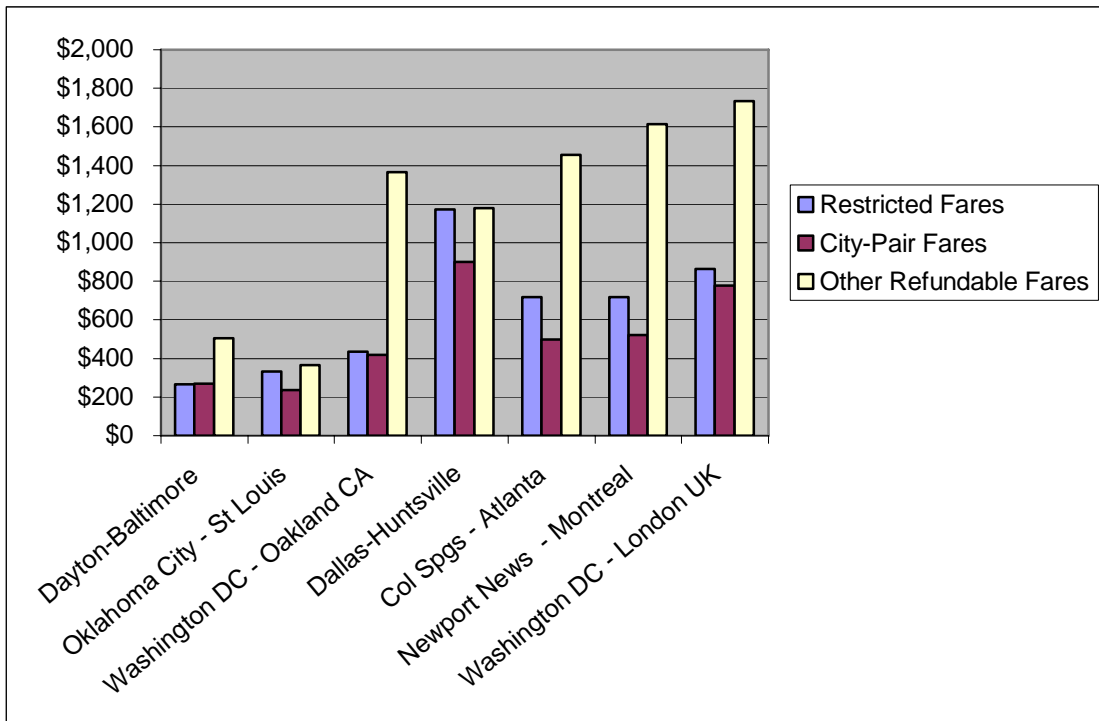
<sup>10</sup> Refer to Appendix C, Section F, for additional information.

While there is a potential to reduce costs using restricted fares, it must be under the right circumstances. Figure 2 compares classes of airfares between seven origins and destinations for ticket purchases 30 days before travel. The three airfare classes are (1) restricted, (2) GSA city-pair, and (3) unrestricted, refundable airfares offered to the general public.<sup>11</sup> The city-pair fares in this sample are from 11 percent to 71 percent smaller than the more expensive, refundable fares, but from 14 percent to 143 percent larger than the least expensive, restricted fares shown. However, if the planning horizon for travel shrinks to 4 days prior to travel (Figure 3), we observe changes in the cost advantage of restricted travel. The cost of restricted airfares has increased. In this case, the city-pair fares are now either equal to or smaller than the least-cost, restricted fares.



**Figure 2. Fare Comparison for a 4-Day Trip with 30-Day Advance Purchase**

<sup>11</sup> By no means is this a comprehensive review of the overall city-pair program. However, these 7 cases match the widely held perception that, under selected circumstances, DoD can save money by using restricted fares.



**Figure 3. Fare Comparison for a 4-Day Trip with 4-Day Advance Purchase**

This observed change in fare amounts between the two purchase dates reflects the constantly changing nature of travel fares as the airlines, seeking to fill their aircraft, exercise “yield management.” For this reason, an important feature of restricted tickets and their potentially lower fares is the requirement to purchase either *immediately* at the time of reservation or *within 24 hours* in order to lock-in the low rates. But this requirement conflicts with DTS workflow in which the traveler encumbers seats but does not commit the Government *before* approval.

Under some conditions, however, it might be possible to obtain authorization for a maximum airfare that could establish fare “ceilings” which could allow for the purchase of restricted fares, provided they fall below the ceiling. In essence, the city-pair fare represents such a ceiling. Applying this concept would require a reordering of the DTS workflow. Instead of encumbering seats during the reservation process, the traveler could have the system compute what the airfare would cost.<sup>12</sup> That figure could then be used to

<sup>12</sup> See recommendation for a “Trip Planner” button in Section 4.B.3.

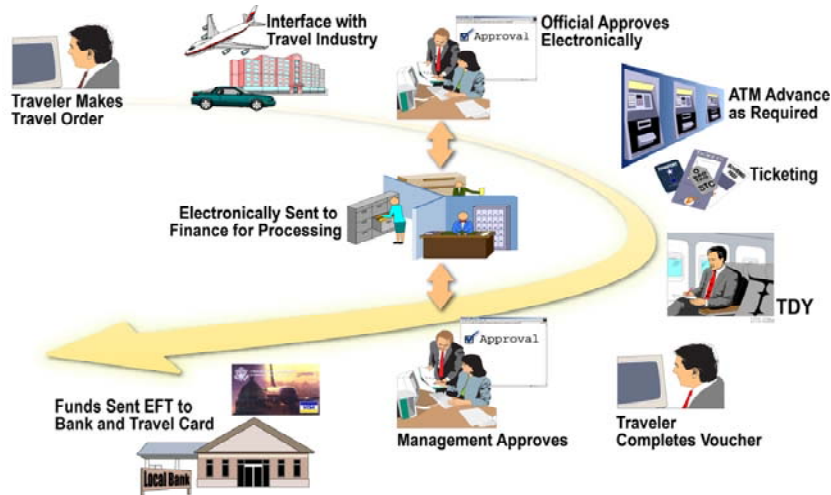
authorize the travel. Once authorization was complete, the traveler could be given the authority to spend up to that amount for airfare.

Modifying DTS to accommodate restricted fares is much more complicated than a change in workflow. For example, because current policy requires that ticket purchases be done by CTOs, special arrangements would be needed to ensure that CTOs are able to act quickly enough to obtain the restricted fares, which are almost always time-sensitive. The entire situation should be studied in greater detail because many other considerations are involved. For example, penalties incurred if restricted tickets are changed, management of unused restricted tickets, and the potential impacts on the GSA City-Pair program must all be taken into account. The Departments of Interior and Transportation are reported to make extensive use of restricted fares. That expertise should be tapped along with those organizations in DoD that utilize restricted fares.

### III. DTS ARCHITECTURE

#### A. OPERATIONAL VIEW

Figure 4 is a top-level operational overview of the process the DTS follows, including traveler activities, management actions, commercial travel office ticketing and financial transactions.



Source DTS Program Management Office

**Figure 4. Overview of DTS Process**

The major steps in the process before travel has begun are as follows:

- The traveler enters the system and inputs the parameters of the desired trip—dates, travel destination and departure points, transportation reservations if required (air, rail, etc.), rental car and hotel reservations if required.
- The traveler is presented a selection of available transportation (air travel is assumed for purpose of discussion herein) consistent with guidelines from the Joint Travel Regulations (JTR) and Joint Federal Travel Regulations (JFTR) and other DoD policy. The traveler selects the desired flight (if no satisfactory flights are available, the traveler may check a box requesting CTO assistance). Once a flight is selected, the traveler may choose a seat if that option is provided by the vendor listing the flight.

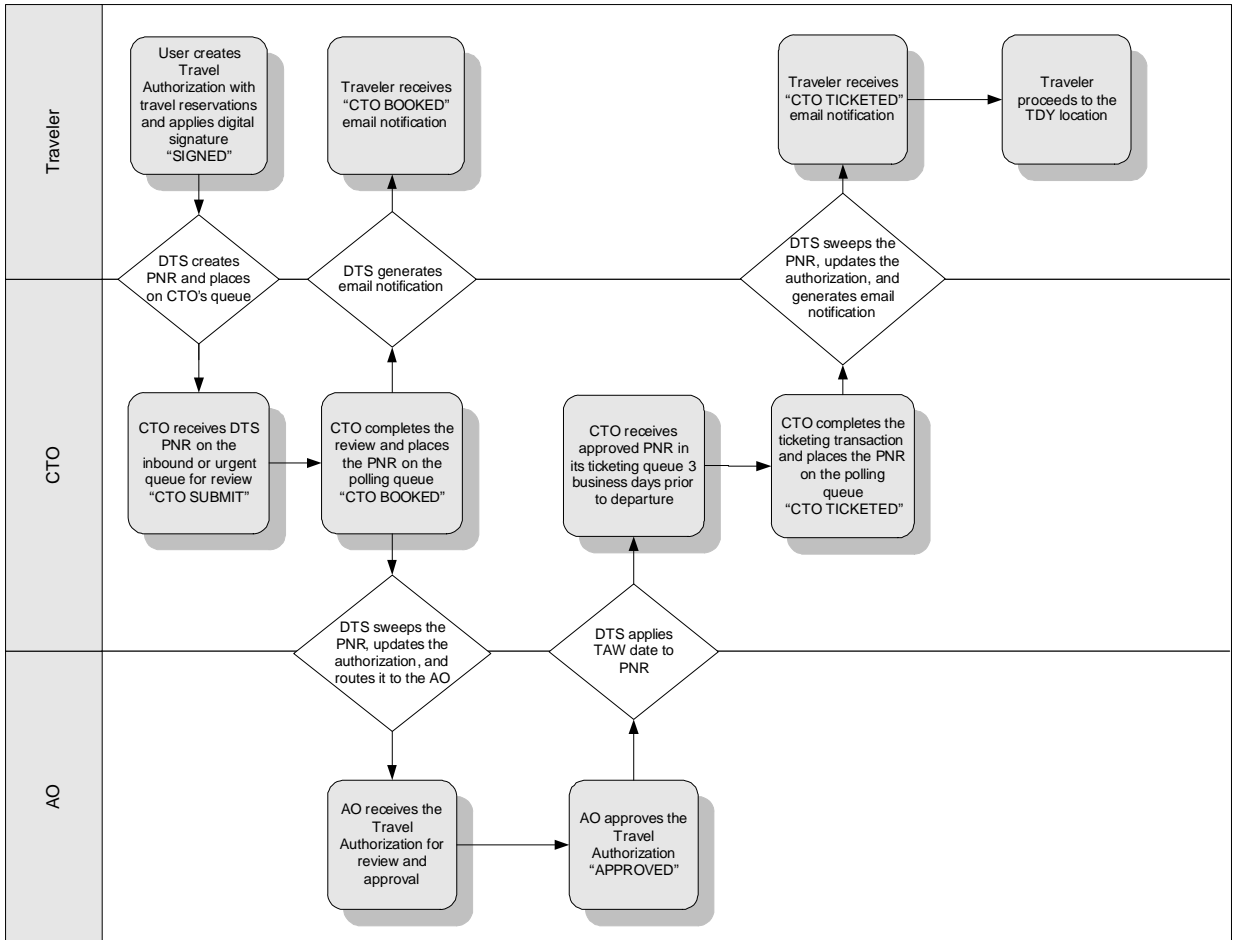
- The traveler is then presented with choices to select other transportation, including rental cars and lodging, if requested.
- Assuming all reservations are successfully selected, DTS estimates per diem costs based on the TDY location. The traveler can add estimates of other expenses and then complete a pre-audit check to justify anything that may be outside of DoD policy or rules. Finally, the traveler electronically signs the travel request.
- After the electronic signature is received in DTS, a passenger name record is created and passed to the CTO.
- The financial system is accessed to determine whether funds are available for the trip.
- The document then flows electronically to the travel authorizing official for trip approval.
- After approval is completed, a notation is added to the PNR, so that the CTO knows that a ticket may be purchased (actual purchase usually occurs no sooner than 3 days before the date travel begins).
- The CTO issues tickets.

A more detailed description of the activities of the traveler, the commercial travel office, and the authorizing official in the front end of the process are shown in Figure 5.

The following major steps shown in Figure 4 are executed after travel is completed (1) the traveler reenters DTS to file the voucher, including receipts provided by fax or that are scanned in; (2) DTS completes the voucher with the computed entitlements according to the JTR/JFTR and DoD and agency policy and forwards it electronically to the accounting system—the Defense Finance and Accounting Service (DFAS) in most cases—through the Global Exchange Service (GEX);<sup>1</sup> (3) DTS authorizes payment by electronic funds transfer (including split disbursements), which usually is completed within 3 to 5 days; and (4) DTS transmits the records to the Defense Manpower Data Center, where they are archived and retained for the requisite length of time.

---

<sup>1</sup> GEX is an interface system maintained by Defense Information Systems Agency (DISA). From the DISA website: “The GEX provides translation and transportation of transaction sets among legacy and new systems that need to interface with each other, enabling interoperability among these systems. It combines gateway and network entry point functions into a single environment, and provides an enhanced audit trail of transactions to ensure end-to-end reliability and audit ability.”



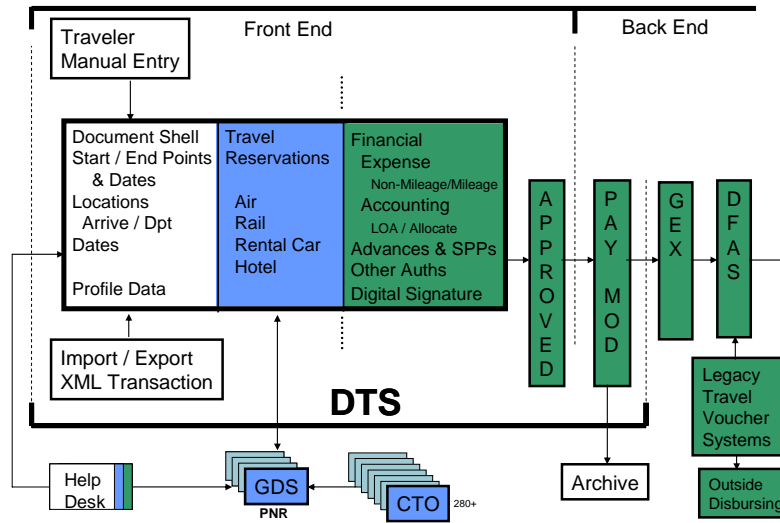
Source Defense Travel Management Office

**Figure 5. DTS Activity Workflow**

**B. SYSTEMS VIEW**

Figure 6 displays a top-level functional overview of the currently deployed Defense Travel System.





Source Northrop Grumman Mission Systems

**Figure 6. DTS Functional Overview**

The system consists of a family of systems that operates in an integrated manner. The family includes:

- 1) A document shell that processes trip data, traveler profile information, and other travel data.
- 2) A travel reservations application that searches for and books transportation and lodging, sends information to a travel authorizing official for trip approval, and sends information to a CTO for ticketing.
- 3) Financial systems that perform voucher processing, accounting, disbursing, debt collection, management accountability, and archival functions.

Figure 7 shows a component view of the DTS and the interfaces among the components.



The DTS “financial infrastructure” includes interfaces with 16 accounting systems, 3 disbursing systems, and 3 entitlement systems.<sup>2</sup> The accounting systems primarily support financial accounting for working capital funds, project funding, installation support, and other general operations and maintenance activities. DTS currently can access those accounting systems because there may be travel chargeable to the activity supported by the particular system. The DTS uses those systems to permit obligation of funds as the travel estimate is entered prior to travel, and adjusts the estimate after a voucher is submitted upon travel completion.

### **C. GOVERNANCE VIEW**

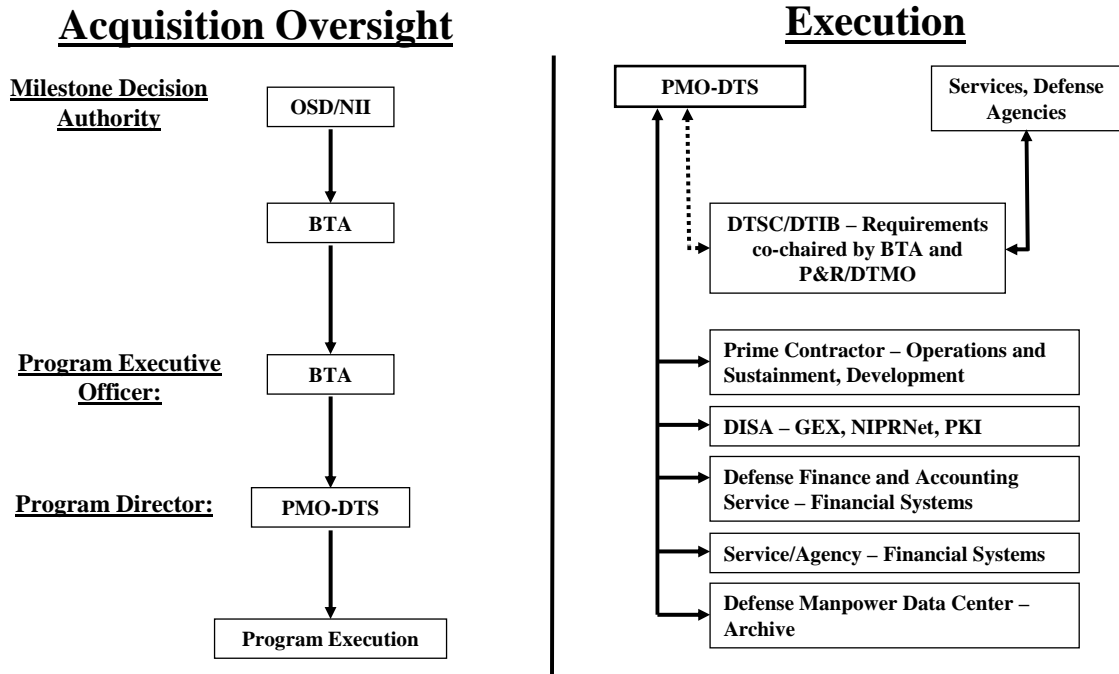
The DTS is managed and overseen by a number of DoD organizations as shown in Figure 8.

DoD travel policy and regulations that form the basis for business rules programmed into the DTS software are contained in the Joint Travel Regulations document for civilians and the Joint Federal Travel Regulations for members of the uniformed Services. Key regulations that govern transportation, lodging, and other travel-related expenses are summarized below. The regulations are described in more detail in Appendix B.

An important feature of the business rules that are implemented in DTS is that an authorizing official (AO) in a DoD component (e.g., a Service) has broad authority to direct any mode of travel other than by privately owned transportation or rental car when the AO decides it is the best way for travel to be performed. Also, the AO may limit reimbursement for other transportation modes.

---

<sup>2</sup> For more detail see [http://www.dtstravelcenter.dod.mil/secs/RI\\_Systems.cfm](http://www.dtstravelcenter.dod.mil/secs/RI_Systems.cfm).



Source DTS Program Management Office

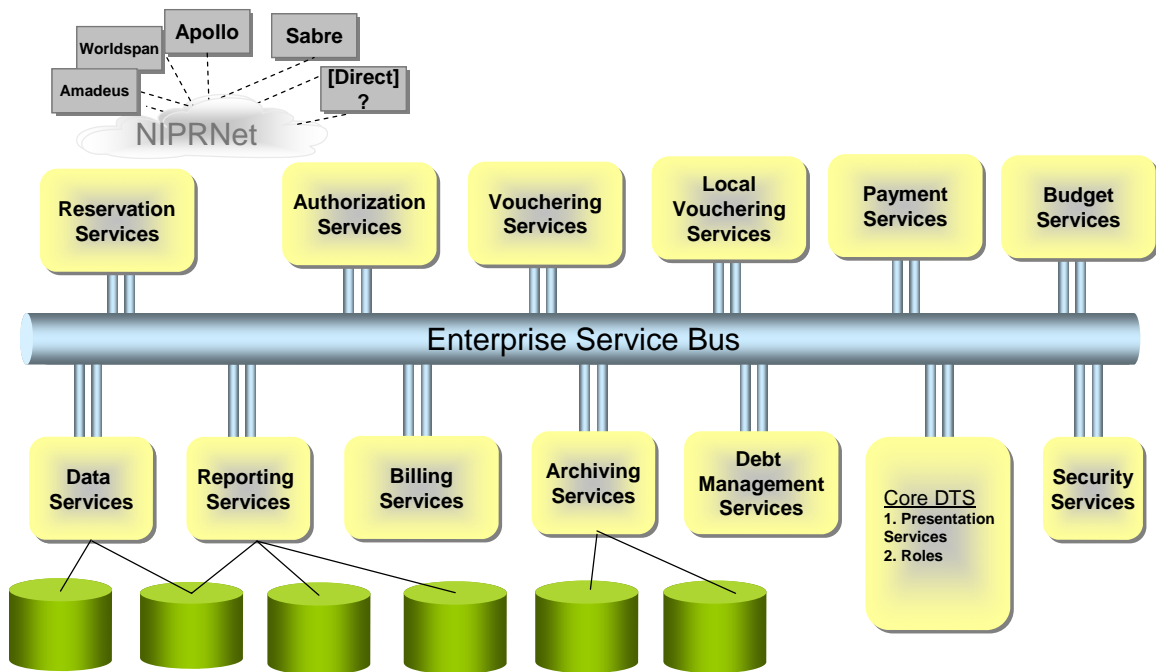
**Figure 8. DTS Governance**

Each temporary duty (TDY) location has an associated daily lodging allowance determined by the Per Diem, Travel, and Transportation Allowance Committee (PDTATAC) for continental US (CONUS) locations or the State Department for outside of CONUS (OCONUS) locations. The AO may authorize the traveler to exceed the daily lodging allowance if required by the needs of the mission.

