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COMPARATIVE FUNCTIONAL ANALYSIS OF AIR FORCE AND COMMERCIALLY AVAILABLE TRANSPORTATION INFORMATION MANAGEMENT SYSTEMS

THESIS

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AFIT/GLM/ENS/04-05

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Wright-Patterson Air Force Base, Ohio

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AFIT/GLM/ENS/04-05

COMPARATIVE FUNCTIONAL ANALYSIS OF AIR FORCE AND COMMERCIALLY AVAILABLE TRANSPORTATION INFORMATION MANAGEMENT SYSTEMS

THESIS

Presented to the Faculty

Department of Operational Sciences

Graduate School of Engineering and Management

Air Force Institute of Technology

Air University

Air Education and Training Command

In Partial Fulfillment of the Requirements for the

Degree of Master of Science in Operations Research

Patrick S. Holland, BS

Captain, USAF

March 2004

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AFIT/GLM/ENS/04-05

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Abstract

The Air Force currently relies on two transportation information management systems for managing cargo and passenger movements throughout the Defense Transportation System. The two systems are Global Air Transportation Execution System (GATES) and Cargo Movement Operations System (CMOS). Although GATES and CMOS have evolved from legacy systems created during the 1980s, both systems are used to process cargo and passengers while providing the information needed to maintain in-transit visibility (ITV) and manage each movement.

In 1994 the Department of Defense issued a memo that emphasized the use of commercial-off-the-shelf (COTS) products because of the private sector's ability to maintain a competitive edge and provide better technology for integrating information systems. Since the events of September 11th 2001, the DoD has reemphasized the need to transform their warfighting capabilities in making them flexible and adaptive enough to meet future challenges. In response, DoD has increasingly used COTS software to replace their stove-piped legacy systems that have been difficult to integrate with other information systems and provide the information needed for key decision making.

The purpose of this research is to identify commercially available logistics software packages and determine whether they provide the same functionality as the two Air Force information systems currently employed. Using a case study methodology, the researcher collected information on logistics software provided by SAP, Oracle, and PeopleSoft. A gap analysis was then conducted to identify the percentage of similarity

between the Air Force and commercial systems. The results of the research show SAP having the highest percentage of similarity with each of the Air Force systems followed by Oracle and then PeopleSoft.

In Loving Memory of Howard P. Holland
"Pap"

Acknowledgments

"*I will lift up my eyes to the hills -where does my help come from? My help comes from the Lord, the Maker of heaven and earth" (Psalm 121:1-2).*

First and foremost, I praise God for the strength, wisdom, and endurance that He has blessed me with during my time at AFIT. For without Him, none of this research would be possible.

I express my sincere gratitude and appreciation to Major Kirk A. Patterson for serving as my thesis advisor. He gave me the freedom to discover on my own the meaning of the word "research". I am also indebted for the countless hours he spent guiding me throughout the thesis process as well as his patience and encouragement.

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Most importantly, I want to thank my wife for her continuous love and support while I worked to complete this masters program. I know there were many times when I had to sacrifice spending time with her in order to meet a deadline. Honey, you were right! It is worth it in the end!

Patrick S. Holland

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COMPARATIVE FUNCTIONAL ANALYSIS OF AIR FORCE AND COMMERCIALLY AVAILABLE TRANSPORTATION INFORMATION MANAGEMENT SYSTEMS

I. Introduction

Overview

Lessons learned from Operations Desert Shield and Desert Storm highlighted the need for improved visibility of assets moving through the Defense Transportation System (DTS) (Office of the Inspector General, 2001:i). During the Gulf War, military officials realized there was a problem when over 40,000 containers of supplies were shipped to the Persian Gulf and nobody could identify what was inside each container or who the containers belonged too. The only way they solved this problem was by opening and inventorying each container. When the war ended, the U.S. military still had 8,000 containers that remained unopened and contents unaccounted for (Hodierne, 2003:16).