Other travel-related expenses governed by DoD travel policy are implemented in DTS. For example, each TDY location has an associated daily meal and incidental expense allowance determined by the PDTATAC for CONUS locations or the State Department for OCONUS locations. The AO can authorize reimbursement of several different categories of miscellaneous expenses.

**D. SERVICE-ORIENTED ARCHITECTURE APPROACH**

The study also examined an alternative architecture for DTS—service-oriented architecture (SOA) environments, where functional capabilities such as making reservations can be provided as separate services. This alternative approach, which is further discussed in section 4 as a possible way ahead, is illustrated in Figure 9.



Source Northrop Grumman Mission Systems

**Figure 9. “To Be” Conceptual View of DTS with SOA**

The approach provides a set of services or capabilities which can dynamically route information to whatever system needs it, as opposed to using fixed-system interfaces.

Some of the valuable characteristics of an SOA approach are:

- Flexibility to adapt to changing requirements, business processes, and technology
- Scalability to multiple organizational environments using a federated approach
- Resiliency against single-point failures
- Accessibility using single-point sign-on
- Support for event-driven processes

Advantages of using this approach include providing the means to integrate legacy systems in a federated way with newer applications and to implement business processes as services for use by all. In addition, the government does not have to manage all the services—only the agreements required for obtaining the services provided. Also, when widely used data about travel, funding, and personnel is accessed through services,

rather than belonging uniquely to a system, this information can more easily be shared across services.<sup>3</sup>

SOA technology is now proven and economical in the private sector. There are important risks that need to be managed as the federal government implements service-oriented environments. For example, schedule and cost risks are associated with implementing standards in the areas of web services, network security, and privacy of data. Other issues include:

- Time to establish the service-level agreements
- Establishing networks and operating environments that have an acceptable level of risk
- Availability of commercial software to implement SOA

The Business Transformation Agency in DoD, which has acquisition oversight responsibility for the DTS, has begun to plan for an SOA approach to enable business agility across all its enterprise processes through a modular, federated integration of applications. In terms of supporting the reservation process, an SOA approach has been considered by the DTS program office and its contractors for future evolution of the system. Using an SOA could mean having the reservation process divided into services such as entering personnel data, booking, authorization, and CTO involvement. In addition, the approach could apply to the financial infrastructure. Some of these services could be provided by the government, and others could be provided by the private sector.

Already, service-like features are included in the recently deployed Reservation Refresh version of the DTS (described in section 2), including:

- Use of a commercial application to search for airline flight availability and fares. This company provides that information as a service to the DTS booking engine.
- Use of the DFAS financial infrastructure to process transactions as a service to the rest of DTS.

---

<sup>3</sup> Creation of a service-oriented environment would also be an important step in implementing the concept of net-centricity if the service applications remain separate from the data sources.

Additional efforts will be required to achieve a service-oriented environment for DTS, and these efforts will take time because of the need to manage risks identified above. An important aspect of the business rules that are implemented in DTS is that an AO in a DoD component has broad authority to direct any mode of travel other than by privately owned transportation or rental car when the AO deems it to be the best solution. Also, the AO may limit reimbursement for other transportation modes.

## IV. EVALUATION OF ALTERNATIVES

This section evaluates alternatives for the reservation process (subsections A and B) and fee-for-service arrangements (subsection C) for the Defense Travel System. The alternatives reflect the direction contained in the congressional mandate for this study.

### A. CONSTRUCTING ALTERNATIVES FOR THE DTS RESERVATION PROCESS

As described in section 2, the DTS travel reservation process has been designed, developed, deployed and operated as an integrated part of an end-to-end travel system. The following functions are included in the reservation process:

- Using trip parameters including dates, locations, and itineraries input by the travelers
- Displaying transportation, rental car, and lodging availability information for selection by the traveler
- Exchanging information for authorization of travel, funds availability, and commercial travel office assistance processes

The shortcomings of DTS, described in section 1, that gave rise to this study are:

- Inadequate route optimization to obtain lowest-cost, policy-compliant airfare
- Incomplete inventory access
- Poor usability

For the first two shortcomings, the study team believes, as noted in section 2, that the approach taken by Reservation Refresh promises the best solution available in the marketplace today. Only after some experience with Reservation Refresh will it be known whether the DTS application actually realizes that potential. Section 2 described substantial usability improvements implemented in Reservation Refresh. We do not believe that those improvements solve *all* DTS usability problems, either within the reservations module or other parts of the system.<sup>1</sup>

---

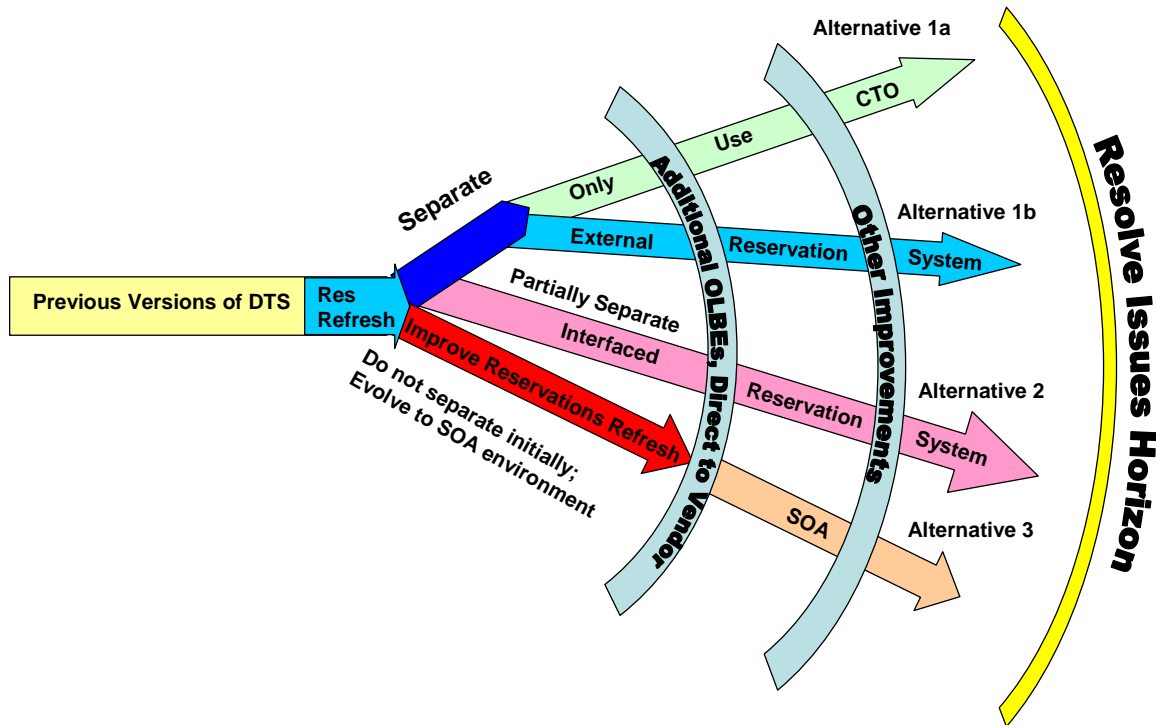
<sup>1</sup> Any improvements will take time to overcome negative views and biases within the DoD community regarding DTS.



With those considerations in mind, we examined three alternatives that are responsive to our congressional mandate to consider feasible ways to separate the reservation process from the rest of DTS:

- 1) Use a completely separate reservation process external to DTS, with two sub-alternatives:
  - a) Only the CTOs make the reservations.
  - b) Travelers make reservations using a commercially available online booking engine (OLBE) tailored for DoD.
- 2) Replace the DTS reservations booking engine by interfacing with an alternative OLBE.
- 3) Evolve toward a service-oriented environment and, in preparation, aggressively improve DTS usability.

These alternatives are conceptually illustrated in Figure 10. They have been formulated to consider various degrees and ways that the reservation process could be separated in or from DTS.



**Figure 10. Conceptual Approaches to Alternative Reservation Processes**

Alternative 1, the path labeled “Separate,” is the most literal interpretation of the congressional direction. In Alternative 1, there is no travel reservation OLBE in DTS.

Travel reservations are made by a process completely separate from the DTS. Two sub-alternatives are considered: In Alternative 1a the *CTO books* all reservations. In Alternative 1b, *travelers book* the reservations using a separate commercial OLBE and then enter DTS to complete the cost estimates and pre-audit checks. Reservation information is brought into the DTS via global distribution systems, to which the CTO, the OLBE, and DTS have access.

In Alternative 2, the partially separated option on the path labeled “Interfaced Reservation System,” a commercially available OLBE, tailored to comply with DoD travel policy, is seamlessly interfaced to the DTS and used to make reservations.

In Alternative 3, the path that begins with “Improve Reservation Refresh,” the travel reservation process remains integral to DTS, in the interim, by starting with the existing Reservation Refresh version and improving upon it. When feasible, that path evolves into a service-oriented approach that would permit separate providers of services to be accessed by DTS.

Another alternative considered but not evaluated further in the study is to *replace* the DTS reservations module with an alternative module that would still be integrated. The alternative module would be implemented by licensing code from a commercial OLBE. We did not fully evaluate this alternative because we concluded that such an approach would in effect “start from scratch” and therefore would require significant development funding and incur substantial risk.

## **B. THE ALTERNATIVES: DESCRIPTION, KEY FEATURES AND ISSUES, AND COST CONSIDERATIONS**

This section provides a more detailed description of the alternatives, identifies key features and issues, and discusses some cost considerations that will be used in our assessment. Appendix C outlines a conceptual model of DoD travel costs and concludes that the following kinds of costs are most relevant when comparing alternatives.

- Nonrecurring
- Recurring tangible costs, including:
  - Transportation costs
  - CTO fees and OLBE fees
  - Software maintenance
- Recurring opportunity costs
  - Traveler’s time in making reservations

For each alternative, these costs are discussed after a description of the key features and issues. Additional supporting information, including some rough, low-confidence, quantitative estimates, is provided in Appendix C.

### **1. Alternative 1: Use a separate reservation process external to DTS**

In this alternative, travel reservations would be made outside DTS, thus completely separating the travel reservation process from the approval and accounting functions of DTS. To maintain complete functionality, there would have to be an external system for providing transportation and lodging information to the traveler and an interface devised to transfer that information to DTS for travel approval, voucher processing, and the financial infrastructure.

Before examining the two sub-alternatives introduced above, we need to discuss two other theoretical possibilities:

- Traveler could use a commercially available OLBE *not* tailored for DoD use<sup>2</sup>
- Traveler could obtain a reservation with an airline directly

*These alternatives were not evaluated because enforcement of DoD travel policy would require an extremely awkward process.* The enforcer for DoD policy is the authorizing official. That person must be provided sufficient information to know whether a trip is within guidelines, whether exceptions are justified, and whether funds are available for the trip. Under these two alternatives, the traveler would be making reservations without policy checks. Those policy checks would have to be made by someone (probably the CTO) prior to approval. That would require reconfirmation of the reservation to see what other flights were available and whether exceptions to policy must be justified for the authorizing official. Such a process would be extremely inefficient, expensive, and inconsistent with good government practice.<sup>3</sup> These possibilities would also presumably require change or exceptions to the policy requiring the use of CTOs in support of DoD travel.

---

<sup>2</sup> Included in this category would be consumer-oriented OLBEs such as Expedia, Orbitz, and Travelocity.

<sup>3</sup> There is a relationship with restricted fares, discussed in section 2, since the fares booked in these alternatives would likely be restricted.

**a. Alternative 1a: Only the CTOs make the reservations**

***Description***

Without a reservation process in DTS, one clear option is for DoD travelers to go directly to CTOs to book their trips. That could occur by e-mail, facsimile, or telephone. Once the trip is agreed on, the CTO creates a passenger name record (PNR) in the Global Distribution System (GDS), in such a way that DTS can retrieve it. (Our understanding is that it would not be necessary to communicate the PNR to DTS, because the GDS contains “queues” which DTS frequently “sweeps” to see if PNRs have been posted for DoD travelers that it services.) The principal difference between this option and DTS today is that the trip shell would probably be created by the CTO, not the traveler. Although the CTO-direct method would still exist under all other alternatives considered, for the present discussion, we consider only the case where no other option is available.

***Key features and issues***

- Carries low technical risk to implement, as some travelers today access the CTO directly to make the reservations and then input that information manually into DTS (The only change would be to have DTS retrieve the booking automatically.)
- Carries management risk since CTO transportation bookings may not always be compliant with DoD policy and hotel and rental bookings may not be at the lowest cost because CTOs may favor vendors with whom they have a commercial relationship
- *May* require less traveler time arranging travel<sup>4</sup> (Significant value in many cases accrues from the time thus saved the DoD traveler.)
- *May* produce a lower-cost airfare. (Representatives of the travel agent industry contend that a travel agent can, on average, find fares as good as or better than those found by the OLBEs. Certainly, if the travel agent had access to and used the same OLBE(s) and GDS(s) used by the traveler through DTS, the agent should do no worse. The same could be said if the travel agent had access to and used an OLBE that used the ITA Software methodology to locate the lowest cost fares. There is serious doubt that the agent would be able to do any better on average, and if not diligent in searching, could do worse.)
- Perception by travelers of loss of control over all travel arrangements; may require a lot of back-and-forth interaction with the CTO

---

<sup>4</sup> Assumes an efficient CTO that does not require extensive interaction with the traveler.

- Counter to preferences of many travelers who prefer to use an OLBE, as many are accustomed to using them in their personal travel—increasingly so for younger people

**Costs**

<i>Nonrecurring</i>	Low. Certain current functionality would have to be removed from DTS (but no further improvements in reservation module required)
<i>Recurring</i>	
<i>Transportation</i>	May decrease if CTO is better at finding cheaper reservations
<i>CTO and OLBE fees</i>	Increased by ~\$12 per trip (net of DTS savings of \$2 per trip) for travelers who would otherwise have used the DTS OLBE. Potential cost increment over that of a fully-deployed DTS is estimated to be about \$37 million per year (see Appendix C)
<i>Software Maintenance</i>	Lower since reservation process does not have to be maintained
<i>Opportunity</i>	
<i>Time to make reservations</i>	May be lower if CTO interaction time is short <sup>a</sup>

<sup>a</sup> May also decrease the travel time if the CTO is better at finding more convenient flights; that would be a savings in opportunity cost.

**b. Alternative 1b: Travelers make the reservations using a commercially available OLBE tailored for DoD use**

**Description**

This alternative could be based on one or both of the following premises:

- The reservations module of DTS is irredeemable (the judgment of many critics—but based on previous versions of the software, not Reservation Refresh).
- A superior product can be obtained and maintained by tapping into the rapidly developing commercial marketplace for OLBEs. (DoD should not be in the business of developing travel reservations systems.)

DoD would authorize the use of a commercially available OLBE, configured to support DoD policy, but as a stand-alone product.<sup>5</sup> This would work much like the CTO alternative, except the reservation would be made through the OLBE, which would create a PNR and place it in the CTO’s GDS queue. The traveler might have to create a shell in

<sup>5</sup> There are three potential products already in use by GSA eTravel. Others exist in the marketplace, but we have not investigated their suitability. A profit-making opportunity would undoubtedly attract more competitors over time.

DTS, unless the shell information could also be encoded in the PNR. After a quality assurance check by the CTO, DTS could pick it up just as it does today for cost estimation and pre-audit checks.

Policy checks would have to be incorporated into the OLBE. The PNR would have to be formatted to include any policy-check flags and justifications for exceptions provided by the traveler as well as any other information needed by DTS. After retrieval by DTS, the trip cost would be computed and budget checks on funds available made before presentation to the authorizing official. Also, the current DTS system automatically associates the nearest airport and per diem rates with military installations. (There are thousands of military installations in the list.) This database would have to be included or duplicated in the new OLBE.

Although it does not appear that any candidate commercial OLBE currently uses the Reservation Refresh methodology to access the airline reservation inventory and pricing and construct city-pair fares, there is no reason to believe that it cannot be done or that another equivalent solution cannot be found.<sup>6</sup>

There are two approaches the government could use to acquire an OLBE's services for such an alternative. The contractor could be required to meet the desired specifications (incorporating DoD business rules, nearest airport to military installations, and access to flight inventory equivalent to Reservation Refresh). Alternatively, the government could pay all costs to modify a commercial-off-the-shelf product to meet the requirement (or the government could cost-share such modifications, making the project attractive to small companies that could not afford to alter their product). Since ultimately, the contractor will recover costs through future usage fees, from an economic standpoint there is likely to be little difference in final costs to the government.

***Key features and issues***

- Provides an OLBE that would be selected for improved usability over DTS
- Carries a risk that usability would not be substantially improved after DoD policies and business rules are incorporated, thereby requiring an additional effort to improve usability
- Facilitates competition to provide the DoD traveler the best service at the best price (Complete separation from DTS would facilitate periodic re-competitions to get the best value for the government.)

---

<sup>6</sup> One eTravel vendor claims that its process is as good as ITA Software in accessing inventories.

- Appears technically feasible, requires implementation of DoD business rules in making travel reservations (This has been done for other federal agencies in GSA eTravel System (ETS)<sup>7</sup>; thus, there is no reason to think it cannot be done for DoD.) and requires an OLBE able to create a PNR acceptable to the organization's servicing CTO and to DTS
- Limits competition because of inability of some commercial products to provide the same level of security (PKI) as DTS <sup>8</sup>
- Potentially confuses the traveler who must become familiar with and use two distinct systems
- Carries management risk since PMO-DTS would have to manage two separate contractors providing travel-related services
- Delays efforts to enhance usability because of the need first to hold a competition and then to complete the installation process
- Requires a more extensive study of usability and ability to access reservations inventory and construct city-pair routes to determine the best candidates to meet DoD requirements within acceptable costs

---

<sup>7</sup> ETS began in 2003, after DTS had been fielded. Three vendors were chosen to offer their products to federal government agencies. One of the three selected was NGMS, which offered a version of DTS called Gov-Trip. As time did not permit this study to examine all the commercial products available, we made the assumption that the two non-DTS-based systems chosen for use in eTravel would be viable, representative candidates for evaluation purposes. Those systems are E2 Solution by CW Government Travel, a subsidiary of Carlson Wagonlit Travel, and FedTraveler by Electronic Data Systems (EDS). E2 Solutions uses the GetThere OLBE, a product of Sabre, whereas FedTraveler uses the Quality Agent, a product of TQ3Navigant, also a subsidiary of Carlson Wagonlit Travel through acquisition of Navigant/SATO Travel. Neither of the two non-DTS vendors could foresee any roadblocks to implementing DoD travel policy.

<sup>8</sup> At least one ETS product, offered by Carlson Wagonlit using GetThere, claims to be PKI-capable, although it is not currently being used.