Because of the "visibility problem", thousands of duplicate requisitions were placed by the warfighters just to ensure they had items needed to accomplish daily operations (Office of the Inspector General, 2001:i). These requisitions slowed down the logistics pipeline and eventually caused a congestion of backlogged cargo at the stateside aerial ports (Heath, 2002:14; Snyder and Smith, 1997:18). These problems further added to the frustration of not being able to account for assets within the theater of operations. Since

then the Department of Defense (DoD) has explored ways of enhancing and improving in-transit visibility (ITV) on all cargo that moves through the DTS.

Although the DoD has made great strides in improving ITV since the days of Operation Desert Storm, the defense department continues to struggle with providing efficient and effective ITV to the warfighters. One of the major challenges during Operation Iraqi Freedom was integrating the use of several technologies such as satellite tracking and radio frequency identification tags to try to give warfighters a detailed picture of their cargo status. Military planners realized that each technology, used individually, worked fine. However, the biggest challenge was finding ways to incorporate the technologies and data into one cohesive tool that could be used for planning and decision making (Hodierne, 2003:16).

Trying to integrate data from various logistics information systems is one of the reasons why human intervention is still required to achieve successful ITV. For example, during the onset of Operation Enduring Freedom (OEF), Air Force Material Command stood up the CONUS Distribution Management Cell (CDMC) to react to the needs of the warfighter by providing them with "single-stop service to locate, divert, expedite and provide visibility for any mission-critical cargo shipped in support of Operation Enduring Freedom" (Michno, 2002:11).

Problem Statement

Since the events of September 11th, 2001, the DoD has reemphasized the need to transform their warfighting capabilities in making them flexible and adaptive enough to meet future challenges (Department of Defense, 2003b:1). However, the problem is the

DoD has to rely on the use of stove-piped legacy systems that lack data integration making it difficult to provide the information needed for the decision maker (Handy, 2003:32). In response, DoD has increasingly used COTS software to replace their stove-piped legacy systems that have been difficult to integrate with other information systems and provide the information needed for key decision making (Department of Defense, 2004a). The purpose of this research is to determine whether commercial logistics software packages are capable of providing the same functionality as CMOS and GATES.

Research Question

How does commercial logistics software packages compare to the Air Force's transportation information management systems in being able to provide the same functionality required to achieve in-transit visibility?

Investigative Questions

1. What logistics software packages are commercially available?
2. What are the similarities between commercial software packages and the Air Force's transportation information management systems?
3. What commercial software package best aligns with CMOS, GATES, and an Air Force combined system?

Scope and Limitations of Research

This research effort focuses on comparing three commercial logistics software packages to the Air Force transportation information management systems only. The

selection of the commercial packages was based on the percentage of revenue market share for ERP software applications (Gartner, 2003). Additionally, corporate partnerships were not considered part of the study. Therefore, the data analysis consisted of only the software functionality provided by the company. Throughout the course of this study, several limitations have been noted that could have either introduced bias or limited the scope of research. The six research limitations are:

1. Researcher only compared CMOS and GATES functions to the commercial software packages.
2. The 290 transportation functions identified as the baseline for the study are only a snapshot in time.
3. Research did not address if any additional software was required before implementing or using any of the three commercial software packages.
4. Researcher did not observe the use of either the Air Force or commercial systems within an operating work environment.
5. Functionality interpretation acted as a hindrance in trying to match CMOS and GATES functions to commercial software packages.
6. Due to the proprietary nature of commercial products, searching for software functionality specifics was hard to obtain.

Methodology

A qualitative methodology was chosen along with a case study strategy as the research design. The researcher chose the number of cases (commercial software packages) based on the percentage of revenue market share for ERP software applications (Gartner, 2003). Relying primarily on documents and interviews, data was collected on the software functionality provided by each vendor. In order to properly conduct the

analysis, the researcher had to state two assumptions. A gap analysis was then used to compare the similarities between commercial and Air Force systems.

Summary

The purpose of this chapter was to provide an introduction for the research contained in this study. The researcher began by giving a brief overview on the visibility problems experienced during Operation Desert Shield/Desert Storm, Operation Enduring Freedom, and Operation Iraqi Freedom. Next, a problem statement was identified followed by the research and investigative questions used to guide the study. In addition, the scope of the research was narrowed and several limitations were stated that the researcher encountered during the course of the study. Finally, the research methodology was outlined stating the strategy used to guide the data collection and analysis.