**Costs**

<p><i>Nonrecurring</i></p>	<p>Ultimately the government pays (~\$3-\$4 million in total) for:</p> <ul style="list-style-type: none"> <li>• Improving inventory access and route optimization capability</li> <li>• Implementing DoD business rules</li> <li>• Including data for the military installation nearest to the airport</li> <li>• Creating acceptable PNR</li> <li>• Testing and training</li> <li>• Licensing</li> <li>• Enhancing usability (highly likely)</li> </ul>
<p><i>Recurring</i></p> <p><i>Transportation</i></p> <p><i>CTO and OLBE fees</i></p> <p><i>Software maintenance</i></p>	<p>No change if equivalent inventory access and route optimization capability</p> <p>Higher since the added OLBE will charge a fee (approximately \$5.50 per trip, net of DTS savings of \$2 per trip); potential cost increment over that of a fully deployed DTS is estimated to be about \$17 million per year (see Appendix C)</p> <p>Lower since reservation module in DTS would not have to be maintained</p>
<p><i>Opportunity</i></p> <p><i>Time to make reservations</i></p>	<p>Could be lower if product is more user-friendly</p>

**2. Alternative 2: Replace the DTS reservations module with an alternative OLBE**

***Description***

As was the case with Alternative 1b, this alternative could be based on one or both of the following premises:

- The reservations module of DTS is irredeemable (the judgment of many critics—but based on previous versions of the software, not Reservation Refresh).
- A superior product can be obtained and maintained by tapping into the rapidly developing commercial marketplace for OLBEs. (DoD should not be in the business of developing travel reservations systems.)

The current DTS reservations system would be replaced by an interface to an outside OLBE. Functionality for the user would be basically the same, though the look and feel would be different.

Several commercially available products could be used, including those currently being used in ETS. It appears to be technically feasible for DTS to interface with one (or



more) of these products, and a cursory demonstration of their use indicates acceptable usability. As in Alternative 1b, the database associating military installations with nearest airport would have to be included or duplicated in the new OLBE(s).

It is possible that these products could offer better selection and/or more optimized selection of travel products, since various OLBEs employ a variety of ways to access inventory, including (it is claimed) direct connections to vendors for lodging and transportation. To simplify management and prevent the PMO-DTS from having to resolve disagreements between the contractors, the OLBE should be a subcontractor to the DTS prime contractor. Eventually, connections could be made directly to vendors, assuming the policy checks are performed. (This might be particularly attractive for hotels.)

Another interesting possibility is that different OLBEs could be tapped for different types of trips. For example, one OLBE might be best for CONUS trips, another for Asia, and yet another for Europe.

#### ***Key features and issues***

- Provides an OLBE that would be selected for improved usability over DTS
- Carries a risk that usability would not be substantially improved after DoD policies and business rules are incorporated, thereby requiring an additional effort to improve usability
- Appears technically feasible; carries some risk in defining and implementing the interfaces between DTS and the new OLBE and requires implementation of DoD business rules in making travel reservations (This has been done for other federal agencies in GSA eTravel System (ETS); thus, there is no reason to think it cannot be done for DoD.)
- Carries management risk even when the OLBE is a subcontractor to the DTS prime contractor since difficult issues and disagreements may arise between the two companies and such a situation could be a major management problem for the PMO-DTS
- Facilitates *some* competition among OLBEs for DoD travel reservations business, potentially reducing cost and improving effectiveness (but not as effective as Alternative 1b, where the reservations module is completely separate)
- Limits competition because of inability of some commercial products to provide the same level of security (PKI) as DTS<sup>9</sup>

---

<sup>9</sup> At least one ETS product, offered by Carlson Wagonlit using GetThere, claims to be PKI-capable, although it is not currently being used.

- Delays efforts to enhance usability because of the need first to hold a competition and then to complete the installation process
- Requires a more extensive study of usability and ability to access reservations inventory and construct city-pair routes to determine the best candidates to meet DoD requirements within acceptable costs

**Costs**

<p><i>Nonrecurring</i></p>	<p>Ultimately the government pays (~\$3–\$4 million in total) for:</p> <ul style="list-style-type: none"> <li>• Improving inventory access and route optimization capability</li> <li>• Implementing DoD business rules</li> <li>• Including data for the military installation nearest to the airport</li> <li>• Creating acceptable PNR</li> <li>• Testing and training</li> <li>• Licensing</li> <li>• Enhancing usability (highly likely)</li> </ul>
<p><i>Recurring</i></p> <p><i>Transportation</i></p> <p><i>CTO and OLBE fees</i></p> <p><i>Software maintenance</i></p>	<p>No change if equivalent inventory access and route optimization capability</p> <p>Higher since the added OLBE will charge a fee (approximately \$8.50–\$9.50 per trip, net after DTS savings of \$1.50 per trip); potential cost increment over that of a fully-deployed DTS is estimated to be about \$28 million per year (see Appendix C)</p> <p>Lower since reservation module in DTS would not have to be maintained (not as low as Alternative 1b)</p>
<p><i>Opportunity</i></p> <p><i>Time to make reservations</i></p>	<p>Could be lower if product is more user-friendly</p>

**3. Alternative 3: Evolve toward a service-oriented environment and, in preparation, aggressively improve DTS usability**

***Description***

This alternative evolves toward implementation of a service-oriented architecture, described in section 3.D of this report, as a way to achieve a longer-term cost-effective travel solution for the DoD. In following that path, it must be recognized that applications of SOA in DoD are immature, so it will be important to mitigate against risks in cost, schedule, performance and governance, as detailed in section 3.D.

In preparation for SOA implementation, this alternative addresses the remaining usability issues with Reservation Refresh immediately and with vigor. Given the history of poor DTS usability, and since it may take several years to phase in an SOA approach, interim improvements would involve a focused, proactive program to make further enhancements to DTS usability (not just the reservations module, but all aspects.) Improvements should not be delayed while evolution toward an SOA model is taking place. The preferred approach would be to engage a contractor that has expertise in diagnosing usability problems and designing user-friendly websites. After a “settle-down” period with Reservation Refresh, the contractor should perform a thorough, systematic, and statistically valid sampling of user experience with the new system, using surveys and site visits in addition to evaluation of user feedback. The following improvements could begin now:

- *Improve website navigability.* The recently completed operational test of Reservation Refresh noted the need for improved navigability in the DTS website.<sup>10</sup> In addition, DTS can be difficult to work with when making changes in itineraries or amendments to trips.
- *Improve the look and feel of the DTS portal.* The contractor should work with the developer in identifying feasible ways to improve the displays, menus, navigation tools, default settings, customization options, etc. (An aggressive goal might be a 50 percent reduction in the average time to complete trip reservations.)
- *Improve ease of access to the CTO.* A relatively simple enhancement identified by the study team is enabling the traveler to request CTO assistance for the entire trip rather than one leg of the itinerary at a time. This would be done immediately *before* any searching for reservations using DTS. This is a particularly attractive option for very complex trips, particularly international ones, as well as for users who do not wish to spend their time (or the government’s) making trip reservations. If this improvement were implemented immediately, it would provide a very informative gauge of user dissatisfaction with the DTS reservation process. As usability improvements are put in place, a reduction in the use of this feature should be observed.
- *Add “Trip Planner” button.* This button would be available on the first screen after log-in and notice. It would allow the traveler to go directly to the reservations module without establishing a trip shell to check on flight availabilities and prices for trip planning purposes. (This option would be particularly useful with the current book-as-you-go system.) A refinement would allow the traveler to save a selected reservation for use after subsequently establishing a trip shell.

---

<sup>10</sup> In addition, problems with the tables associating airports and nearby cities with military installations were noted—these problems are easily corrected soon after they are discovered.

These usability improvements should be viewed as part of a continuous process of improvement in a natural, managed evolution and contributing to a service-oriented environment. Planning for this evolution requires: (1) partitioning the functionality of the DoD travel system into services that can be competed commercially, and (2) paying attention to the requirement that all product vendors and service providers keep data and applications separate, consistent with DoD net-centric guidance<sup>11</sup> and to minimize integration costs. This approach can take advantage of the work that has been done to date and enhances the DoD's ability to introduce newer commercial technologies as they become available.

It will be necessary to keep up with significant changes that may occur in the travel industry in the future due to improved technology and increased competition among providers of travel-related products. For example, access to other sources of transportation (e.g., rail and bus) could be added. Also, access to hotels (beyond what is available in the CTO's GDS) could be significantly improved (the systems for booking hotel rooms are currently much more fragmented than the systems for booking air flights—a situation that should improve over time in the marketplace).

***Key features and issues: evolving toward an SOA environment***

- Appears to entail moderate technical risk for services such as making reservations, but may entail higher risk for services such as those involving secure government financial transactions—based on knowledge that the federal government travel systems supported by the GSA E-Gov Travel program are using service-like functionality for making reservations
- Appears to entail high management risks, based on two factors:
  - DoD is only in the planning stages of implementing service-oriented architectures in its business environments
  - There will be contracts with multiple vendors for the various service providers requiring integrated management and oversight
- Has potential to exploit commercial best practices for usability, inventory, and low-cost travel improvements
- Introduces greater opportunities for competition than existing DTS program
- Utilizes continuous process improvement as part of an evolutionary acquisition approach

---

<sup>11</sup> That is, in accordance with the “post before processing” paradigm specified in “DoD Net-Centric Data Strategy,” May 9, 2003.

- Provides an open architecture approach to accommodate legacy systems

***Key features and issues: improving usability in preparation for SOA implementation***

- Entails low technical and management risks since the path to improvement is well-understood
- Recognizes the central importance of usability to acceptance of DTS
- Clearly identifies usability issues by using commercial best practices for web design improvements
- Responds directly to user feedback and inputs
- Utilizes continuous process improvement in the context of a spiral development approach
- Carries the expectation that it will obtain the best solution on the market today for low-cost transportation and inventory access
- Allows efforts to enhance usability to begin quickly
- May not satisfy critics (who believe that too much money has already been spent on DTS with too little to show for it)

***Costs (for the interim approach only; SOA costs are too uncertain to be discussed at this time)***

Nonrecurring	Costs incurred (~\$2–\$3 million, but should be lower than alternatives 1b and 2) for: <ul style="list-style-type: none"> <li>• User survey and study to determine critical usability improvements</li> <li>• Website design experts</li> <li>• Software changes</li> </ul>
Recurring	
Transportation	No change
CTO and OLBE fees	Increase if more travelers request the CTO to make all of the reservations (no OLBE fees); estimated to be ~\$6-\$9 million (See Appendix C)
Software maintenance	No significant change likely
Opportunity	
Time to make reservations	May be reduced when the CTO is requested to make all the reservations

## **C. COMPARISON OF ALTERNATIVES**

This section compares the alternatives on the basis of how well they address the following evaluation criteria: technical risk, management risk, performance in terms of access to more complete flight inventories and the ability to find policy-compliant low-cost fares, implementation schedule, usability, and cost.

For the SOA approach, technical and management risks are high and nonrecurring costs may be greater than any of the other alternatives. Under a phased implementation approach, it may take years before risks are mitigated sufficiently and the potential benefits can be realized. Therefore, the following evaluation compares only the interim part of Alternative 3—aggressively improving DTS usability.

### **1. Technical Risk**

We conclude that Alternatives 3 and 1a have the lowest technical risk of the four alternatives. In Alternative 3, the approach to improvement is based on the application of commercial-based website design to achieve enhanced usability. This is well understood. Alternative 1a is not significantly different technically from the current system, and some elements of DoD bypass the DTS reservations module in that way today. Alternatives 2 and 1b have higher technical risk. Alternative 2 appears to be the higher of the two because of the need to establish linkages in DTS—we cannot say if that difference is significant. Both of these alternatives involve completely replacing the reservations module and therefore entail significant risk, e.g., from the design development and testing associated with the new software. In addition, several other areas of technical risk are associated with Alternatives 2 and 1b that are not found in Alternatives 3 and 1a as follows:

- Providing the same level of security (PKI) as DTS
- Programming all of DoD’s travel policy and business rules into the new OLBE
- Ensuring all of the interfaces with the CTO and with the DTS financial, payment, and reimbursement systems are accommodated

### **2. Management Risk**

We conclude that Alternative 1b has the highest management risk among the four alternatives because of the need to manage one or more additional separate contracts and the control of technical interfaces may be complicated by security issues. Next highest is

Alternative 2, since there could be serious interface issues arising between the prime contractor and the OLBE(s). Selection of Alternative 1a eliminates any need for further software upgrades to DTS, which is lower risk relative to Alternative 3. However, Alternative 1a carries with it the *substantial risk* that the CTO will not always satisfy all JTR/JFTR mandates.

### **3. Performance in Terms of Access to More Complete Flight Inventories and the Ability to Find Policy-Compliant Low-Cost Fares**

Alternative 3 (Reservation Refresh) is expected to provide the best solutions available today to the inventory access and route optimization shortcomings identified earlier. Although it does not appear that any candidate commercial OLBE currently utilizes the Reservation Refresh methodology to access the airline inventory and construct city-pair fares, there is no reason to believe that it cannot be done or that another equivalent solution be found. But since that is something that would have to be accomplished for Alternatives 1b and 2, there is at least a small advantage to Alternative 3. We see no basis for discriminating between Alternatives 1b and 2 on this factor. In Alternative 1a, the CTO may not always find lowest-cost fares, unless the CTO has access to and uses a methodology as good as the one employed by Reservation Refresh and if CTOs favor vendors with whom they have a commercial relationship, hotel and rental car rates could be higher.

### **4. Implementation Schedule**

We conclude that Alternative 3 will attain reservation module usability improvements faster, and with less risk, than Alternatives 2 and 1b, largely because of the time to develop and implement a competitive acquisition strategy. In Alternative 1a, the DTS reservation module is “turned off”; that should be very easy to implement although there may be some delays in reestablishing the interface with the DTS “back-end.” Under Alternative 3, implementation of commercial best practices for improved website design could begin fairly soon, although a competitive process may be required. There would be a significant waiting period for any usability improvements to appear under Alternatives 2 and 1b. It is extremely unlikely that a new OLBE could be put in place in less than one year.

## 5. Usability

Because we do not know how successful each alternative would actually be in obtaining usability improvements through different approaches, none of the alternatives has a clear advantage with respect to this criterion. DTS is the only end-to-end system today with the capability to support all DoD policy and business rules and the only system that currently uses the new methodology for inventory access and route optimization. Commercial systems that have demonstrated the capability to implement government business rules are those that are available on ETS. When comparing Alternatives 1b and 2 from the user perspective, Alternative 1b has the disadvantage of requiring the use of a separate process for reservations. On the other hand, user-friendliness might be easier to maintain in Alternative 1b.

Based on the following three considerations, we doubt that the ETS vendors are significantly more user friendly than DTS:

- Gov-Trip, the NGMS ETS product, is based on an earlier version of DTS. As far as usability is concerned, Gov-Trip has some redesigned screens but remains very similar to previous versions of DTS. For example, it utilizes the same cumbersome two-step process of first displaying flights and then accessing price data. In addition, it does not currently make use of the new approach to inventory access and route optimization.
- Of the three vendors, Gov-Trip has the largest market share. Measured by vouchers processed, the recent market shares are: Gov-Trip 45%; FedTraveler 24%; and E2 Solutions 8%. While the difference cannot be attributed entirely to usability, usability certainly is a factor.
- Reservation Refresh has superior usability to Gov-Trip. For example, it does not require a two-step process for “shopping” and “pricing.” It has full access to inventory. It uses a process flow controller to step through the reservation process.

When Alternative 3 is compared with Alternatives 1b and 2, there is a significant risk that no commercial product would be any better than DTS after DoD policy and business rules and PKI security are introduced. *Furthermore, Alternative 3 is the only alternative that addresses usability beyond the reservation system.*

## 6. Cost

Without much more detailed cost analysis, we cannot find large discriminators based on the direct or tangible costs of the alternatives. The large discriminators are in two costs that are difficult to estimate. The first is trip cost. For example, if one



alternative were better at constructing trips using city-pair fares, where savings can be up to 50% over non-city-pair unrestricted fares, that could be a very significant advantage; however, we have not been able to discriminate on that basis for two reasons. First, it appears that both Alternatives 1b and 2 *could* employ a methodology similar to Reservation Refresh, and thus could be equal to Alternative 3. The second regards Alternative 1a, where the situation is more problematic. The travel agent can have access to an OLBE as good as the one in Reservation Refresh, so the agent should do no worse in theory. An experienced travel agent could quite possibly be better at constructing city-pair fares, but we have no analytical basis for determining that, and we have heard conflicting arguments about this from travel industry professionals.

The next potential large discriminator is the opportunity cost of the traveler's time, and that applies only to Alternative 1a, since differences in traveler's time are not likely to be large for the other alternatives. Alternative 1a has higher net recurring costs of about \$12 per trip, but there may be a recurring savings in the traveler's time since the CTO makes the reservation. Appendix C estimates a breakeven time in making a reservation at about 9 minutes (i.e., the value of the travelers' time versus the cost of a CTO reservation), based on an average fully burdened personnel cost of \$150,000 per year for DoD travelers. Based on our experience with the DTS training system, we believe an experienced DTS user would take less than 9 minutes on average to make a reservation using DTS. Furthermore, the breakeven point will exceed 9 minutes by the amount of time expended to make a reservation through a CTO, which in some instances could be considerable. Thus, savings in opportunity costs probably would not offset the increase in CTO fees. Another possibility is that the CTO could produce a trip that is more convenient to the traveler, thereby saving the traveler time.

Alternative 3 has a recurring cost advantage over the other alternatives, each of which is costlier to make a reservation. Recurring costs would increase by \$37 million, \$17 million, and \$28 million for Alternatives 1a, 1b, and 2, respectively, compared with \$6–\$9 million for Alternative 3. Software maintenance costs may reduce the difference somewhat, since only Alternative 3 would require an internal reservation module, but we believe the reduction would be small. See Appendix C for aspects of the DTS reservation module that could be terminated, accruing cost savings.

Alternative 1a has negligible nonrecurring cost. Based on what we have seen, we believe it is likely that Alternatives 1b and 2 would require an investment for usability improvement after all DoD business rules have been accommodated in the OLBE.

Therefore, we estimate that Alternatives 1b and 2 and 3 would each require nonrecurring investments of approximately \$3–\$4 million. The nonrecurring cost for Alternative 3 would be slightly lower (\$2–\$3 million) since there would be no expenditures necessary for building new interfaces, accommodating the business rules, and retraining.

#### D. SUMMARY OF EVALUATION OF ALTERNATIVES

The study findings are summarized in Table 1.

**Table 1. Summary of Findings from the Comparison of Alternatives**  
(Comparisons are relative to the deployed system)

<b>Evaluation Criteria</b>	<b>Alternative 1a</b>	<b>Alternative 1b</b>	<b>Alternative 2</b>	<b>Alternative 3<sup>a</sup></b>
Technical Risk	Low	Higher	Highest	Low
Management Risk	Highest	Higher	High	Low
Performance	Can be as good as Alternative 3			Demonstrated
Schedule	Faster	Slower	Slower	Fast
Usability	NA	Unknown	Unknown	Superior
Recurring Cost Insights	~\$ +37 million	~\$ +17 million	~\$ +28 million	~\$ +6-9 million
Non Recurring Cost Insights	Very low	~\$ 3-4 million		~\$ 2-3 million
Opportunity Cost Insights	Breakeven time ~ 9 minute savings per trip	Improvement expected, but distinctions not measurable		

<sup>a</sup> Based on the interim part of Alternative 3, aggressively improve the usability of Reservation Refresh.

Alternative 3 is superior across the board. Even without the enhanced across-the-board usability improvements of Alternative 3, DTS currently provides performance which may not be equaled by the other alternatives in optimizing flight selection for lowest cost.

Alternative 1a would revert to the pre-DTS practice where a travel agent did all DoD bookings, would have significantly higher future recurring costs, would reverse trends in the commercial sector and would generate the highest management risk. Nevertheless, Alternative 1a might create savings in opportunity costs as noted above. Experienced travelers may prefer the greater control of the process offered by an OLBE

for the most effective accomplishment of mission. Alternative 1a would not relieve travelers from using the financial infrastructure of DTS. Although we do not believe that the savings (if any) in opportunity costs would offset the increase in CTO fees, the DTS enhancement described earlier that enables the traveler to request CTO assistance immediately (i.e., before any searching for reservations using DTS) for the entire reservation, rather than one leg of the itinerary at a time, gives travelers the option to work either way. In addition, this option should be a very important element of the user feedback that is integral to Alternative 3.

Alternatives 1b and 2 would be slower to implement than Alternative 3, with higher technical and schedule risk, would entail higher management risk from the additional contracts requiring management and oversight, and might be somewhat more costly. Alternative 3 would be able to achieve additional usability improvements faster than Alternatives 1b and 2, again with lower risks since the usability characteristics of the online booking service that would win the contract in those alternatives is unknown.

Despite the uncertainty reflected in our discussion, *we find no compelling reason to adopt any alternative that does not give the Reservation Refresh version of DTS a chance to work.* Without any evidence that the DTS reservation process is irredeemable, or that a clearly superior alternative exists, there is no argument for discarding Reservation Refresh. Alternative 3 has a relatively low, well-defined, and controllable nonrecurring cost, estimated at no more than \$3 million. Its recurring costs are less than those of the other alternatives. The approach to making further improvements is low-risk, and those improvements are not necessary for DTS Reservation Refresh to be preferred over the other alternatives considered.