II. Literature Review

Background

According to Matthews and Holt (1996), Desert Shield/Desert Storm is considered one of the largest deployments in U.S. history (1996:12). From 7 Aug 1990 until 10 Mar 1991, the U.S. military moved 504,000 passengers and 9.7 million tons of cargo and petroleum products (Matthews and Holt, 1996:12). The deployment of troops and equipment occurred very quickly and items were being shipped to Saudi Arabia's ports without proper cargo markings and in some cases having no documentation accompany the shipments (Heath, 2002:14).

The United States military realized they had an asset visibility problem when 40,000 containers of supplies were shipped to Southwest Asia and nobody could readily identify the container contents or whom the containers belonged too. Military personnel had to physically open, inventory, and reseal more than 20,000 containers so that they could determine the proper disposition of the items (United States General Accounting Office, 1999:1; Hodierne, 2003:16; Horsey 2003:1; USTRANSCOM, 2000). This process took a considerable amount of labor and time to perform. To compound the problem further, if the warfighters did not receive their equipment in a certain amount of time, then they would reorder the same items in order to make sure they had the tools and equipment to accomplish their mission (Caterinicchia, 2003a; Hodierne, 2003:16).

By the time the war had ended, 8,000 of those same containers were left unopened. Some of the items were spare parts worth $2.7 billion (Caterinicchia, 2003a; Hodierne, 2003). This lack of cargo visibility caused many end-users much concern as well as countless man-hours spent tracking down cargo (Cirafici, 1995:80). It also prompted the DoD to refocus efforts on implementing Total Asset Visibility (TAV) so equipment, supplies, spare parts, and requisitions could be tracked on a continuous basis (United States General Accounting Office, 1999:1; Jackson, 2002).

The purpose of this chapter is to identify the literature reviewed in preparing to conduct this study. Specifically, this chapter will discuss the following areas: Total Asset Visibility (TAV), In-transit Visibility and United States Transportation Command, Private Sector's use of ITV, Air Force Transportation Management Systems, and DoD's emphasis on Commercial-Off-The-Shelf (COTS) technology.

Total Asset Visibility

The DoD defines Total Asset Visibility (TAV) as:

> The capability to provide users with timely and accurate information on the location, movement, status, and identity of units, personnel, equipment, materials, and supplies. It also includes the capability to act upon that information to improve overall performance of the Department of Defense's logistics practices (Department of Defense, 1996:1-1; Department of Defense, 2003a:539). TAV is based on two very important factors: military readiness and logistics support costs (Department of Defense, 1996:iii).

Why is TAV important to the U.S. military? TAV is a key enabler that provides service branches and support agencies across the DoD with real-time information to make operational decisions (Chairman of the Joint Chiefs of Staff, 2000:24).

Although the lost visibility of cargo during Desert Storm caused the DoD to reemphasize TAV, the concept really began in 1972 under the Logistics Systems Plan (United States General Accounting Office, 1999:31) This plan attempted to "eliminate inventory duplication and establish a common use of inventories wherever operationally acceptable and economically beneficial" (United States General Accounting Office, 1999:31). Unfortunately, the Logistics System Plan did not make the target completion date of 1980. The target completion date also slipped again for the next version, DoD Total Asset Visibility Plan (1992) that was originally scheduled to be completed by 1995. The objective of this plan was to "provide managers the capability to have access to and act on timely and accurate information about the location, quantity, condition, movement, and status of DoD material assets" (United States General Accounting Office, 1999:31). Currently, under the FY2000 DoD Logistics Strategic Plan (1999), the deadline for 100% joint TAV across all of DoD is set for full implementation by the end of fiscal year 2006 (Department of Defense, 2003a:12).