In the longer term, moving in the direction of an SOA environment should provide benefits as noted above. In particular, an SOA for DTS will open up a range of options for taking advantage of advances in reservation technology, multiple reservation processes, and improved financial management. In addition, future development will be the responsibility of the service providers, not DoD, and competition should lower costs.

#### **E. EVALUATION OF ALTERNATIVE FEE-FOR-SERVICE CONTRACTUAL ARRANGEMENTS**

The congressional tasking also asked for an evaluation of using a fee-for-service contract in lieu of the current DTS contract, which is firm, fixed price for operations and

sustainment.<sup>12</sup> In the future, payment for DTS operations and sustainment could be made on a fee-for-service basis. This applies both to the reservation process as well as the financial back end. The issue is whether using a fee-for-service arrangement would add value for DoD.

Traditionally, a fee-for-service arrangement adds value for the customer under two general circumstances. The first circumstance deals with cash flow. When the contract mechanism is not fee-for-service (e.g., cost reimbursement or fixed price), the customer pays for the service upfront. Under a fee-for-service arrangement, payment is made as services are rendered. This is not an important factor for DTS.

The second circumstance where a fee-for-service arrangement could add value is to enable competition in providing services. ETS is a good example. There are three providers, each offering the same service in a different way at a different price. Each competitor makes investments to improve its services and adjusts its fees to attempt to increase its market share. The government benefits from this competition. Such is not the case with DTS. DoD owns the rights to the system and must pay for its operation. Since there is no competition except periodically for operations and sustainment, a fee-for-service arrangement has little potential to add value for DoD.<sup>13</sup>

In addition, implementation of a fee-for-service structure becomes complicated when the different DoD budget accounts are factored in. The Services and Defense Agencies, who must ultimately pay the fees, would have to decide where the money comes from. This could further obscure the total cost of travel to DoD.

In attempting to keep pace with the rapid technological changes in the travel industry, DTS has employed a development approach where DoD established system specifications (derived from technical requirements) and managed the efforts to develop systems to meet those specifications. There are technical risks associated with such a development as well as risks associated with selecting the best technological approach.

With a service-oriented architecture, DoD's role would be different. Currently, DoD establishes requirements for services and manages service providers. In this approach, most of the technical development risks would be shifted to the service providers. While this approach is not risk-free, as described in a previous section, the

---

<sup>12</sup> The Services and Defense Agencies each pay a share as a function of their usage.

<sup>13</sup> The DTS contractor would be incentivized to increase usage under a fee-per-service arrangement. However, the government is already doing all it can to increase usage. There is little more that the contractor could do on its own.

management risks associated with a service-oriented architecture are often judged to be less than the technical risks associated with the more conventional development approach.

Therefore, converting DTS to a service-oriented architecture would be a way of introducing ongoing competition to add value for DoD. If a service provider performs poorly or has adopted an inferior technological approach, DoD would be in a position to replace it. Under those conditions, a fee-for-service arrangement could be the most effective contracting mechanism, despite the financial complexities described above.

Presumably, Alternative 1b would be fee-for-service, and the OLBE used in Alternative 2 would be fee-for-service as well. Although it would be possible to negotiate a fixed-price contract, the fee-for-service arrangement is more likely because the government would not “own” the code. In either case, total dollars spent by the government could be about the same.

## **V. INCREASING USE OF THE DTS FINANCIAL INFRASTRUCTURE AND PHASE-OUT OF LEGACY TRAVEL SYSTEMS**

### **A. INTRODUCTION**

The third congressionally mandated element of the study deals with the feasibility of making the use of the DTS financial infrastructure mandatory and phasing out legacy systems made redundant by implementation of DTS.

The DTS financial infrastructure has been praised in previous studies, audits, and investigations. All DoD travelers and travel support personnel interviewed for this study echoed those sentiments, and each interviewee applauded the quick turn-around from the time an electronic voucher is submitted until the traveler receives reimbursement through electronic funds transfer. However, the Defense Finance and Accounting Service (DFAS) continues to receive paper vouchers by mail, facsimile, or email for travel types that DTS does not yet support, or because DTS or another digital voucher processing system, though available, was not used. We have identified the following disadvantages of continuing use of cumbersome legacy systems and advantages of increasing use of the DTS financial infrastructure:

- Use of paper vouchers delays reimbursement to the traveler.

In a paper-based system, a DoD traveler returning from TDY prepares or has a travel clerk prepare a DD Form 1351-2 (Travel Voucher or Sub-voucher) and, if appropriate, a DD Form 1352-2C (Travel Voucher or Sub-voucher (continuation sheet)), a DD form 1351-3 (Statement of Actual Expense), and/or an SF1164 (Claim for Reimbursement for Expenditure on Official Business). Travel administration personnel in the traveler's unit and the local finance office (which audited the reimbursement package prior to submission to DFAS) might return the package to the traveler if mistakes are found. The process can take weeks to complete.

- Use of paper vouchers is more costly to the government.<sup>1</sup>

The fee that DFAS charges (to the Service or agency submitting the voucher) to process a paper voucher averaged \$39.04 for FY 2006. That compares with \$2 to \$3 to process a digitally submitted voucher. The reason for the large difference is that DFAS personnel must manually convert the paper voucher into electronic form for processing within the DFAS-managed financial infrastructure using the Windows Integrated Automated Travel System (WINIATS) legacy voucher processing system. In FY 2006, DFAS Indianapolis alone processed over 1.25 million manual travel vouchers. The incremental cost of manually processing those vouchers exceeded \$45 million.

- The use of the automated DTS financial infrastructure provides substantial financial management benefits.

One of the most important benefits is in funds reconciliation after disbursement to centrally billed and individually billed accounts. This is the feedback loop to the authorizing official, which is critical to preventing Anti-Deficiency Act (ADA) violations.<sup>2</sup> Another important benefit is automated routing of travel vouchers to the proper accounting, disbursing, and entitlement system. DFAS maintains 16 accounting systems, 3 disbursing systems, and 3 entitlement systems. To maintain accurate financial control of funds, a travel system must fit seamlessly into the larger financial infrastructure of the DoD.

- Direct recurring costs attributable to the use of legacy systems could be eliminated if legacy systems made redundant by implementation of DTS were phased out.

The remainder of this section elaborates on these points as follows. Section B identifies legacy systems in use today. Sections C through F discuss areas where those legacy systems are used for travel that DTS cannot accommodate today, sites where DTS has not been fielded, travel for which DTS cannot be used efficiently today, and situations where DTS should have been used.

## **B. LEGACY TRAVEL SYSTEMS IN USE TODAY**

The tables below list the three types of legacy systems that are in use today, and briefly describe their functionality. Table 2 contains order-writing systems. For the most part, these systems use some variation of FORMFLOW software to produce travel orders.

---

<sup>1</sup> Members of the study team visited travel organizations at various levels in each of the Services and at DFAS. We collected statistics from the organizations visited, including the PMO-DTS, as well as from telephone and email contacts with those DFAS sites responsible for processing DoD travel that were not visited.

<sup>2</sup> The ADA prohibits the government from obligating funds unless appropriated funds are available.

**Table 2. Brief Descriptions of Legacy Order-Writing Systems**

<b>System Name</b>	<b>Owner</b>	<b>Description</b>
Army Training Reservation System (ATRS)	Army	ATRS is used by the Army to manage training and education allocations and funding. It interfaces with DTS.
Military Entrance Processing Station (MEPS)	Army	Manual travel system for new recruits traveling from MEPS to basic training station.
Regional Support Command (RSC) Level Application Software (RLAS)	Army	System used by the Army Reserves to manage training and mobilization. DTS can be used with this system for travel.
USAREUR Local National Travel Interface System	Army	Used to pay travel for local nationals working for USAREUR. Will interface with DTS.
Automated Fund Control & Order System	Army	Funds management system will interface with DTS.
Resource Management Automation System (RMAS)	National Guard Bureau (NGB)	System used by the NGB to manage training and mobilization. DTS can be used with this system for travel.
Navy Reserve Order Writing System (NROWS)	Navy	System used by the Navy Reserves to manage training and mobilization. DTS interface is being developed to pull traveler information from NROWS for travel purposes.
Automated Travel Order System (ATOS) Plus Afloat and ATOS Plus Ashore (ATOS)	Navy	Order-writing system used by the fleets and associated shore units. Uses WINIATS as the travel voucher-processing module. WinATOS is functional replacement.
Windows Automated Travel Order System AFLOAT and ASHORE (WinATOS)	Navy	Order-writing system used by the fleets and associated shore units. Uses WINIATS as the travel voucher-processing module.
Military Sealift Command (MSC) - Travel and Training	Navy	Interim authority until DTS is fully implemented at MSC 30 June 2007 (est).
Gelco Travel Manager 7.1 and 8.1	Navy	Authority to operate through September 2007 and or DTS is fully implemented/migrated into the Navy Enterprise Resource Plan (NERP) and deployed throughout Naval Air Systems Command
Corporate Travel System	Navy	CTS provides "cradle to grave" tracking capability for a travel order. CTS currently is the "Standard System" used to process travel at five Naval Sea Systems Command Naval Surface Warfare activities. Allowed with restrictions.
Travel Order Processing System (TOPS)	Navy	TOPS is used to generate civilian and military employees' travel orders and routes it for approval at all levels within the command.
Existing Travel System (ETS)	Navy	ETS provides a means to track TDY and PCS orders for civilian and military employees. Travel orders are established in ETS via a feeder file from TOPS, then forwarded via interface to Defense Industrial Financial Management System (DIFMS) on a daily basis.



<b>System Name</b>	<b>Owner</b>	<b>Description</b>
Generic User Software (GENUS)	Navy	Order-writing system
Naval Aviation Depot (NADEP) Mapper Travel System	Navy	This application allows for maintenance of historical information and production of travel orders for military personnel stationed at Portsmouth Naval Shipyard.
The Naval Facilities and Engineering Command (NAVFAC) Enterprise Administrative Management Information System (NEAMIS)	Navy	The NAVFAC Enterprise Administrative Management Information System 1.0 (NEAMIS 1.0) consolidates administrative functions under one integrated information system. It is used by 3 NAVFAC Engineering Field Divisions, 5 Engineering Field Activities and various Resident Officer in Charge of Construction (ROICC) offices.
Travel Requests (TRAVEL)	Navy	Order-writing system used by NAVFAC South Division.
Reserve Order Writing System (ROWS)	USMC	ROWS is the USMC Reserves call-to-duty system. It generates orders for all USMC reserve travel, training, mobilization, etc. It also calculates pay and allowances and travel. USMC will move to NROWS once DTS interface is functioning.
Manpower Mobilization Assignment System (MMAS)	USMC	Used as wartime mobilization system. Consists of four subsystems used to forecast requirements, notify, assign, and track mobilized USMC Reserves.
Invitational Travel Orders (ITO)	USMC	Manual process used to provide travel orders and payment to USMC family members and non-government civilians.
Marine Corps Total Force System (MCTFS)	USMC	MCTFS is an integrated personnel and pay system supporting active and reserve USMC and personnel records management support for retired USMC personnel. MCTFS has two subsystems used for paying Contingency Per Diem and Unit Deployment Program. The latter is unique to USMC.
Federal Automated System for Travel (FAST)	USAF	Prototype system for DTS. Currently only used at Bolling Air Force Base. Scheduled for phase out in FY 2007.
Travel Order Writer	DFAS	DFAS Order Writer is a module of the Defense Transportation Payment System (DTPS).

Table 3 identifies the legacy voucher-processing systems. Along with DTS, WINIATS and RTS are used to process nearly every DoD travel voucher. Both RTS and WINIATS have the capability to process all types of travel, but they are stand-alone, not part of an end-to-end travel management system like DTS.

**Table 3. Brief Descriptions of Primary Legacy Voucher-Processing Systems**

System Name	Owner	Description
Windows Integrated Automated Travel System (WINIATS)	Navy/Army/USMC financed--DFAS contracts for the use from the commercial vendor that owns the software.	Automated voucher-processing system for all forms of travel. Used by USMC to compute travel that DTS cannot handle. Operated by DFAS for the Army, Navy, and USMC. Automated voucher-processing system for all forms of travel. Used by the Services to compute travel that DTS cannot handle. Used by DFAS to convert manual vouchers to digital format.
Automated Computation Travel System/Reserve Travel System (ACTS/RTS)	USAF	Order-writing and travel-voucher-computation system. Used to compute all types of DoD travel and as an order-writing system for the USAF reserves. Commonly referred to as "RTS."

Table 4 lists financial management systems with travel capability. These are not merely legacy travel systems since they include functionality other than travel. The order-writing and voucher-processing systems shown in Tables 2 and 3 could ultimately be phased out if DTS develops the capabilities to make them redundant, but that is not the case for the two financial management systems found in Table 4.

**Table 4. Brief Descriptions of Financial Accounting Systems with Travel Capabilities**

System Name	Owner	Description
Corps of Engineers Financial Management System (CEFMS)	Army	USACE financial accounting and management system that uses WINIATS as its travel computation module. CEFMS has an embedded order-writing and reservation process.
Standard Accounting, Budgeting and Reporting System (SABRS)	USMC	USMC official accounting system. It includes a travel subsystem for TDY/TAD and PCS travel. The travel subsystem is used by Training and Education Command and for short-fuse TAD travel throughout USMC.

There are four situations where legacy travel-voucher-processing systems are in use today:

- Legacy voucher-processing systems *must* be used to process types of travel that DTS cannot accommodate.
- Legacy voucher-processing systems *must* be used to support sites where DTS has not been fielded.

- Legacy voucher-processing systems *are* being used to process travel where DTS cannot be used efficiently.
- Legacy voucher-processing systems are being used in situations where DTS should have been used.

The first three situations must be changed before the DTS financial infrastructure can become mandatory. Such changes are on the critical path of phasing out legacy travel systems. The travel order-writing systems continue to exist only to support the use of the voucher-processing systems for these situations. Both would become redundant if DTS had the requisite capabilities. Eliminating the use of legacy voucher-processing systems in the latter case is mostly a matter of management attention. The following four sections describe these four cases and suggest approaches for phasing out the legacy systems.

### **C. TRAVEL DTS CANNOT ACCOMMODATE TODAY**

Appendix D describes all DoD trip types, several of which DTS cannot accommodate today. Perhaps the largest category is permanent change of station (PCS). Until DTS functionality is expanded to include virtually all these types of travel or they are eliminated, legacy systems cannot be phased out.<sup>3</sup>

There is more than one approach to expanding DTS functionality. One approach is to consider policy changes to reduce the number of trip types in DoD. Travel rule complexity has a direct impact upon DTS. The JFTR is 768 pages long with 244 additional pages contained in appendices. The JTR is 612 pages long with another 270 pages in appendices. Chapter 4 of the JFTR, at 79 pages, is a compendium of different aspects of temporary duty travel, the type that DTS was designed to accommodate. Chapter 4 of the JTR contains 82 pages, but TDY travel is addressed in only 6 of those pages. Appendix O (Temporary Duty [TDY] Travel Allowances) is now the same in both regulations—it has 29 pages of TDY mandates and instructions. The more complex the underlying regulations, the more difficult it is to maintain a coherent software baseline—especially if travel regulations change continuously as the JTR and JFTR seem to do. DTS began as a business travel system designed to be a “paperless TDY travel system that meets the needs of DoD travelers, commanders, process owners,” yet the JTR and JFTR remain as paper-based relics complicating modernization. This may directly affect the phase out of certain legacy systems that currently deal with the JTR/JFTR labyrinth.

---

<sup>3</sup> There may continue to be a few situations in which DTS support is not feasible or cost-effective and the travel type cannot be eliminated. Those cases may be relegated to manual processing.

Much of this complication is unnecessary. In some instances the nature of the travel itself that is supported by DTS is little different from travel that DTS does not support, e.g., Travel for Patients (JFTR Chapter 7; JTR Chapter 6) vs. Travel for Transfer of Mentally Ill patients (JFTR Chapter 7) vs. Travel for Patient Escorts and Attendants to Include Travel or Sick Member (JFTR Chapter 7; JTR Chapter 6). As long as these separate minor types of travel continue to exist, use of legacy systems will be a source of waste for DoD. Fundamental JFTR/JTR change bears examination.

A complementary approach is one in which DTS employs an absorption rather than a code modification strategy. Legacy systems in use by the Services capably and suitably support Service-specific needs. Rather than build competing capabilities, DTS should consider incorporating those systems through import-export functions or other appropriate interfaces. Both RTS and WINIATS have the capability to process vouchers for all types of travel:

- The USAF owns the software that runs RTS, so there would be no intellectual property issues that would preclude absorbing RTS into DTS. RTS uses the same financial management tools at DFAS Denver that support DTS voucher processing and funds obligation reconciliation. A disadvantage of RTS reported by USAF and DFAS personnel is that its operators must be knowledgeable.
- WINIATS is much more automated. Professional Software Consortium, Inc. (PSC) is the small business that markets the system. WINIATS is used to establish all travel documentation, computations, accounting interfaces, federal tax reporting, and payment by check or electronic funds transfer. WINIATS runs on multiple platforms and is used by the Services' military and civilian employees around the world. It is a system that can be used during wartime and purports to include all the rules promulgated in the JFTR Volume 1, JTR Volume 2, and the *Federal Travel Regulation (FTR)*.<sup>4</sup> The major advantage of WINIATS is that it is endorsed by DFAS, which not only uses it internally but also contracts with PSC for its use on a DoD-wide basis. There may be licensing issues with WINIATS that do not pertain to RTS, but if DFAS can contract with PSC, then logically the PMO-DTS could take over that contractual function.

This study has not addressed the technical feasibility of these options, but we have found no compelling reason why DTS should not be capable of developing the import/export interfaces needed to absorb competing legacy front- and back-end systems. There is similarly no evidence that such an approach would be unsuitable for any user segment. Users of legacy systems have voiced no opposition and are therefore

---

<sup>4</sup> Information extracted from the PSC website at <http://www.profsft.com/products.htm>.

likely to be open to such an approach. Certainly, implementation will involve unanticipated complications, but the advantages would be substantial.

#### **D. SITES WHERE DTS HAS NOT BEEN FIELDDED**

The PMO-DTS was responsible for fielding DTS at approximately 30 pilot sites during Phase I and, in combination with the DTMO, approximately 250 high-volume sites during Phase II. The current DTS Phase III fielding plan requires the Services and Defense Agencies to pay for and implement fielding of DTS at the remaining DoD sites. Based on estimates from the Services it appears that only the Army may have a significant number of sites where DTS has not been fielded at the end of FY 2007.<sup>5</sup>

There is no incentive for the Army to accelerate fielding—it will require funding. The cost of each 4-day contractor-led installation and travel administrator training session is just under \$1,600. There is also the cost of training travelers and authorizing officials. It is cost-neutral to DoD whether the training is paid from a Service or Agency budget or whether it is paid from the DTMO budget. Training and deployment should continue to be accomplished by the ones with the greatest experience with it—the DTMO. Any other approach will delay the process and potentially lead to additional negative user feedback.

#### **E. TRAVEL FOR WHICH DTS CANNOT BE USED EFFICIENTLY**

The Navy has unique operational requirements that currently necessitate the use of a legacy order-writing system and WINIATS. Carrier groups at sea average about 500 TDY trips per deployment for various purposes, e.g., emergency leave, separation from service, and prisoner travel. DTS has no batch processing capability and, as it is web based and uses TCP/IP protocols that require computer-to-computer interaction, it cannot handle intermittent connectivity. Use of the NIPRNet for DTS transactions on shore works adequately. However, the bandwidth available for unclassified connectivity by satellite or other radio transmission is insufficient to support DTS use. Priority given to administrative traffic is low compared with that given to operational missions. Ships at sea also have operational security concerns that limit traffic unrelated to operations. Thus, the Navy uses its Automated Order-Writing System Afloat. To efficiently handle this travel, DTS could incorporate a batch processing capability by import/export

---

<sup>5</sup> The study team has received conflicting data on the extent of the Army backlog of sites. DTMO data implies that the Army has deferred further implementation until FY 2009 due to funding cuts.

interface or by other means, or perhaps another mechanism could be utilized to accommodate this Navy-unique situation.

PKI security and Common Access Card (CAC) authentication required by DTS necessitate the use of legacy order-writing systems by the Reserves and the National Guard for two reasons: either DTS is not fielded at their home station or a PKI-capable card reader is not available to the individual. Even though DTS may not support movement from a home station to a mobilization site, it can handle travel once the individual has been mobilized. However, if DTS was not used for travel from a home station to the initial mobilization site, the use of DTS after the reaching the mobilization site and beyond would require two sets of orders—something the Services want to avoid. If DTS were to absorb the order-writing systems used, this situation would be mitigated.

National Guard travel for training also suffers from another issue. The Air Force and Army National Guard are funded by the DoD either under Title 10 of the U.S. Code or Title 32 of the U.S. Code. If training is done incident to state requirements, the particular state may fund the training. Certain National Guard personnel are on full-time status,<sup>6</sup> Active, Guard and Reserve status,<sup>7</sup> or are civilian employees (technicians) who must be members of the National Guard (state-organization) and Army or Air National Guard of the United States (federal organization). The Army apparently has developed a workaround to use DTS for this multi-fund-citation travel, even though technically it does not yet have the functionality. The Air Force uses RTS instead. An important step in solving this problem is augmenting DTS capability to handle, in a workable way, the multiple federal and state appropriations involved.

Finally, DTS does not support Military Entrance Processing Station (MEPS) operations from the receiving site to the initial training site. A determination should be made whether it is efficient for DTS to process such travel, given that no orders or vouchers are used, and the recruits will not yet have received a CAC.

---

<sup>6</sup> “Full-time National Guard duty” means training or other duty, other than inactive duty, performed by a member of the Army National Guard of the United States or the Air National Guard of the United States in the member’s status as a member of the National Guard of a State or territory, the Commonwealth of Puerto Rico, or the District of Columbia under section 316, 502, 503, 504, or 505 of title 32 for which the member is entitled to pay from the United States or for which the member has waived pay from the United States.”

<sup>7</sup> “Active Guard and Reserve duty” means active duty or full-time National Guard duty performed by a member of a reserve component of the Army, Navy, Air Force, or Marine Corps, or full-time National Guard duty performed by a member of the National Guard, pursuant to an order to active duty or full-time National Guard duty for a period of 180 consecutive days or more for the purpose of organizing, administering, recruiting, instructing, or training the reserve components.”

## **F. SITUATIONS WHERE DTS SHOULD HAVE BEEN USED**

Most DoD personnel understand that DTS has the backing of top leaders. Management Initiative Decision (MID) 921 (October 2004) and implementing directives issued by the Military Departments require termination of use of legacy travel systems, but contain loopholes that have permitted local commanders to justify continued use of legacy systems even when DTS could be used. Our field visits confirmed that if the local commander does not emphasize DTS, it may not be fully utilized; the Department of Defense Inspector General has also documented instances of local noncompliance. Even for those sites where DTS has been fielded, it is not uncommon for travelers to initiate the travel process by calling the local CTO to make reservations—order-writing and travel authorizations are done later. The added cost<sup>8</sup> of this mode of operation is hidden from the traveler and the official who approves it. However, those costs add up to a significant amount.

The Air Force reports that vouchers that DTS could handle are still being processed on RTS. During 11 months of fiscal year 2006 (November 2005 through September 2006), the Air Force processed 377,540 vouchers using DTS and 284,644 more vouchers (43%) using RTS that could have been done in DTS. That processing included final settlements, normal travel, group vouchers, vouchers with leave, and local vouchers and was done using RTS partly because DTS was not available.<sup>9</sup> As Phase III fielding reaches all USAF sites, DTS usage will increase. The Navy reports even less usage of DTS. During March 2005, 18,300 vouchers were processed using DTS, while 90,000 vouchers are processed monthly using WINIATS. The Army reports that it has, at the sites at which DTS has been fielded, a 95–97% DTS usage rate for the types of travel DTS can support. Field interviews confirm that command emphasis is key. The high Army rate is assured by monthly monitoring of usage statistics and command intervention when the usage rate dips.

The Services, to varying degrees, have policy issues regarding TDY to schools that do not support use of DTS. For active duty for training, the Air Force and USMC report that their respective training and education commands want to control the funds allocated to them to support training of students ordered TDY for schooling from other major commands. It is not a problem for DTS because DTS can support multiple fund

---

<sup>8</sup> The Navy's CTO contract is not on a per transaction basis, although there may be some sort of periodic adjustment for these costs.

<sup>9</sup> Data obtained from the USAF Travel Reengineering Division, SAF/FMPTT.

citations. The Army and Navy report that they have overcome the problem through a policy of command emphasis requiring the use of DTS. The Navy reports that it has no such problems for Navy schools but does have problems when members attend schools run by other Services. The USMC processes all training travel manually. This is the type of policy and training problem that should be simple to solve, but until it is solved universally, legacy systems will continue to be used instead of DTS.

Solving this problem requires a two-pronged approach. The first step is to create a clearer mandate for the use of DTS. The Services and Defense Agencies are not required to abandon legacy systems for DTS until DTS is fielded at a particular station. What constitutes “fielded” is left to local interpretation. All people interviewed indicated that if there was a clearer top-level mandate to stop using legacy systems for travel that DTS can accommodate, the Services could comply within a reasonable period.

The second step is to collect complete, reliable, and timely management information and distribute the statistics to identify installations that are not complying with the mandate. Given those statistics, the chain of command would have the means to rectify noncompliance. Centralized collection of DoD travel data will also have other benefits. For example, it would inform reviews of travel policy and could be used for negotiations with travel vendors for reduced fees. It also could provide data on the effectiveness of initiatives to reduce DoD travel costs. In general, it could be used to support overall management of all DoD travel.



This page is intentionally left blank

## VI. RECOMMENDATIONS

### A. RECOMMENDATIONS CONCERNING THE TRAVEL RESERVATION PROCESS

The congressional language requiring this study called for a determination of “the feasibility of separating the financial infrastructure of the Defense Travel System, including voucher processing, accounting, disbursing, debt collection, management accountability, and archival functions, from the travel reservation process.”

The study concludes that separation is feasible, but we do not recommend it. We have found no basis for abandoning the newly deployed Reservation Refresh version of DTS in favor of an alternative approach at this time. Therefore, we recommend:

- DoD continue to use the Reservation Refresh version of DTS.

For the longer term, a service-oriented architecture approach will open up a range of options for taking advantage of advances in reservation technology, multiple reservation processes, and improved financial management. We recommend:

- The DTMO and the PMO-DTS explore an SOA approach to ensure that the benefits cited above can come to fruition, within the limits of prudent risks.

In the interim, since usability is the study team’s most serious concern, we recommend the following to improve DTS:

- The BTA should fund an option that allows the traveler to request the CTO to make reservations for the *entire* trip immediately after establishing the trip shell, and add a “Trip Planning” button to permit immediate access to the reservations module without having to establish a trip shell.
- USD(P&R) and the BTA should implement a focused, proactive program to improve DTS usability across the board. Systematic user feedback, use of leading website design professionals, and improved access to other transportation providers and hotels (beyond what is included in the CTO’s GDS) should be included in that plan.

Nonrecurring costs for these two recommendations should be modest (no more than \$3 million).

In addition, as part of a continuing effort to reduce transportation costs, DTS should find a way to make greater use of restricted fares. To that end, the study team recommends:

- USD(P&R) conduct a study, in cooperation with GSA, to determine a consistent set of policy guidelines for using restricted fares and the pros and cons of modifying DTS to accommodate restricted fares under those conditions. Penalties incurred if restricted tickets are changed, management of unused restricted tickets, and the potential impacts on the GSA City-Pair program must be thoroughly evaluated in the study.

## **B. RECOMMENDATIONS CONCERNING FEE FOR SERVICE**

Section 943 also required a determination of “the feasibility of converting the travel reservation process to a fee-for-service system or authorizing the use of multiple travel reservation processes, all of which would use the financial infrastructure of Defense Travel System.” *The study team found that converting the DTS reservations system to a fee-for-service arrangement has little potential to add value for DoD under the current DTS architecture. When a service-oriented architecture approach is adopted, a fee-for-service arrangement could be an appropriate contracting mechanism. Therefore we recommend:*

- The DTS support contract arrangement to pay for travel reservations not be fee-for-service.

## **C. RECOMMENDATIONS CONCERNING THE FINANCIAL INFRASTRUCTURE AND LEGACY SYSTEMS**

Finally, the congressional language asked for a determination of “the feasibility of making use of the financial infrastructure of the Defense Travel System mandatory for all DoD travel transactions” and that “the Secretary of Defense develop a schedule to phase out legacy travel systems made redundant by implementation of the Defense Travel System.”

This study concludes that it is not feasible to make use of the financial infrastructure of the Defense Travel System mandatory for all DoD travel transactions *at this time*. Although DTS is the only end-to-end travel system in use by DoD today, several order-writing and voucher-processing legacy systems are used for travel types that DTS cannot support. *It is therefore impracticable to phase out all of the legacy systems immediately.*

Use of the DTS financial infrastructure will not become universal in the Department, and legacy systems cannot be phased out, until two conditions are obtained: (1) DTS must be made capable of supporting virtually all DoD travel mission areas and be installed throughout DoD via a centrally managed and stably funded fielding plan; and (2) Secretarial-level management (both OSD and Military Departments) must mandate and enforce conversion to DTS and termination of legacy systems.

In the pursuit of the overall congressional goal, a near-term objective is to eliminate the use of legacy systems for the types of travel that DTS can support. To that end, we recommend:

- USD(P&R) establish a clearer mandate for the use of DTS for all travel that it currently is capable of efficiently supporting.

In addition, to better manage all DoD travel, we recommend:

- USD(P&R), in coordination with the services and Defense Agencies, establish a process to collect complete, reliable, and timely DoD travel information needed to support overall DoD travel management. The information should be centrally accessible.

To support the expansion of DTS functionality necessary for the eventual elimination of all redundant legacy systems, we recommend:

- The BTA fund an aggressive program to improve DTS capability to support all DoD travel as soon as possible by adopting, where feasible, a proactive strategy for absorbing (1) legacy voucher-processing systems using automated interfacing where possible, and (2) legacy order-writing systems to permit users to access the front-end system needed.

Spending the time and money to redevelop a similar capability within DTS should be a last resort, except where it would be more cost-effective, and in that case, it should be postponed until all types of travel can be accommodated with the most expeditious means possible. In support of this, we also recommend:

- USD(P&R) review DoD's travel regulations comprehensively with the objective of substantially reducing the number of travel types.
- PMO-DTS investigate what would be required to enable batch processing of vouchers submitted by personnel on Navy ships at sea, overcome multiple federal appropriations issues with National Guard training, and overcome PKI issues with the Reserves and the National Guard.
- USD(P&R) investigate how to resolve policy issues with active duty for training.
- USD(P&R) determine unambiguously the number of Phase III sites yet to be converted to DTS. To the extent that there remain a large number of such sites,

the DTMO should be given the responsibility and the funding to field DTS at the remaining DoD sites.

- USD(P&R) ascertain whether it is efficient for DTS to process MEPS travel given that there are no orders or vouchers, and the recruits will not yet have received a Common Access Card needed to access DTS.

Our final recommendation relates to the congressional goal of mandatory usage of the DTS financial infrastructure. We recommend:

- Once a date can be projected by which DTS will have the capability to support a very high percentage of all DoD travel, *a mandate should be issued to discontinue use of all legacy systems by the appropriate authority.* Discontinuance should be effective after a period of time sufficient to close out any travel initiated under the legacy system.

## Appendix A

### HISTORY OF THE DEFENSE TRAVEL SYSTEM

The September 1993 National Performance Review articulated the need to reengineer how travel is arranged and managed to meet DoD requirements. A DoD Task Force was constituted to address the issue, and the ensuing report (referred to as the “Redbook”) mapped out a strategy to improve the way in which business travel was handled within the Department. The Redbook specified the following features as requirements of a DoD-wide system to improve travel:

1. Authorization to travel: Mission requirements, funds and authorization to provide funds
2. Arrangements: Scheduling and planning the travel
3. Execution: Actual performance of travel
4. Reconciliation: Voucher processing and reconciliation of payments
5. Accountability: Provision of internal controls

Many efforts to attain the recommended features have ensued, as summarized in Figure A-1.

<ul style="list-style-type: none"> <li>• 1993 – 1995</li> <li>• 1995 – 2000</li> <li>• 2000 – 2001</li> <li>• 2001 – 2003</li> <li>• 2004 – 2006</li> <li>• 2005 – 2006</li> </ul>	<p><b><u>Need for Change Articulated:</u> Travel fragmented and antiquated; not focused on mission support</b></p> <p><b><u>Implementation Complexity Underestimated:</u> USD(C) “Special-interest program”; COTS-based approach; open-ended requirements; no test plan; early emphasis on financial management (not reservation making)</b></p> <p><b><u>Initial Implementation Problems Observed:</u> Deployments premature; operational test failure</b></p> <p><b><u>Revised Acquisition Approach Undertaken:</u> Contract restructured; oversight assigned to DFAS; designated ACAT-IAM; ORD validated by JROC; MS C ADM signed</b></p> <p><b><u>Revised Management Approach Undertaken:</u> MID 921 directed use of DTS; oversight reassigned to USD(P&amp;R); PMO assigned to BTA</b></p> <p><b><u>Congressional Scrutiny Intensified:</u> GAO and DoD IG cite continuing functional problems and low usage (however, DTS transactions processed growing steadily)</b></p>
--	---

Figure A-1. History of Defense Travel System

The original task force was guided by the “best in class” features of travel management used in private industry, which heavily influenced its recommendations. Recommendations included straightforward articulation of a policy, use of corporate credit cards, reservations made through designated commercial travel offices (CTOs), a 24-hour help desk, rapid reimbursement, automated administration, and low administration costs.<sup>1</sup>

As a result of the Redbook report, the Under Secretary of Defense for Acquisition, Technology, and Logistics [USD(AT&L)] and the Under Secretary of Defense (Comptroller)<sup>2</sup> [USD(C)] established the Program Management Office (PMO)-Defense Travel Service (DTS), or PMO-DTS, to provide a DoD-wide mechanism for travel services. Also the Military Traffic Management Command<sup>3</sup> was tasked as the procurement entity for DTS. The undertaking was enormous. Prior to the introduction of computer-based automated systems (which began in the early 1990s), the DoD traveler had to go through a complicated, labor-intensive, lengthy and expensive process, illustrated generically in Figure A-2, below. Even today, at least parts of that process are still in use. It is estimated that as many as 47 human “touches” were required in that system,<sup>4</sup> very roughly estimated to cost on the order of \$200 per trip, and adding up to perhaps as much as \$1 billion per year in costs for DoD.

DTS originally began as an Office of the Secretary of Defense (OSD) Special Interest Initiative. Even though a Program Manager was assigned in 1995, the provisions of DoDI 5000.2<sup>5</sup> and other acquisition directives had not been adhered to because DTS was not defined as an “acquisition program.” The PMO developed a plan based on commercial-off-the-shelf (COTS) software, and in 1998 awarded a firm, fixed-price, performance-based services contract to BDM International to design and deploy DTS. The compensation to the contractor was to be primarily in the form of a transaction fee for each voucher processed after operational deployment. The original contract schedule planned to deploy the system at 11,000 DoD sites worldwide by September 2001.

---

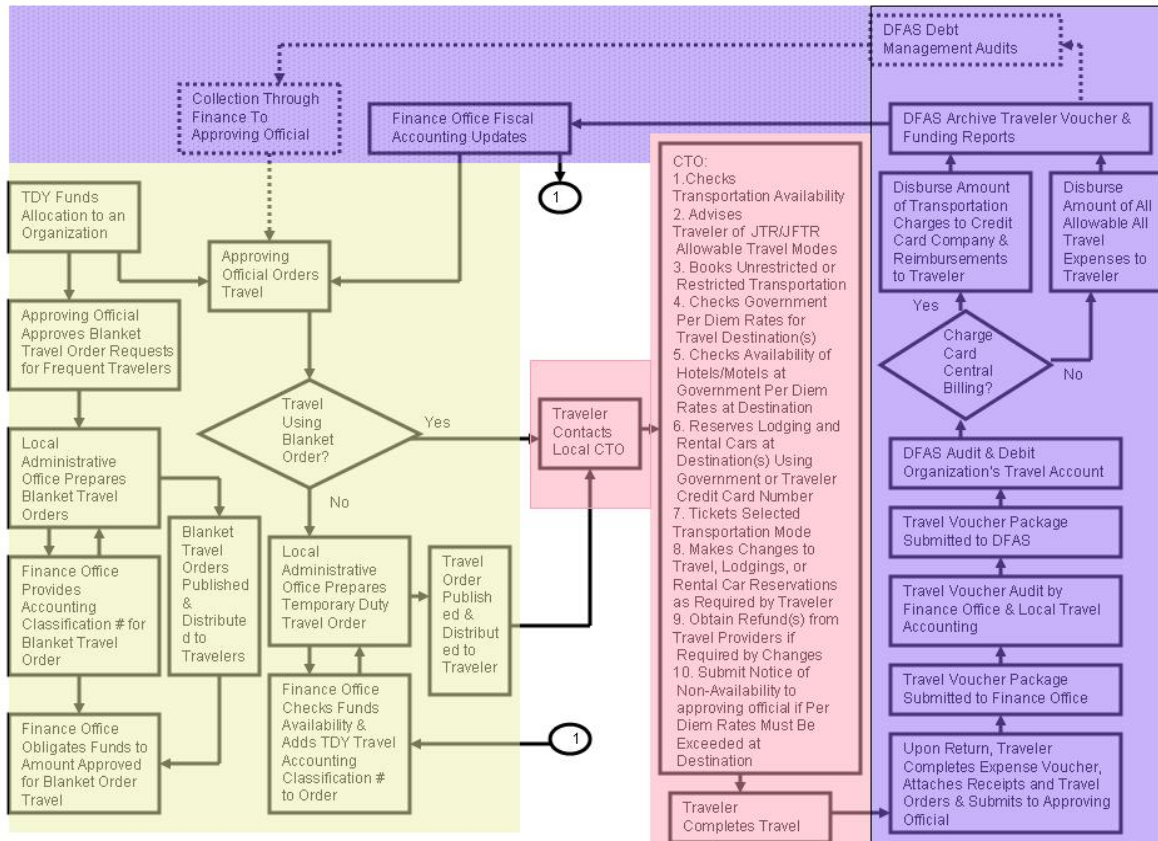
<sup>1</sup> Interestingly, the task force never promoted the development of an online reservations capability. Most likely, a capability of this sort was not the state of the art at the time the report was written, and the possibility that travelers would make their own arrangements was not considered.

<sup>2</sup> Also the Chief Financial Officer.

<sup>3</sup> Now known as the Military Surface Deployment and Distribution Command, which is the Army component command for USTRANSCOM.

<sup>4</sup> A “touch” is defined as an event wherein a human must perform some function with a document.

<sup>5</sup> Department of Defense Instruction 5000.2, Operation of the Defense Acquisition System.



**Figure A-2. Generic Manual Travel Process**

From program inception, the focus was on automating financial infrastructure associated with travel (referred to as “the back end”) with less emphasis on an end-to-end travel management system, particularly the reservations “front end.” By the end of 2002 it was clear that the assumption that a COTS travel system could be adopted to meet DoD needs was optimistic; the COTS software would require major alterations. The contract (then with TRW) was renegotiated to allow for the substantial software development effort that the project would entail, and licenses were obtained to modify the COTS software (Gelco Travel Manager).

In response to a DoDIG report,<sup>6</sup> DTS was designated an Acquisition Category IAM Program in May 2002; an Operational Requirements Document was prepared and approved by the Joint Requirements Oversight Council in January 2003. Those steps supported a Milestone C Acquisition Decision Memorandum signed on December 24, 2003, that approved DTS fielding. Throughout, the USD(C), USD(AT&L), Under Secretary of Defense for Personnel and

<sup>6</sup> Department of Defense Office of the Inspector General, *Allegations to the Defense Hotline on the Management of the Defense Travel System* (D-2002-124), Washington DC Department of Defense, July 2002.



Readiness [USD(P&R)] and the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence [ASD(C3I)]<sup>7</sup> have issued various directives that have evolved DTS from 1995 to the present. The directives culminated on October 18, 2004, with the Deputy Secretary of Defense signing Management Information Decision (MID) 921 on Commercial Travel Management. MID 921 gave USD(P&R) the functional lead, directed the establishment of the DTMO, and directed the DoD Components not to use paper-based or automated legacy temporary duty (TDY) travel processes when the full DTS (including travel reservation module) is fielded at each location. Until the actual startup of the Defense Travel Management Office in February 2006, the PMO-DTS was the manager of all aspects of DTS. The PMO-DTS now reports to the Business Transformation Agency (BTA).