TAV is made up of four requirements. The four requirements are requisition tracking, in-storage, in-process, and in-transit. The Defense Total Asset Visibility plan describes each requirement as the following: (Department of Defense, 1996:1-2 to 3-1)

- Requisition tracking: tracking the status of requisitions placed with organic or commercial sources of supply; this normally occurs from the time a customer places an order and the product is retrieved from storage for transportation
- In-storage*:* assets that are being stored at retail and wholesale inventory organic or commercial sites, and at disposal activities
- In-process: assets on order from DoD vendors, but not yet shipped, or in repair at intermediate- and depot-level organic or commercial maintenance facilities

- In-transit: assets that are being shipped from origin (i.e. vendors, storage activities, or maintenance facilities) to destination (i.e. using units, storage activities, or maintenance facilities)

The diagram in Figure 1 represents an overall view of TAV. As noted in the Defense Total Asset Visibility Implementation Plan (1996), "Achieving TAV is an enormous undertaking, one that involves all logistics disciplines and DoD components" (1996:iii). Having visibility each of these areas is critical to achieving TAV. Not having this visibility could result in losing track of military assets and being unable to give combatant commanders or logistics planners the information they need to make key decisions.

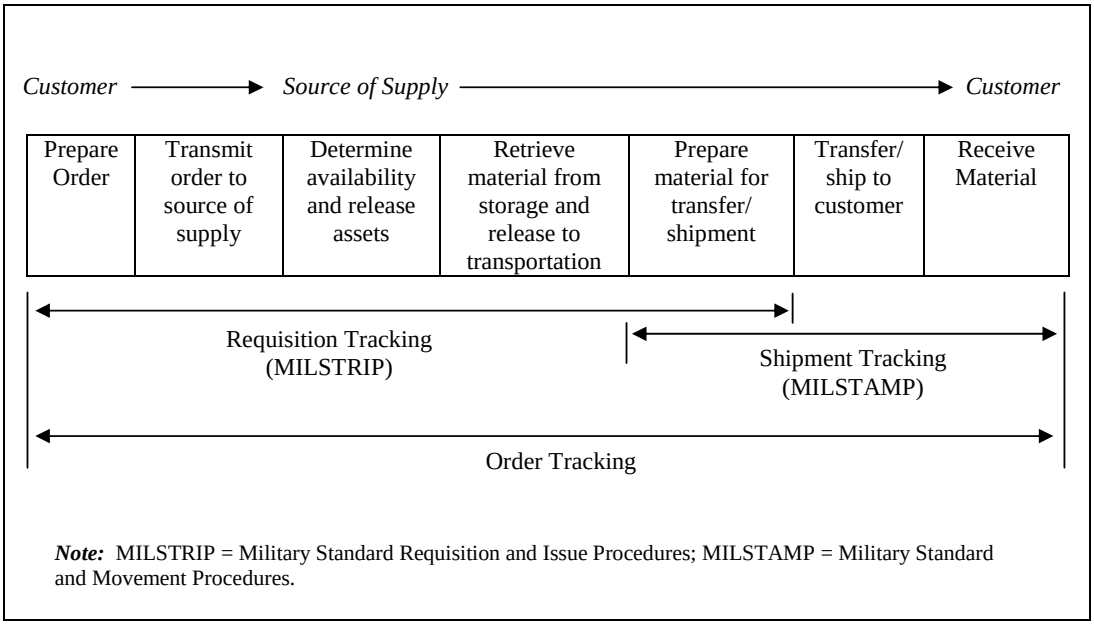

Figure 1. Diagram Representing TAV (Department of Defense, 1996:3-1)

Without this capability in the future, military readiness and mission effectiveness could be degraded (Department of Defense, 1996:iii). The reason this did not degrade mission effectiveness during Desert Shield/Desert Storm is that the military had 161 days to get ready for combat operations (Snyder and Smith, 1997:28). Future conflicts may not allow the military to take this much time again.

Once the assets arrive in theater, then they become part of the joint task force logistics management and fall under the Joint Total Asset Visibility (JTAV) Strategic Plan (Department of Defense, 1996:v). The only difference between TAV and JTAV is JTAV consolidates all of the source data (e.g. national stock number, required delivery date) from a variety of joint and service automated information systems to provide the joint force commanders with visibility of their assets (Department of Defense, 2003:291).

By capturing this information, the joint community hopes to "provide a capability that, in harmony with other DoD initiatives, facilitates improvements in the performance of DoD logistics practices" (Department of Defense, 1999:iii). JTAV is also essential in supporting the capability of Focused Logistics that makes up part of the Chairman of the Joint Chief of Staff's goal of Full Spectrum Dominance. JTAV supports the CJCS' goal by providing users with timely information that allows them to see the status of troop and equipment movements (Department of Defense, 1999:iii). Focused Logistics provides military capability by ensuring that the logistics community meets the needs of the warfighter (Chairman of the Joint Chiefs of Staff, 2000:2).

In-transit Visibility and United States Transportation Command

ITV is defined as:

> The ability to track the identity, status, and location of Department of Defense units, and non-unit cargo (excluding bulk petroleum, oil, and lubricants) and passengers; patients; and personal property from origin to consignee or destination across the range of military operations (Department of Defense, 2003a:272).

For the past eight years, the Office of the Secretary of Defense (OSD) has emphasized to each of the service branches about the importance of improving their ITV capability (Jackson, 2002). Just as TAV is an integral part of Focused Logistics, ITV is information that is essential in allowing commanders, planners, and operators to make the correct decisions (Department of Defense, 2000:2-16). In addition, ITV allows everyone to see the status and location of personnel, material, and airlift assets (Department of Defense, 2000:2-16).

ITV has been difficult to achieve due to the service branches' logistics information systems evolving from stove-pipe development. The reason for the difficulty is that not all of DoD's systems were designed to provide "all-encompassing views of all the assets on hand or nearby, especially if those resources were outside the original purview of those systems" (Jackson, 2002). In addition, as Miller (1996) noted during his research of the ITV process, "The source data for the ITV system is captured as a by-product of daily business operations" (1996:46). This information is then used to process passengers and cargo as well as provide updates to other information systems, such as the Global Transportation Network (GTN) with the latest movement information (Miller, 1996:46). Since these systems rely on the ITV information being generated from the

originating system, then it is crucial that source data is accurately processed into the system the first time (Young, 1996:14). Otherwise, when it comes time to rely on the data being pulled from the system (e.g. looking up shipment status), users will receive inaccurate information (Wolford, 1996:16).

The agency primarily responsible for executing ITV is the United States Transportation Command (USTRANSCOM) located at Scott Air Force Base in Illinois. USTRANSCOM's mission is "to provide global air, land, and sea transportation for the Department of Defense (DoD) in peace and war" (USTRANSCOM, 2003:18).

In order to coordinate mission requirements worldwide, USTRANSCOM relies on its three component commands: Air Mobility Command (AMC) also located at Scott Air Force Base, Illinois; Military Sealift Command (MSC) located in Washington D.C.; and Military Surface Deployment and Distribution Command (MSDDC) (*formerly known as Military Traffic Management Command (MTMC)* located at Alexandria, Virginia (USTRANSCOM News Service, 2003a). AMC's primary mission is to provide "rapid, global mobility and sustainment for America's armed forces" (Defense Transportation Journal, 2003:20). Although AMC is poised for wartime, the command also supports the nation's Homeland Defense and humanitarian operations by providing airlift and air refueling capabilities (Defense Transportation Journal, 2003:30; Air Mobility Command, 2004).

MSC's mission is "to provide ocean transportation equipment, fuel, supplies, and ammunition to sustain U.S. forces worldwide during peacetime and in war for as long as operational requirements dictate" (Military Sealift Command, 2004). During wartime, MSC is responsible for moving 95% of all the equipment and supplies needed to sustain

the warfighters (Military Sealift Command, 2004). MSC also performs the role as contracting authority in obtaining ocean transportation services for several government agencies. For example, MSC currently maintains an operation and maintenance contract for two survey ships used by the Environmental Protection Agency (Defense Transportation Journal, 2003:21).