Problems with DTS unfortunately did not end with those steps. Congressional scrutiny increased after the early difficulties with the system became known. A complaint by a losing contractor was filed in the US Court of Claims; complaints were lodged by a watchdog group against government fraud, waste, and abuse; and various investigations were conducted by the Department of Defense Inspector General, Government Accountability Office (GAO), and the Office of Director, Program, Analysis and Evaluation. Congressional concerns span cost, effectiveness, and contract issues. There have also been a number of negative articles in both the trade press and the broader public media. Frequently, critics have alleged something to the effect that “DoD has spent a half billion dollars on a travel system that doesn’t work.” In fact, less than half that figure was for development—the rest was to operate the system for some 8 years or so. And the allegation that DTS does not work is just plain wrong. The fact is there is an average of 6,000 (and growing exponentially) users online in a typical mid-day working hour. Operational tests have certified the system as “effective, suitable, and survivable.”<sup>8</sup>

---

<sup>7</sup> Now Assistant Secretary of Defense for Networks and Information Integration [ASD(NII)].

<sup>8</sup> Army Test and Evaluation Agency Operational Assessment, Defense Travel System, Madison Release, November 2005. Full disclosure: A February 2006 ATEC report rated the then deployed Monroe release neither effective nor suitable; however, the deficiencies were corrected in the latest “Reservation Refresh” version, which was released in February 2007. ATEC declared that release effective, suitable, and survivable.

## **Appendix B**

### **DoD TRAVEL GOVERNANCE**

#### **A. POLICY**

Policies that govern the use of the Defense Travel System are contained in the Joint Federal Travel Regulations (JFTR) for uniformed Service personnel and the Joint Travel Regulations (JTR) for DoD civilians. The JFTR is issued under the following authorities

1. The United States Code, primarily the sections found in title 37 (especially those sections concerning travel and transportation allowances in chapter 7 and title 10.
2. DoD Directives, such as DoDD 1315.7, 1327.5, and 5154.29, and DoD Instructions such as 1315.18, 1327.6.
3. Executive Orders and decisions of the US Comptroller General, Defense Office of Hearings and Appeals, and the OSD General Counsel.

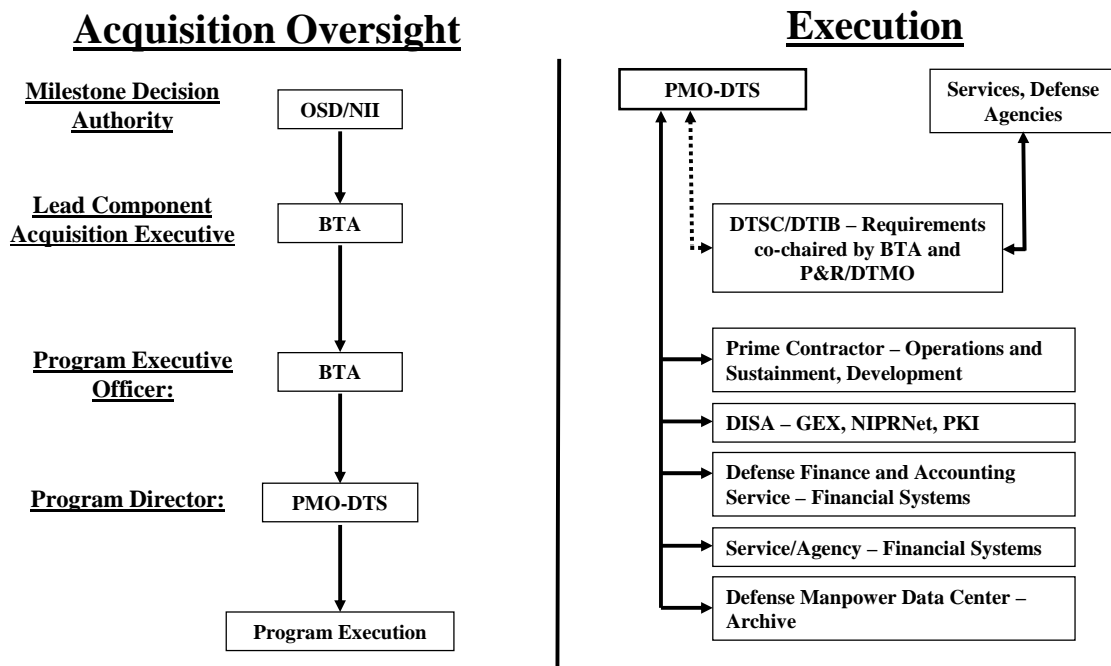
The JTR is issued under the following authorities

1. Federal Travel Regulation (FTR), published by General Services Administration (GSA) (41 CFR 300-304); the Department of State Standardized Regulations for Government Civilians in Foreign Areas, issued by State Department; and regulations published by the Office of Personnel Management (CFR, title 5).
2. The United States Code, primarily sections found in title 5 (especially chapter 57, concerning allowances for travel, transportation, and subsistence) and title 10.
3. Executive Orders, GSA Commuted Rate Schedule, and DoD directives.
4. Decisions of the US Comptroller General, the GSA Board of Contract Appeals or Civilian Board of Contract Appeals and the OSD General Counsel

#### **B. MANAGEMENT AND OVERSIGHT**

While the JFTR and JTR establish the overall DoD travel policy, the Defense Travel Management Office (DTMO), based on decisions by the Defense Travel Improvement Board (DTIB) and the Defense Travel Steering Committee (DTSC), establishes specific business rules for the DTS. Membership in the DTIB and DTSC includes the Services, OSD Components, Defense Agencies such as Defense Logistics Agency and Defense Information System Agency and US Transportation Command (USTRANSCOM). The DTSC is co-chaired by the Acting Principal Director for Military Personnel Policy and the Defense Business Systems Acquisition

Executive, Business Transformation Agency (BTA). DoD organizations involved in the management and oversight of the DTS are shown in Figure B-1.



Source: DTS Program Management Office

**Figure B-1. Program Management Structure**

**C. TRANSPORTATION GOVERNANCE**

Within the business rules that are implemented in DTS, an authorizing official (AO) in a DoD component has broad authority to direct any mode of travel other than by privately owned transportation or rental car when the AO decides it is the best way for travel to be performed. Also, the AO may limit reimbursement for other transportation modes.

When travel is by commercial air:

- It is mandatory that travel arrangements be made through an available CTO.
- Coach fares under the GSA city-pair contract must be used unless an exception is approved by the AO. A lower fare offered by a non-contract (DoD-approved) US-certified carrier may be considered if the fare is available to the general public. However, if the contract carrier offers a comparable fare, that fare must be chosen.
- Restricted fares are seldom used.

DTS performs several system audits to help the traveler adhere to these rules including:

- Selection of other than GSA city-pair fares
  - A list of applicable reason codes is presented to the traveler.
- Selection of other than a compact rental car
  - Compact rental car class is the standard for TDY travel.
  - Exceptions, based on mission requirements, can be approved by the AO.
- Selection of other than commercial air as the en-route transportation mode
  - Traveler may be required to provide a cost-comparison as part of their request to travel by other than commercial air.
- Selection of other than the “default” method of payment for commercial transportation
  - Service and Defense Agency rules determine whether transportation should be charged to the individual traveler’s government travel charge card or to the organization’s centrally billed account.

#### **D. LODGING GOVERNANCE**

Each TDY location has an associated daily lodging allowance determined by GSA for the 48 contiguous states, established by county. The per diem rates are approved by the Office of Management and Budget (OMB) and published annually. The Per Diem, Travel, and Transportation Allowance Committee (PDTATAC) prescribes the maximum allowances for Alaska, Hawaii, the Commonwealth of Puerto Rico and possessions of the United States, and the Department of State establishes the allowances for foreign locations outside the continental United States (OCONUS).

For lodging, the AO may authorize the traveler to exceed the daily lodging allowance by up to 300 percent of the published lodging and meals/incidental allowance if required by the needs of the mission. (Any higher amount for military members requires PDTATAC authorization in advance.)

In the continental United States (CONUS), taxes on hotel rooms are reimbursable separately from the daily lodging rate.

In the OCONUS, the cost of any hotel room tax or sales tax is included in the published daily lodging rate and not reimbursed separately.

Military members TDY to a US government installation are required to check on the availability of government quarters prior to obtaining commercial lodging.

DTS provides system audits related to lodging policy as follows

1. Upon initial selection of a room that exceeds the daily lodging allowance, a screen pop-up notification is provided to the traveler.
2. Upon signing the travel document that includes a rate exceeding the daily lodging allowance, a traveler justification notification is shown that must be addressed before authorization can take place.
3. The system will audit lodging that is not Federal Emergency Management Agency (FEMA) approved as compliant with federal fire protection policy. Regulations require that 90 percent of all lodging nights in CONUS be in FEMA-approved facilities.
4. A military traveler TDY to a US government facility who selects a commercial lodging facility will have to certify that government quarters were not available.

#### **E. MEALS, INCIDENTAL AND MISCELLANEOUS EXPENSES GOVERNANCE**

Other travel-related expenses governed by DoD travel policy are implemented in the DTS. For example, each TDY location has an associated daily meal and incidental expense allowance determined by GSA for CONUS, the PDTATAC for Alaska, Hawaii, the Commonwealth of Puerto Rico and possessions of the United States, and the State Department for OCONUS locations.

The AO can authorize reimbursement of several different categories of miscellaneous expenses, including the following:

1. ATM fees associated with cash withdrawals up to the amount authorized
2. Passport or Visa fees
3. Required inoculations or physical examinations
4. Currency conversion fees
5. CTO transaction fees
6. Transportation-related tips
7. Transportation terminal fees (public transportation, taxi, or private vehicle costs)
8. Official telephone calls
9. Registration fees

## **Appendix C**

### **COST CONSIDERATIONS IN THE EVALUATION OF THE DEFENSE TRAVEL SYSTEM**

#### **A. OVERVIEW OF DOD TRAVEL COSTS**

This appendix accomplishes two objectives—(1) support the cost inferences drawn in Section 4 regarding the alternatives evaluated therein, and (2) provide some additional background on cost considerations in the DoD travel domain. Section A is an introduction and overview of types of costs relating to travel in DoD. Section B is the discussion of the alternatives in Section 4 in terms of those types of cost; it references succeeding sections for supporting detail as appropriate. The rest of the appendix discusses other considerations that are related to but not used explicitly in the cost assessments: fiscal year (FY) 2006 DoD travel expenses; historical DTS cost; CTO fees; travel policy and city-pair fares; and some considerations on seeking lowest-cost versus shortest-duration fares.

OMB has reported that travel expenses, reflected in directly funded and in reimbursable accounts, for DoD personnel in FY 2006 totaled \$8.46 billion.<sup>1</sup> This figure includes transportation costs, such as airline tickets, as well as the costs of rental cars, lodging, per diem, and incidental expenses. Those costs are distributed primarily across two types of travel: Temporary Duty (TDY) and Permanent Change of Station (PCS). As noted elsewhere in this report, DTS currently cannot process PCS travel; it can process most, but not all, types of TDY travel.

In response to the congressional directive for this study, Section 4 of this paper considers several alternatives to the DTS reservation process. This appendix discusses cost aspects and implications of those alternatives. A comprehensive description of DoD travel costs is helpful in understanding factors related to the cost-effectiveness of DTS and in evaluating the alternatives under consideration in this study. Toward that end, this appendix views DoD travel costs in several categories:

- Incremental costs that can be associated with a given trip

---

<sup>1</sup> OMB reports this travel cost annually in the Object Class Reporting as “transportation of persons.”

- Recurring expenses that cannot be associated with a given trip
- Fixed costs of the DoD travel infrastructure
- Intangible costs to travelers themselves

The following are *identifiable* costs to DoD that are incremental for each trip taken (i.e., if the trip is not taken these costs are saved):

- The cost of transportation—airlines, rail, mileage reimbursement for use of privately owned vehicles, etc.
- Other trip expenses—lodging, per diem, rental cars, incidental expenses
- The cost to make reservations and for ticketing—paid to CTOs or to an online booking service—when charged on a per-trip basis
- Cost to process travel vouchers--when charged on a per-voucher basis

In addition, there are “opportunity costs” of the travelers’ time—also incremental though problematic to estimate (we refer to these costs as “value” since they do not translate, at least directly, into changes in DoD’s budgeted cost of doing business):

- Value of time of DoD personnel while traveling
- Value of time of DoD personnel in arranging travel
- Value of time of DoD personnel in filing vouchers

Some recurring trip-related costs are not *identifiable* on a per-trip basis:

- CTO costs when not charged on a per-trip basis (e.g., the Navy arrangement with its CTO)
- Voucher-processing costs that are not based per voucher, e.g., for Army Corps of Engineers (voucher processing is performed by accounting activities that also do many other financial functions)

Some travel-related costs are largely fixed:

- Cost to develop, operate, and maintain automated systems for processing travel:
  - Systems that facilitate travel arrangements (reservations, etc.)
  - Travel order-writing and voucher-processing systems
  - Associated information technology infrastructure (e.g., communications backbone, gateways, translators)
- The value of time spent by DoD management and administrative personnel on travel matters (opportunity costs)

Lastly, some costs to travelers themselves are not compensated by DoD:

- The value of non-duty time spent in travel (offset perhaps by the perceived benefits of travel—“seeing the world,” sightseeing, shopping—combined with vacation or other leave, etc.)
- The time value of personal funds expended by the DoD traveler for which compensation is received later

Most of these costs and “values” cannot be estimated, or can only be estimated crudely. The DoD accounting system is not in fact one system, but a conglomeration of numerous systems that have evolved into use by the various DoD Components and subcomponents. Visibility into travel costs was likely not a particularly important consideration as these myriad systems evolved.

## **B. COSTS USED IN THE EVALUATION OF ALTERNATIVES**

This section addresses the relevant costs for the evaluation of alternatives for DoD travel reservation processes used in Section 4 as follows:

- Nonrecurring Costs
- Recurring Costs
  - Transportation
  - CTO and OLBE fees
  - Software maintenance
- Opportunity Costs
  - Value of travelers’ time in making travel arrangements
  - Value of travelers’ time on the trip (This cost was not used as a discriminator in Section 4.)

Most of the cost distinctions made in the Section 4 are qualitative, because we have been unable to estimate most of these costs for the alternatives within the time available for the study. This section elucidates those qualitative conclusions where possible and includes some rough quantitative insights. Section 4 considered three alternatives:

- 1) Use a completely separate reservation process external to DTS, with sub-alternatives:
  - a) Only the CTOs make the reservations.
  - b) Travelers make reservations using a commercially available OLBE tailored for DoD.
- 2) Replace the DTS reservations booking engine by interfacing with an alternative OLBE.



- 3) Evolve toward a service-oriented environment and, in preparation, aggressively improve DTS usability.

We will discuss these alternatives within each of the above cost categories. Because we are not able to estimate costs for a service-oriented architecture approach, the following discussion applies only to the interim part of Alternative 3, aggressively improving DTS usability.

### **1. Nonrecurring Costs**

For the alternatives considered, nonrecurring costs are costs to procure new OLBEs or to modify DTS to achieve improvements. The only nonrecurring costs for Alternative 1a are the cost to deactivate the current DTS reservations module. We assume that cost would be minimal. Alternatives 1b and 2 would require DoD to enlist the services of a new commercial OLBE that would require modifications for DoD use. The GSA eTravel System (ETS) operates much as Alternative 2 would, and GSA provided a cost estimate of about \$500,000 to make the needed modifications to the commercial OLBEs used. That figure may be an appropriate acquisition cost for both Alternatives 1b and 2, but there would also be costs in Alternative 2 to modify DTS to interface with the new engine. One million dollars would seem like a reasonable upper bound on that cost (the entire Reservation Refresh software upgrade of DTS was reported to be only about \$2.0 million for development and \$0.8 million for testing).

Both alternatives 1b and 2 would incur costs to develop and deliver technical training to travel administrators on the new OLBE and to modify the DTS online training for general use. Based on data provided by Office of Secretary of Defense on the number of DoD installations, we estimated a cost of \$500,000 to visit and deliver technical training.

Both Alternatives 1b and 2 would also require verification testing and licensing; the \$0.8 million for Reservation Refresh testing may be a reasonable estimate. The nonrecurring costs for Alternative 3 can be grossly estimated based on the cost of the Reservation Refresh upgrade to DTS—as noted, about \$2.8 million. That may be a reasonable estimate for further upgrades. But Alternative 3 also includes (1) studies of user feedback, site visits, etc., to clearly identify and define usability problems and (2) user-friendly website design specialists. No estimates for those costs have been completed.

The above discussion assumes that there would be no additional cost to improve usability for Alternatives 1b and 2. That may not be likely based on what we have seen. When all DoD

business rules have been accommodated, there may be a need for additional nonrecurring investments similar to Alternative 3, which would make alternative 3 the least costly of the three.

## **2. Recurring Costs**

DoD's recurring costs for travel are driven, obviously, by the amount of official travel that DoD personnel make per year. Unfortunately, as noted in our recommendations in section 5, DoD lacks high-quality, complete, and up-to-date data on DoD travel. A strong point of DTS is that it offers the potential to capture a great deal of useful data. However, since DTS is currently processing less than half of DoD travel (by voucher counts), the data provided from DTS are necessarily incomplete.

### **a. Transportation**

Section C, below, estimates that DoD spends in the range of \$2.4 to \$2.9 billion per year on airline travel, with the cost of airline tickets for an average TDY trip in the range of \$315–\$400. Budget data indicate that air travel is a much lower fraction of costs for PCS travel than for TDY travel. About 16 percent of PCS travel is by commercial airlines, at an average cost per trip of about \$740 (most PCS airline travel is believed to be overseas). We have no data to quantify the effect of the alternatives on those costs-per-trip figure, but differences might exist, and if they do, the effect could be significant.<sup>2</sup>

*Alternative 1a.* Some representatives of the travel agent industry contend that a travel agent can, on average, find fares as good as or better than those found by the OLBEs but we have no analytical basis for determining that, and we have heard conflicting arguments about this from travel industry professionals. Certainly, if the travel agent had access to and used the same OLBE(s) and GDS(s) used by the traveler through DTS, the agent should do no worse. The same could be said if the travel agent had access to and used an OLBE that used the ITA Software methodology<sup>3</sup> to locate the lowest cost fares.

---

<sup>2</sup> For example, an alternative might be more successful in finding low-cost fares.

<sup>3</sup> ITA Software, Inc., offers a product that appears to be unique in the industry at this time, and Reservation Refresh makes use of the product. ITA obtains flight inventory data from the Airline Traffic and Publishing Company database, as well as other databases, so that the inventory and pricing picture it provides is as full and complete as is possible today. ITA Software was built around a new algorithm for producing low-cost airfares that meet traveler needs. These statements are controversial. A representative from a commercial OLBE told us that, while it may have been true at one time, it is not true today.

*Alternatives 1b and 2* would use an alternative OLBE. We do not know how fares obtained would compare with Alternative 1a or 3. However, there is no reason why the alternative OLBE could not use the same methodology or its equivalent.

*Alternative 3.* We believe this alternative employs the best database and algorithm for finding lowest-cost fares in the marketplace today.

However, since the same approach could be used by the other alternatives, we have been unable to discriminate among the alternatives based on transportation costs.

#### **b. CTO and Other Booking Fees**

Section E contains a discussion of the use of CTOs by DoD and the fees charged. The annual recurring costs for CTO and OLBE fees are determined by those charges, the number of DoD trips, and the type of booking used for the trips. Table C-1 summarizes the data from Sections C and E that are used for our cost estimates.

Section E concludes that reasonable estimates are \$7.50 for automated (“no touch”) bookings and \$21.50 for full-service bookings in the future. The methodology used in Section C is to apply statistics from DTS sample data to the larger set of all DoD travel. Thus, the 445,000 DTS trips with vouchers filed from October to December 2006 showed that 47 percent had a PNR—meaning that a transportation or rental car reservation was made. Applying that percentage to the estimated 6.9 million TDY trips a year produces an estimate of 3.3 million TDY trips a year requiring such a reservation. PCS trips are estimated to account for another 218,000 reservations, for a DoD total of 3.5 million. If, as a limiting case,<sup>4</sup> each such reservation required full travel services from a CTO, CTO fees would be about \$75 million annually (3.5 million x \$21.50).

---

<sup>4</sup> Many are by private vehicle or other means not requiring CTO assistance.