The mission of MSDDC is to "provide global surface deployment command and control and distribution operations to meet National Security objectives in peace and war" (Surface Deployment and Distribution Command, 2004a). As of 1 January 2004, MTMC's name was officially changed to MSDDC in order to truly reflect the organization's mission and increased emphasis on end-to-end distribution operations (TRANSLOG, 2003:6). During the past couple of years, MTMC transformed its role as traffic manager to the single entity in charge of all surface distribution, rail, commercial trucks, and ocean transportation (Harps, 2003:78). This move helps out their customers by having all surface and sealift requirements filter through one organization (TRANSLOG, 2003:7).

Besides managing end-to-end distribution, MSDDC is still responsible for movement of combat units, sustainment cargo, service member household goods, and privately owned vehicles (TRANSLOG, 2003:6). MSDDC also serves as port management for ship loading/unloading operations at 25 locations worldwide (Surface Deployment and Distribution Command, 2004b). As the port manager, MSDDC is also responsible for pre-deployment planning, terminal service contracting, documentation, cargo stow planning, and customs clearance (Harps, 2003:79). If need be, MSDDC also

has the capability to establish port operations anywhere in the world (Surface Deployment and Distribution Command, 2004b).

On 16 September 2003, the Secretary of Defense designated USTRANSCOM as the Distribution Process Owner (DPO) making them the single agency responsible for the strategic distribution system (USTRANSCOM, 2004b). Under their expanded role, USTRANSCOM is responsible for improving "the overall efficiency and interoperability of distribution related activities--deployment, sustainment, and redeployment during peace and war" (USTRANSCOM, 2004b). Specifically, USTRANSCOM plans to improve efficiencies in the following areas:

- Eliminate existing seams between current distribution processes and standardize the policies, vision and performance goals in the DoD's supply chain.
- Drive interoperable information technology solutions and enhance total asset visibility to distribution customers.
- Institutionalize sustainment planning into contingency processes.
- Streamline distribution accountability under a single combatant commander (USTRANSCOM, 2003k)

USTRANSCOM's designation as the DPO also makes it a historical event (USTRANSCOM, 2003j). The reason it is historic is because prior to the command becoming the DPO, the DoD did not have a single agency or command solely responsible for making sure that the distribution system met the warfighter's needs (Ross, 2003). If problems did occur then the warfighters did not have a single voice to turn for help. This event makes it the first time in DoD that a subordinate organization has authority over the distribution system (USTRANSCOM, 2003j).

The immediate challenge facing USTRANSCOM is finding a way of making the distribution system more "reliable, flexible, and responsive to the warfighting customer's needs" (Ross, 2003). As a start in trying to improve the distribution pipeline, USTRANSCOM created the Deployment and Distribution Operations Center (DDOC) (USTRANSCOM, 2003j). The DDOC is a deployable logistics team that falls under the control of the combatant commander within a theater of operations. As an extension of USTRANSCOM, the DDOC is authorized "to direct air and seaport operations and cross-country moves in the theater" (USTRANSCOM, 2003j).

Another area USTRANSCOM is focusing a lot of attention on is how to better utilize information technology (IT). Although USTRANSCOM is known for overseeing DoD transportation and now the entire distribution system, USTRANSCOM really considers itself more of an "IT organization" (Melcer, 2003:B1). According to General John W. Handy, Commander of USTRANSCOM, "Information technology is central to our mission as the planes, trains, trucks and ships that support our warfighters every day around the globe. If information doesn't move, we don't move" (Handy, 2002:30). USTRANSCOM's goal is to develop a logistics system that looks into the supply chain and provides complete visibility for the warfighter (Sample, 2003; USTRANSCOM, 2004d)

One of the hurdles the command is trying to overcome in improving their information technology is in dealing with legacy computer systems. These systems are considered stove-piped systems because they lack data integration making it difficult to provide information needed for decision making (Handy, 2002:32). The other problem with legacy systems is that the data is tied to specific computer applications. This makes

it difficult for the users to manipulate or change the data because in order to do so, they would have to reprogram the application (Handy, 2002:32).