**Table C-1. Data Used for Booking Fee Cost Estimates**

DTS trips per month (Oct-Dec 2006)	0.25 million
Extrapolated DTS trips per year	3.0 million
Percent of DTS trips having a PNR booked with DTS (based on 445,000 DTS trips, Oct 2006-Dec 2006)	47.1%
DTS Trips with Transportation(air/rail or rental car)	0.12 million
DTS PNRs per month (Oct-Dec 2006)	0.10 million
Extrapolated DTS PNRs per year	1.23 million
DTS fraction of trips requiring CTO assistance	12.3%
Total TDY trips/yr	6.92 million
TDY trips w reservations	3.26 million
Total PCS trips/yr	1.53 million
PCS trips w reservations	0.25 million
Total DoD Expenditures on Travel of Personnel (FY06) \$	8.46 billion
Total DoD Trips per year	8.45 million
Total TDY & PCS reservations/year	3.50 million
Factor to scale if DTS includes all DoD travel	2.85
CTO/OLBE fees	
Full service fee	\$ 21.50
DTS "no touch" fee	\$ 7.50
OLBE fee	\$ 7.50
DTS access fee savings if no reservation made	\$ 2.00
DTS access fee savings if OLBE makes reservation	\$ 1.50

<sup>a</sup> A PNR implies that a transportation or rental car reservation was made. Note that the *recent* percentage having PNR is slightly greater (48.3 percent).

*Alternative 1a.* In this alternative, the DoD costs in CTO fees would be expected to increase significantly. As seen in Table C-1, DTS can be expected to make about 1.23 million trips per year having a reservation at current usage rates. About 12 percent of those on average require CTO assistance. CTO costs for DTS reservations should thus be about \$11 million [1.23 million x (0.88 x \$7.5 + 0.12 x \$21.5)]. If the rest were also made by the CTO, costs would increase by the cost of full-service CTO reservations (\$21.50) less the cost of a DTS reservation. That cost is the DTS CTO fee of \$7.50 plus the amount DTS pays to access inventories and book reservations, which is estimated at \$2 per trip.<sup>5</sup> Thus the cost would increase by about \$13

<sup>5</sup> Currently these access charges are fixed fees. We obtained a per-booking cost by dividing the fixed fees by the projected annual volume, since it is likely that these fees will vary with volume.

million (1.23 million x (\$21.5 - \$2) – \$11 million) per year, to about \$24 million per year. Next we scale up to all DoD travel, assuming that eventually DTS will do it all. That yields a potential cost increase on the order of \$37 million per year ( $3.5/1.23$ ).

*Alternative 1b.* The new OLBE would likely be on a fee-for-service contract. The two GSA eTravel vendors that use external OLBEs are charging between \$10 and \$11 per transaction (i.e., trip) for “no touch” reservations and ticketing,<sup>6</sup> but that includes the costs for the Carlson and EDS shells as well as the OLBE. The consumer-oriented OLBEs charge users fees as follows: Expedia, \$5.00; Orbitz, \$4.99–\$11.99 depending on the airline; and Travelocity, \$8.50. An average of those fees comes close to \$7.50. So that seems like a reasonable expectation for a separate OLBE for all of DoD. If there are around 3.5 million trips making reservations per year, the cost increase would be in the range about \$23 million per year (assumes 12 percent still use the CTO) ( $3.5 \text{ million} \times 0.88 \times \$7.50$ ). There would be a corresponding reduction in reservation-related costs for the DTS contractor, we estimate at about \$2 per trip,<sup>7</sup> supported by data supplied by PMO-DTS. So the net cost increment would be about \$17 million per year [ $3.5 \text{ million} \times (\$7.50 - \$2.00) \times 0.88$ ].

*Alternative 2.* This case is similar to 1b, except the consumer OLBE data are not relevant. The \$10–\$11 charged by the two non-DTS-based ETS vendors for no-touch reservations and ticketing should be a reasonable estimate for the fee that DTS would have to pay to access similar services. DTS would save certain costs associated with its current reservation process (see section C), but not as much as the \$2 assumed in 1b. We assume \$1.50 as plausible (in the absence of any data). With these assumptions, the net cost increment would be about \$28 million per year, again assuming—as a limiting case—that all DoD trips use DTS linked to the external OLBE but that 12 percent still use the CTO [ $3.5 \text{ million} \times (\$10.50 - \$1.50) \times 0.88$ ].

*Alternative 3.* Under this alternative, CTO fees would increase because the “CTO button” would allow travelers to choose to have their trips booked by the CTO immediately after establishing the trip shell in DTS. Of course, we have no idea how many travelers would make that choice. To establish a plausible range, we assume that CTO use would increase by a factor of 2 to 2½ over the current rate of CTO usage in DTS, which would translate into an increase in

---

<sup>6</sup> See “E-Gov Travel Service Pricing Guide, version 2.9, January 2007 (on the GSA E-Gov Travel Web site).

CTO fees in the range of \$2–\$3 million per year [ $\$2 \text{ million} = 1.23 \text{ million} \times (.12) \times (\$21.50 - \$7.50)$ ] based on *current* DTS usage, increasing to \$6–\$9 million [ $\$6 \text{ million} = 3.5 \text{ million} \times (.12) \times (\$21.50 - \$7.50)$ ] if DTS were used for all DoD travel. Those increases could be offset by savings in order writing and voucher processing from any increased usage attributable to the new feature. Also, in the future CTO fees might decrease because of competition, increased use of technology, and advances in commercial travel products, which would reduce CTO cost of doing business.

**c. Software Maintenance**

*Alternatives 1 and 2.* Since DTS would no longer have a reservation module, there would be a reduction in software maintenance costs and the cost of certain contracted services used by the DTS prime contractor. While no dollar estimate has been provided, the following list of items that could accrue savings was provided by NGMS:

- Cost for access to ITA Software, Inc. services
- GDS cost for Sabre, Worldspan, and Apollo/Galileo
- Maintenance cost for OpenJaw<sup>8</sup>
- Maintenance cost for the reservation screens, the reservation gateway, the sweeping process
- Costs for troubleshooting/researching reservation issues
- Helpdesk support for the reservation process

We are using \$2 per trip as the incremental costs of the first two items, supported by the data provided by PMO-DTS. Today approximately \$2.1 million is spent annually on 1.23 million trips for access to GDSs (\$575,000) and access to ITA inventory and pricing data (\$1.5 million). This is approximately 10 percent of DTS operation and maintenance costs.

*Alternative 3.* No change over current costs likely.

---

<sup>7</sup> Because the existing contract with NGMS is not fee-for-service, this savings would only accrue with award of the next sustainment contract for DTS. As noted in a previous footnote, these fees are fixed annual or monthly costs—some paid by NGMS and some directly by the Government.

<sup>8</sup> OpenJaw is a software interface with the GDSs used to make reservations with a PNR.

### 3. Opportunity Costs

#### a. Opportunity Costs--Value of Travelers' time in making reservations

*Alternative 1a.* Any calculation is speculative since we do not have any data on the amount of traveler time to make reservations in each of the alternatives. It is also problematic to place a value on the time of the DoD civilian and military members.<sup>9</sup> For illustrative purposes we developed a range of plausible assumptions and found that a typical traveler would have to save about 9 minutes by using the CTO in making a reservation in order for DoD to break even (i.e., the savings in a traveler's time offsets the \$14 increase in the CTO fee less the \$2 non-CTO costs of a DTS reservation).<sup>10</sup> Based on the study team's very limited experimentation with the DTS training system (using Reservation Refresh), savings in time of that magnitude *appear unlikely*, especially considering that the traveler will spend *some* time, which could be considerable, with CTO booking. The complexity of the trip would be a major factor in either case.

#### b. Value of Traveler's Time in Travel

The considerations here are very much like lowest-cost airfares. Instead of lowest-cost fares, one could optimize on the elapsed trip time (see section G). A plausible assumption (*not* supported by the limited data sample in section C.7) might be that the most convenient flights are also the most expensive and the lowest-cost fares the least convenient. Then these two factors would roughly counterbalance. In the absence of any data, we cannot make any discrimination among the alternatives, but as was true for transportation costs, if differences do exist the effect could be significant.

---

<sup>9</sup> Arguably both are higher than their "fully burdened" cost for pay and benefits because both civilian and military strengths are constrained by other than market forces (e.g., congressional end-strength caps). This is especially true of military personnel, who are the means through which virtually all of our military capability is delivered. In the limiting case, it might be argued that the correct opportunity cost per year for military members is the DoD budget divided by the military end-strength.

<sup>10</sup> Based on an examination of the military and civilian pay schedules, we used \$150,000 per year as an average fully burdened cost for all DoD personnel.

### C. DOD TRAVEL COSTS BASED ON FY 2006 TRAVEL EXPENSES

We stated at the beginning of the appendix that OMB reported that DoD's FY 2006 costs for "transportation of persons" totaled \$8.46 billion.<sup>11</sup> This total includes both TDY and PCS travel, and both directly funded and reimbursable accounts. Because these types of travel have different characteristics, particularly in terms of use of reservation systems,<sup>12</sup> we need to break this total out into PCS and TDY. DoD budget displays provide data on PCS travel, so we can obtain TDY travel costs by subtraction.<sup>13</sup> In FY 2006 DoD spent \$1,170 million on PCS travel, so that leaves \$7,292 million for TDY travel.

Trip level information can be obtained using a database of 445,000 TDY trips obtained from DTS.<sup>14</sup> The average cost of those trips was \$1,055. Assuming that cost per trip is typical of all DoD TDY travel, we can infer that there are about 6.92 million DoD TDY trips per year (\$7292 million / \$1055). The budget data for PCS costs indicate there are about 1.53 million PCS trips,<sup>15</sup> so we estimate total trips for DoD at 8.45 million.

The database of 445,000 trips indicates a roughly equal distribution of transportation and per diem costs for a typical TDY. (In general, transportation expenses will be a larger fraction of TDY trip costs for short-duration and longer-distance trips. Per-diem expenses will form a larger fraction of total trip costs for longer-duration travel. The DTS data indicate a typical DoD TDY is about 4 days, but extended trips approach 1 year on average. For those longer-duration trips, rental car expenses begin to rival air/rail/bus transportation expenses.) Thus, if we assume that 50 percent of TDY trip costs on average are for transportation, we can conclude that DoD spends about \$3.65 billion per year on TDY transportation. (We have found no data that would support an estimate of PCS transportation costs.)

Airfare is likely to be the largest fraction of the transportation category for TDY travel. The DTS limited sample from January 2007 indicates 88.6 percent of PNRs involve an air

---

<sup>11</sup> *Financial Summary Tables*, Office of Secretary of Defense (Comptroller), February 2007.  
[http://www.defenselink.mil/comptroller/defbudget/fy2008/fy2008\\_summary\\_tables\\_whole.pdf](http://www.defenselink.mil/comptroller/defbudget/fy2008/fy2008_summary_tables_whole.pdf)

<sup>12</sup> Although little data are available, most CONUS PCS travel is believed to be by privately-owned vehicles.

<sup>13</sup> Only the directly-funded accounts breakout PCS travel; however, we believe the amount of PCS travel in the reimbursable accounts is small.

<sup>14</sup> Vouchers filed in the period October–December 2006.



reservation. Applying this fraction to the total TDY trips that make a reservation (3.3 million), we estimate about 2.9 million TDY trips per year using airlines. If we assume a reasonable range of 60 to 75 percent (backed up with some rough calculations based on data from NGMS) for the fraction of TDY costs attributable to airfares and use the TDY transportation costs of \$3.65 billion derived above, we can estimate a cost range of \$2.2–\$2.7 billion per year for DoD TDY airline travel. We also estimated the number of PCS trips involving commercial air travel at about 248,000 with a cost of about \$184 million, based on FY2006 budget data,<sup>16</sup> so the total DoD commercial airline bill per year is estimated in the range of \$2.4–\$2.9 billion.

#### **D. HISTORICAL DTS COSTS**

The development and operation of DTS is a fixed cost of DoD travel within the DoD financial infrastructure, determined each year.<sup>17</sup> Prior to DTS, a travel section within a local or regional accounting and finance office handled travel financing and accounting. Its work included not only voucher computation and auditing, but disbursement and accounting to ensure adequate control over appropriated funds. DTS fundamentally altered that process.

DTS development expenses through the end of FY 2006 total at least \$134 million within the research, development, test, and evaluation (RDT&E) appropriation. The O&M appropriation includes expenses for the DTS Program Office but may include other development-related expenses. Identified annual historical costs are shown in the Table C-2.<sup>18</sup>

---

<sup>15</sup> The data are stated in terms of PCS “moves” for military members and dependents. It appears from the explanatory materials that the number of moves basically equals the number of trips.

<sup>16</sup> The budget data break out the active-duty PCS commercial (and military) air travel costs but not the costs by privately owned vehicles, which is the most likely method for CONUS PCS travel. That breakout was not available for the Reserve components, so their trip data were estimated by using the percentage using commercial air and cost per trip computed with the Active component data.

<sup>17</sup> Each year the contractor’s compensation is determined based on the projected usage for the upcoming budget year. Costs are then apportioned to each DoD component based on its projected usage.

<sup>18</sup> Other numbers have been used in testimony. The estimated value of the original DTS contract was \$264 million. The approved acquisition program baseline through FY 2007 is \$564 million. The \$433.1 million represents the amount spent by PMO-DTS through FY 2006.

**Table C-2. DTS Historical Funding by Fiscal Year**

Appropriation	DTS Funding (Then Year \$ million)									
	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	Total
RDT&E, Defense Wide	NA	0	0	9.0	19.1	30.4	30.5	25.7	19.6	134.3
O&M, Defense Wide	20.3	22.4	14.7	42.9	65.7	58.2	37.4	23.2	14.0	298.8
Total	20.3	22.4	14.7	51.9	84.8	88.6	67.9	48.9	33.6	433.1

Source: DoD Washington HQ Services (WHS) Budget Justification Books; RDT&E Program Element 0605124D8Z.

Although DTS began its development under the sponsorship of the DoD Comptroller to improve the effectiveness of the DoD financial management systems, including voucher processing, it seems reasonably clear that the primary objective of the DTS development at the beginning was to capture all travel information relevant to the financial system with auditable precision. This includes airline ticket purchases, travel advances, etc. Another key objective was the capability to match travel fund commitments and obligations with travel pay disbursement. The inability to do so has been a chronic problem traditionally within DoD. DTS seems to be making important contributions in these areas. DTS sought to automate travel authorizations and planning as a means to achieve more effective travel voucher processing.

#### **E. COMMERCIAL TRAVEL OFFICE (CTO) FEES**

We have outlined the issues around CTO fees and their interrelationship with other transportation costs. In this section we will more specifically detail the nature of the CTO relationship with DTS, and the range of fees charged by CTO for travel services both with and without the use of DTS. The job of a CTO is to either make or check trip reservations, and at the appropriate time (3 days before departure) purchase the tickets. Reservations made through DTS are placed in the servicing CTO's queue in the GDS that it uses. The CTO retrieves those reservations and verifies their accuracy. If any leg of the trip does not have a valid reservation, the CTO will make it. If the CTO makes no changes to the trip, the transaction is called "no touch"; otherwise, it is called "partially touched." If the CTO books the entire trip, that is called "full service." Normally, but not in all cases, the CTO fee depends on the touch level.

Today, there is little if any rationality to the fees in the myriad CTO contracts now in place with the various DoD components. Some contracts are fixed price and are determined

annually based on projected usage (Navy). In one Army contract, the CTO gets a *higher* fee for DTS-booked transactions than for full-service bookings! Others have only one fixed fee, while for others there is an elaborate schedule.

When DTS is installed at a site, it undertakes a relationship with the servicing CTO, which becomes the ticketing agent for reservations made by DTS on the GDS used by the CTO. As ticketing agents, CTOs are issued a reporting code by the Airline Reporting Corporation that allows the airlines to identify who writes tickets for their flights and aids the ticket payment process. The local CTO also maintains the capacity for nonroutine travel planning and reservations.

The fees for these CTO services vary significantly. In the past, CTO contracts were separately awarded by the Military Departments on a regional basis. One Military Department, the Air Force, chose to award its contracts to small businesses. Individual Services negotiated different fee structures. The Department of Navy negotiated a fixed-fee contract with its CTO, while the Army and Air Force negotiated fee-for-service arrangements. A long-time goal of DoD travel management has been to standardize CTO contracts. With its establishment in 2006, the DTMO was assigned oversight responsibility for all DoD CTO contracts. As a result, DTMO is rationalizing the fee structures for new contracts. In 2005, contracts were initiated with 31 small business CTOs, and recently a request for proposal (RFP) was released for worldwide CTO contracts. They are seeking to qualify CTO bidders and reduce the total number of contracts. Once qualified, bidders will compete for the award of task orders with elements of the individual DoD components.

The process of CTO contract standardization is not yet complete. However, existing contracts cited above, that are under DTMO management, illustrate the range of costs for CTO services with and without use of DTS. Those contracts will offer fully automated electronic booking and ticketing for about \$7.50, while less-than-fully-automated services are expected to be in the range of \$20–\$23.<sup>19</sup> The cost reduction through use of an automated travel reservation system like DTS represents a potential cost savings to the DoD, provided the electronic transaction is sufficiently brief to justify the traveler's use. This point is discussed in greater detail elsewhere in the appendix. Fees in 31 small-business contracts awarded last year are shown in Table C-3.

---

<sup>19</sup> Based on DTMO estimates. Existing contracts not under DTMO management have fees reported to range up to \$40 per transaction.

**Table C-3. Contracted (2006) Small Business CTO Service Fees**

Type of CTO Service	Range
Full service travel planning & ticketing	\$10.11–\$22.95
Partially automated electronic transaction fees	\$8.11–\$18.00
Fully automated electronic transaction fees	\$4.23–\$10

Source: DTMO

Considering the information from these contracts and based on discussions with DTMO personnel, we have used CTO fees of \$7.50 for automated (“no-touch”) reservations and \$21.50 for “touched” reservations in our evaluation of alternatives.

#### **F. FEDERAL TRAVEL POLICY, THE CITY-PAIR PROGRAM, AND UNRESTRICTED AIRFARES**

DoD travel policy, and therefore the DTS reservation process, operates within a larger set of travel policies for the entire federal government. Travel policy regulates the choices for transportation by directing transportation modes and routing that are in the best interest of the government while making accommodations for the government traveler’s time, comfort, safety, and service. As we discussed earlier, airline tickets are almost certainly over 50 percent of the costs of DoD travel transportation, and may be as high as 75 percent. For this reason, the following discussion focuses exclusively on air travel.

A central element of government air travel policy is the GSA Contract City-Pair (CCP) Program. Following airline deregulation in the 1970s, DoD and the federal government pay reduced commercial airline ticket fees for government travelers on official business. These CCP fees are negotiated by the GSA in consultation with all federal agencies. These reduced fees are for unrestricted, fully refundable tickets that give the government traveler great freedom in travel planning. Seat availability permitting, a government traveler can obtain the same fare immediately prior to boarding a commercial aircraft as the same traveler could obtain 30 days prior to travel. For FY 2007, the GSA has established fees with a competitively selected domestic air carrier for domestic and international flights between 4,900 unique city pairs.

The unrestricted fares of the CCP Program differ from popular, usually lower-cost, restricted fares that cannot be canceled or changed without penalty. Popular consumer-oriented websites such as Expedia, Orbitz, and Travelocity specialize in restricted-fare airline tickets. The

CCP program is also very different from the fee structure available to corporate business travelers, who are probably the class of travelers most analogous to government travel. Although the US government is reported to represent only about 2.2 percent of the total market for commercial air travel (DoD is about half of that total.),<sup>20</sup> the federal government represents the largest single organization purchasing commercial flights. Its size allows the federal government to negotiate city-pair fares that are generally lower than comparable corporate fares. An additional benefit of the CCP program for DoD is that GSA requires participating airlines to also participate in the DoD Civil Reserve Air Fleet program, which makes commercial aircraft available for DoD use in declared national emergencies.

In return for these favorable unrestricted airfares, the US government establishes a general requirement for its travelers to use the negotiated city-pair contracts when it is consistent with the goals of their official travel. In that way airlines are assured they will receive most of the government travel on a specified route. However, the government traveler can select a fare lower than the city-pair fare if it is offered to the public and consistent with the travel objective. (If, however, the contract carrier offers a “*comparable*” fare <sup>21</sup> the contract carrier must be selected.)

When available and applicable to travel objectives, the city-pair fares represent cost ceilings that the federal traveler should not exceed. Where a city-pair fare does not exist for a particular route, the travel regulations are silent as to how fares should be selected. They do, however, specify that a CTO must be used, and the CTO is charged with choosing the lowest-cost fares consistent with mission and reasonable convenience to the traveler (local policies may come into play in that regard). So an automated travel reservation process should be evaluated on its ability to produce comparable results.

## **G. DTS AND FINDING THE LOWEST COST, UNRESTRICTED FARE**

It has been claimed that DTS is an inferior travel reservation process relative to an experienced travel agent. There is evidence to indicate that this accusation was true prior to the implementation of the Reservation Refresh version. Some of the explanation of the problem involves accessing airline flight inventory and pricing data. At any given time, around 90,000 flights are available to satisfy the needs of the government traveler. These flights, schedules, fare classes, and fares are constantly changing. From this dynamic set of inventory, a travel agent or automated reservation process assembles the combination of flights that will satisfy mission

---

<sup>20</sup> Based on discussions with GSA.

<sup>21</sup> “Comparable” is used in the JFTR/JTR (Change 240/493, 12/01/06, Appendix P1, p. P1-2).

requirements. The inventory access issue is created by the uneven presentation of flights in the various GDSs.

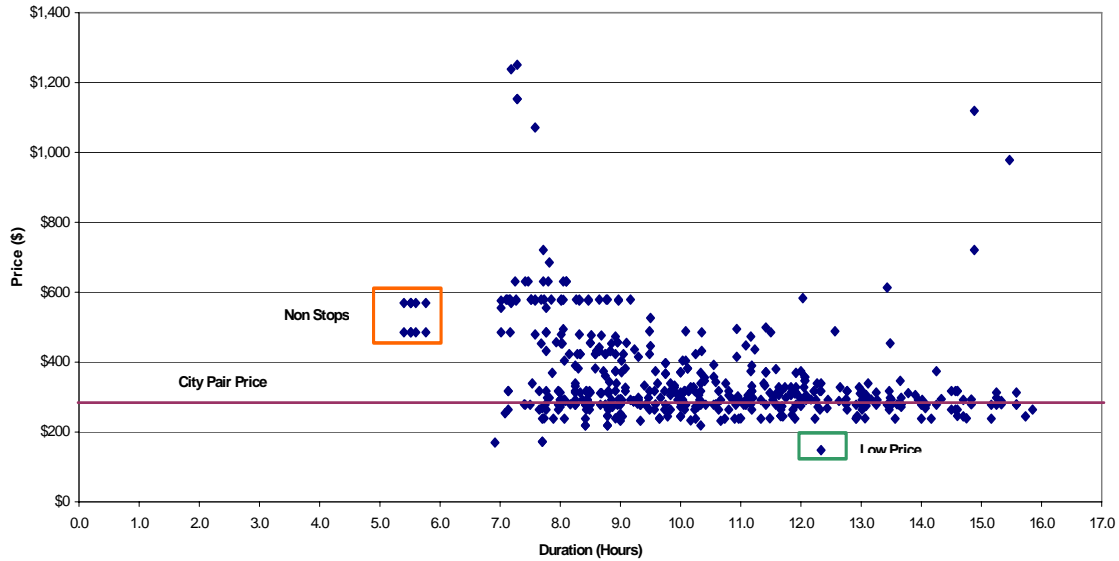
GDSs operate a marketplace for identifying and selecting air travel. They carry the flight inventories that the airlines choose to provide them. Historically, commercial air carriers have paid fees to the GDSs to list their available flights. In turn, travel agents, including the DoD CTOs, have subscribed to specific GDSs to gain access to airline flight inventory. Each GDS has a different listing of flights, and the differences may be increasing because airlines are attempting to limit their expenses. Some airlines, such as Southwest and Air Tran, both offering city-pair fares, list their flights on only one GDS. Others, such as Spirit, apparently do not list flights on any GDS, nor do they offer city-pair fares.

The process is also affected by the complexities of searching for lowest-cost, policy-compliant air travel as outlined above. One difficulty is the association of DoD duty locations with the set of relevant commercially serviced airports. This association remains incomplete even in the most recent testing of DTS.<sup>22</sup> For a given origin or destination of official travel, the inability to identify candidate commercial airports inhibits the process of finding the lowest-cost, unrestricted, policy-compliant ticket. Another difficulty is the limited search capability inherent in GDSs. DTS from its earliest development was designed to operate in concert with the local CTO. Until recently, DTS at a given site and DoD organization used the GDS associated with the CTO that had been awarded travel contract services for that organization to search for low-cost fares.

Figure C-1 illustrates the problem of choosing among more than 500 flights on a given route, with varying characteristics of price and duration. These data provide insight into the relationship between trip duration and fares. The lowest-cost fare has trip duration of over 12 hours, but two flights are available at only slightly higher fares with trip durations of 7 to 8 hours. This demonstrates the importance of not using lowest cost as the *only* discriminator for choosing a flight. It is also interesting that the city-pair fare competes very favorably with all but the very lowest fares, which are undoubtedly restricted.

---

<sup>22</sup> See the results of Army Test and Evaluation Command (ATEC) System Assessment of the DTS Reservation Refresh release.



Source Extracted from www.itasoftware.com

**Figure C-1. Airline Price and Flight Duration Choices – Atlanta to Seattle, Thursday, March 3, 007 (Observed 2/18/2007)**

The Reservation Refresh version of DTS uses an airline flight “shopping” engine that may better address some of these issues within DTS. This engine does not use GDS data; rather, it obtains flight inventory from the Airline Tariff and Publishing Company (ATPCO) database, as well as other ancillary databases, to produce a database that is alleged to be more complete than any GDS. It also employs a sophisticated mathematical algorithm for finding flight possibilities. The new approach appears to solve many of the general issues of constructing multi-leg travel between an origin and destinations, of accessing different inventories maintained in separate GDSs, and of dealing with the uneven offering of flight inventories to the GDSs by the airlines. The study explored the effectiveness of the new approach and concluded that it significantly improves the DTS travel reservation process. There is reason to believe it will improve DTS performance in finding low-cost, policy-compliant fares.

**Appendix D**  
**TYPES OF DoD TRAVEL MISSION REQUIREMENTS**

Type / Circumstance of Travel	Applicable Regulation	Can DTS support processing? (as of 24 Oct 2006)
<i>Current DTS Functionality</i>		
Routine (Business) Temporary Duty (TDY) Travel, to include travel for schoolhouse training	Appendix O, JTR/JFTR	Yes
Local Travel	JFTR, Chap 3; JTR, Chap 2	Yes
TDY on Other Organization's Funds	Service Policy	Yes
Emergency Travel while TDY	JFTR, Chap 7; JTR, Chap 6	Yes
Invitational Travel (non DoD personnel must have profile created by DTA)	JFTR/JTR, Appendix E	Yes
Travel using Multiple Accounting Stations	Service Policy	Yes
Group Travel, Phase 1 (no reservations)	JFTR, Chap 7; DoD 4500.9-R	Yes
Reimbursement for Recruiting Expenses	JFTR, Chap 7	Yes (local travel)
Personal Leave with Official Travel, Phase 1 (partially implemented - no, if POC travel and LV > 400 mi. from PDS)	Appendix O, JTR/JFTR	Yes (see note 1)
Group Travel, Phase 2 (reservations via DTS e-mail to CTO - delivered with Monroe)	JFTR, Chap 7; DoD 4500.9-R	Yes
Personal Leave with Official Travel, Phase 2 (delivered with Monroe)	JFTR, Chap 4; JTR, Chap 4	Yes (see note 1)
Constructed Travel	Appendix O, JTR/JFTR	Yes



<b>Type / Circumstance of Travel</b>	<b>Applicable Regulation</b>	<b>Can DTS support processing? (as of 24 Oct 2006)</b>
Reimbursement for Lodging while on leave	JFTR, Chap 7	Yes (see note 2)
Military Lodging	Appendix O, JTR/JFTR	Yes (arranged outside of DTS)
Transportation billed to a CBA	Service Policy	Yes, Air or Rail only
<i>Travel Under Special Circumstances and Categories (Military Members)</i>		
Travel of Cadets and Midshipmen	JFTR, Chap 7	No (see note 4)
Travel of Uniformed Services Applicants and Rejected Applications	JFTR, Chap 7	Yes, via MEPS function
Travel of Couriers (TDY)	JFTR, Chap 7	Yes (see note 2)
Travel of Witnesses - DoD and non-DoD	JFTR, Chap 7	Yes (see note 2)
Travel While on Duty with Particular Units	JFTR, Chap 7	Based on Circumstances (see note 3)
Member assigned TDY as observers to UN Peacekeeping Organizations	JFTR, Chap 7	No (see note 4)
Travel of Reserve/Guard Personnel	Appendix O and JFTR, Chap 7	No (except for NROWS I/E)
Travel of Senior ROTC (SROTC) Members	JFTR, Chap 7	No (see note 4)
Travel of Retired Members called/ordered to Active Duty	JFTR, Chap 7	No (see note 4)
Travel of Reserve Members authorized Medical/Dental Care	JFTR, Chap 7	No (see note 4)
Travel for Leave between Consecutive Overseas Tours (COT)	JFTR, Chap 7	No (PCS related entitlements)

<b>Type / Circumstance of Travel</b>	<b>Applicable Regulation</b>	<b>Can DTS support processing? (as of 24 Oct 2006)</b>
Transportation in Personal Emergencies	JFTR, Chap 7	TBD (see note 5)
Funded Environmental and Morale Leave Transportation	JFTR, Chap 7	TBD (see note 5)
Convalescent Leave Transportation	JFTR, Chap 7	TBD (see note 5)
Ship relocated during Authorized Absence	JFTR, Chap 7	Yes (see note 2)
Recall to Duty from Leave	JFTR, Chap 7	Yes (see note 2)
Travel of Attendants/Escorts in conjunction with Physical Examination or Illness	JFTR, Chap 7	No (see note 4)
Members on TDRL required to submit to Periodic Physical Examination	JFTR, Chap 7	No (see note 4)
Travel for Patients to/from Medical Facilities or to Home	JFTR, Chap 7	No (see note 4)
Rest & Recuperation (R&R) and Special Rest & Recuperation (SR&R) Absence Transportation	JFTR, Chap 7	TBD (see note 5)
Travel of member to receive a Non-Federally Sponsored Honor Award	JFTR, Chap 7	Yes (see note 2)
Travel of Members whose Enlistment is Voided	JFTR, Chap 7	No (PCS related entitlements)
Travel for Absentees, Stragglers, or other members without funds	JFTR, Chap 7	No (PCS related entitlements)
Travel for Disciplinary Action (to include Prisoners and their Guards)	JFTR, Chap 7	No (see note 4)

<b>Type / Circumstance of Travel</b>	<b>Applicable Regulation</b>	<b>Can DTS support processing? (as of 24 Oct 2006)</b>
Transportation for Members Discharged under Other than Honorable Conditions	JFTR, Chap 7	TBD (see note 6)
Travel of Escorts and Attendants of Dependents	JFTR, Chap 7	Yes (see note 2)
Travel and Transportation when Accompanying Members of Congress and Congressional Staff	JFTR, Chap 7	No (see note 4)
Members authorized to train for, attend, and participate in Armed Forces, National/International Amateur Competitions	JFTR, Chap 7	Yes (see note 2)
Travel Allowances to Specialty Care over 100 miles	JFTR, Chap 7	No (see note 7)
Travel Allowances for Defense Personnel of Developing Countries	JFTR, Chap 7	Yes (see note 2)
Travel and Transportation Allowances - Coalition Liaison Officers	JFTR, Chap 7	Yes (see note 2)
<i>Travel Under Special Circumstances (Civilian Employees)</i>		
Death Cases or Missing Persons, Allowable Expenses	JTR, Chap 6	n/a (refers to surviving dependent travel)
Civilian Escorts and Attendants	JTR, Chap 6	Yes (see note 2)
Pre-Employment Interview Travel	JTR, Chap 6	Yes (see note 2)
Repatriation Transportation	JTR, Chap 6	n/a (employee bares the cost)
Travel of Auxiliary Chaplains	JTR, Chap 6	Yes (see note 2)

<b>Type / Circumstance of Travel</b>	<b>Applicable Regulation</b>	<b>Can DTS support processing? (as of 24 Oct 2006)</b>
Emergency Travel and Transportation	JTR, Chap 6	No (PCS related entitlements)
Travel and Transportation when Accompanying Members of Congress and Congressional Staff	JTR, Chap 6	No (see note 4)
Additional expenses incurred by an Employee with a Disability	JTR, Chap 6	No (see note 4)
Employee Travel for Healthcare (to include attendants and escorts of employee)	JTR, Chap 6	No (see note 4)
Family Visitation Travel	JTR, Chap 6	TBD (see note 5)
Emergency Visitation Travel	JTR, Chap 6	TBD (see note 5)
Funded Environmental and Morale Leave Transportation	JTR, Chap 6	TBD (see note 5)
Rest & Recuperation (R&R) Leave Travel	JTR, Chap 6	TBD (see note 5)
Civilian family member of a seriously ill or injured member	JTR, Chap 6	Yes (see note 2)
<i>Other</i>		
Permanent Change of Station Travel	JTR, Chap 4; JFTR, Chap 5	No
Civilian Witness Travel	JTR, Chap 4	Yes (see note 2)
Juror Travel	JTR, Chap 4	n/a (no authorization is issued)
Travel of an employee serving as a Labor Organization Representative	JTR, Chap 4	Yes (see note 2)
Travel of employee to receive a Non-Federally Sponsored Honor Award	JTR, Chap 4	Yes (see note 2)

Type / Circumstance of Travel	Applicable Regulation	Can DTS support processing? (as of 24 Oct 2006)
Dependent Student Transportation	JTR, Chap 7; JFTR, Chap 5	No
Evacuation Allowances Travel	JTR, Chap 12; JFTR, Chap 6	No
Renewal Agreement Travel	JTR, Chap 5	Yes, current DTS trip type
Travel when GTR used as method of payment	Service Policy	Yes, see note 8
Travel when AMC airlift utilized	Service Policy	Yes, see note 8
Deployment Travel	Appendix O, JTR/JFTR	No (see note 9)
Bus travel charged to a CBA	Service Policy	No
Premium Class Travel	Appendix O, JTR/JFTR	Yes, but approval outside of DTS

Note (applies to all travel) If funding is 'bulk obligated' (rather than obligated under each specific authorization), all obligations and payments must be done outside of DTS. Because DTS submits obligation transactions upon AO approval, this would result in double obligations. DTS could be used in a "Arrangements Only" capacity for these types of travel.

Note 1 DFAS DTS certification imposes this restriction, but even if leave location is > 400 mile, can be processed in DTS - but correct allowable travel time must be verified to ensure correct reimbursement.

Note 2 Normal TDY travel allowances, Appendix O does not list as exception. Should be "Routine TDY" trip type.

Note 3 Normal TDY travel allowances apply, but travel is permitted "without specific travel orders" for mobile units (can travel on flight orders for example).

Note 4 Appendix O directs use of JFTR, Chapter 7, which refers to JFTR, Chapter 4. Chapter 4 allowances are, at times, different than Appendix O allowances.

Note 5 Transportation only (if authorized); DTS could be used to make arrangements only.

Note 6 Typically authorized transportation in-kind only (and usually a bus ticket); if bus ticket charged to CBA, cannot use DTS.

Note 7 Applies to retirees and dependents only who are enrolled in TRICARE Prime.

Note 8 GTR and/or AMC airlift obligations and processing must be outside of DTS

Note 9 DTS could support some Deployment Travel for active duty members under very limited scenarios, such as travel from the PDS to the deployed site and return to the PDS only that is obligated under each specific authorization. It typically cannot support deployment travel that might include other travel while in a deployed status or deployment travel that is funded using both locally and centrally managed funding and obligation processes. Consult your Service/Agency DTS Program Office for more detailed instructions.

## **Appendix E**

### **GLOSSARY**

ACAT	Acquisition Category
ACTS/RTS	Automated Computation Travel System/Reserve Travel System
ADA	Anti-Deficiency Act
ADM	Acquisition Decision Memorandum
AO	Authorizing Official
ARC	Airline Reporting Corporation
ASD(C3I)	Assistant Secretary of Defense for Command, Control, Communications, and Intelligence
ATEC	Army Test and Evaluation Command
ATO	Authority to Operate
ATOS	Automated Travel Order System
ATPCO	Airline Tariff and Publishing Company
ATRS	Army Training Reservation System
BTA	Business Transformation Agency
CAC	Common Access Card
CBCA	Civilian Board of Contract Appeals
CCP	Contract City Pair
CEFMS	Corps of Engineers Financial Management System
COI	Critical Operational Issues
CONUS	Continental United States
COTS	Commercial Off-the-Shelf
CR	Change Request
CTO	Commercial Travel Office
CTS	Corporate Travel System
DBSMC	Defense Business Systems Management Council
DFAS	Defense Finance and Accounting Service
DIFMS	Defense Industrial Financial Management System

DISA	Defense Information System Agency
DLA	Defense Logistics Agency
DoD IG	Department of Defense, Office of the Inspector General
DoD	Department of Defense
DSSR	Department of State Standardized Regulations for Government Civilians in Foreign Areas
DTIB	Defense Travel Improvement Board
DTMO	Defense Travel Management Office
DTPS	Defense Transportation Payment System
DTS	Defense Travel System
DTSC	Defense Travel Steering Committee
EFT	Electronic Funds Transfer
ETS	GSA eTravel System
ETS	Existing Travel System
FAST	Federal Automated System for Travel
FEMA	Federal Emergency Management Agency
FRD	Functional Requirements Document
FTR	Federal Travel Regulation
FY	Fiscal year
GDS	Global Distribution System (e.g. Sabre, Apollo/Galileo, Worldspan, Amadeus)
GENUS	Generic User Software
GEX	Global Exchange Service
GNE	Global Distribution System New Entrants (“Genie”)
GSA	General Services Administration
GSBCA	GSA Board of Contract Appeals
IATO	Interim Authority to Operate
IDA	Institute for Defense Analysis
ITO	Invitational Travel Orders
IER	Information Exchange Requirement
ITO	Invitational Travel Orders
JFTR	Joint Federal Travel Regulations
JROC	Joint Requirements Oversight Council

JTR	Joint Travel Regulations
KPP	Key Performance Parameters
MCTFS	Marine Corps Total Force System
MEPS	Military Entrance Processing Station
MID	Management Information Directive
MMAS	Manpower Mobilization Assignment System
MS C	Milestone C
MSC	Military Sealift Command
MTMC	Military Traffic Management Command
NADEP	Naval Aviation Depot
NAVFAC	Naval Facilities Engineering Command
NEAMIS	NAVFAC Enterprise Administrative Management Information System
NERP	Navy Enterprise Resource Plan
NGB	National Guard Bureau
NGMS	Northrop Grumman Mission Systems
NIPRNet	Non-secure Internet Protocol Router Network
NROWS	Navy Reserve Order Writing System
O&M	Operations and Maintenance
OCONUS	Outside the Continental United States
OLBE	Online Booking Engine (e.g. Travelocity, Orbitz)
OMB	Office of Management and Budget
OPM	Office of Personnel Management
ORD	Operational Requirements Document
OSD	Office of the Secretary of Defense
OSDGC	Office of the Secretary of Defense General Counsel
OUSD(AT&L)	Office of the Under Secretary of Defense, Acquisition, Technology and Logistics
PCS	Permanent Change of Station
PDTATAC	Per Diem, Travel, Transportation Allowance Committee
PKI	DoD Public Key Infrastructure
PMO	Program Management Office
PMO-DTS	Program Management Office - Defense Travel System



PNR	Passenger Name Record
PSC	Professional Software Consortium, Inc.
R&R	Rest and Recuperation
RA	Requirements Analyst
RDT&E	Research, Development, Test and Evaluation
RFP	Request for Proposal
RLAS	RSC Level Application Software
RMAS	Resource Management Automation System
ROICC	Resident Officer in Charge of Construction
ROWS	Reserve Order Writing System
RSC	Regional Support Command
RTS	Reserve Travel System
SABRS	Standard Accounting, Budgeting and Reporting System
SOA	Service-Oriented Architecture
SR&R	Special Rest and Recuperation
TCP/IP	Transmission Control Protocol/Internet Protocol
TDY	Temporary Duty
TEMP	Test and Evaluation Master Plan
TOPS	Travel Order Processing System
TRAVEL	Travel Requests
TWIG	Travel Improvement Working Group
USAEUR	US Army Europe
USD(AT&L)	Under Secretary of Defense for Acquisition, Technology, and Logistics
USD(Comptroller)	Under Secretary of Defense (Comptroller)
USD(P&R)	Under Secretary of Defense (Personnel and Readiness)
USG	Usability Working Group
USMC	United States Marine Corps
USTRANSCOM	United States Transportation Command
WinATOS	Windows Automated Travel Order System Afloat and Ashore
WINIATS	Windows Integrated Automated Travel System