With the renewed focus of combating the Global War on Terrorism (GWT), USTRANSCOM has continually emphasized that their IT systems must be flexible and able to support military operations (Handy, 2002:30). During OEF, USTRANSCOM developed collaboration tools that allowed the combatant commanders to integrate and share information with each other (Handy, 2002:32). The three tools are the Transportation Common Operational Picture (TCOP), Force Protection Condition (FPC) Tool, and Force Movement Tracker (FMT) (Handy, 2002:32). The TCOP is a graphical tool that enabled users to visually see airlift and sealift movement across the globe. The system also provides a drill down capability that allows users to see the cargo onboard each aircraft or ocean vessel (Handy, 2002:32). FPC is a web-based tool that provides users with force protection information from airports and seaports along integrating data from any airlift and/or sealift mission activity occurring at the time (Handy, 2002:32). Users could then take the information and create a comprehensive report in a matter of seconds instead of requiring half of a day preparation because of all the manual processes involved (Handy, 2002:32). Last, the FMT tool provides combatant commanders with a way to identify and track major movements into airfields within their area of responsibility. If a unit missed their scheduled arrival or departure dates, the system would automatically identify other missions that could be used to transport them to their final destination (Handy, 2002:32). In the end, USTRANSCOM credited this tool in saving "man-hours previously needed to retrieve and highlight requirements for priority air flow" (Handy, 2002:32, 34).

In USTRANSCOM's most recent effort to improve IT, the command is creating the concept of Agile Transportation for the 21st Century (AT21), an Advanced Concept Technology Demonstration (ACTD) (DISA, 2004a). The objective of ACTD is to focus on "identifying, exploring, and fostering advanced synergistic technologies with an 'end-to-end' systems perspective of transportation and sustainment processes" (Ballesteros, 2003; DISA, 2004a). Utilizing commercial off-the-shelf technology, AT21 will center on building databases, optimization, and collaboration technologies in an effort to provide near real-time information for the warfighter (DISA, 2004b; Handy, 2002:34). One of AT21's objectives is to have new delivery schedules created within 10 minutes of receiving a movement request from the customer (Vantran, 2003). By consolidating movement requests into a centralized database, USTRANSCOM hopes to improve reliability and visibility in moving troops and sustainment support throughout the distribution system (Vantran, 2003).

As part of AT21, USTRANSCOM's Joint Mobility Operations Center is in the process of implementing a commercial software program called Transportation Visibility (TransViz) (Patterson, 2003). TransViz enables users to collaborate on passenger and equipment movement requirements by allowing each user to view the same data, but in a format that suits their specific needs (Patterson, 2003). For example, an Army unit will see the number of trucks and equipment requiring airlift. On the other hand, USTRANSCOM logisticians will be able to view the same information except that it has been converted into short tons and square footage for load planning purposes. If someone makes a change to the data, then everyone is able to view the latest update (Patterson, 2003).

Global Transportation Network (GTN)

The Global Transportation Network (GTN) is USTRANSCOM's customer-focused automated information system that provides near real-time ITV for all cargo shipped throughout the DTS (Heath, 2002:14; USTRANSCOM, 2003h). Since its inception, with the first prototype testing in August of 1989, GTN has evolved from a software-installed application into a web-based ITV tool capable of being accessed by anyone who has a valid need and has received permission to use the system (Department of Defense, 2000:3-3; Heath, 2002:16; USTRANSCOM, 2003i). GTN has more than 6,000 registered users, receives on the average 2,500 queries daily, and is capable of processing 3 million data transactions per day (Heath, 2002:14; Kennedy, 2003:10).

GTN's strength comes from its ability to operate in a shared data environment and receive transportation data from 25 government and 50 commercial logistics information systems in order to provide ITV to its customers (Department of Defense, 1999:4-8; Heath, 2002:16; Kennedy, 2003:10). This system gives USTRANSCOM the ability to monitor, divert or reroute cargo as required (Heath, 2002:14). The information collected by GTN also supports users at all levels of the DoD and some commercial carriers with their planning and decision making (USTRANSCOM, 2003h). Authorized GTN users are able to access a myriad of information such as cargo on-hand reports, mission schedules, passenger information, requisition statuses, etc. Figure 2 and 3 represent a couple of typical screen shots that users might see when accessing GTN.
This information can then be used by the organization to aid in their planning and decision-making (USTRANSCOM, 2003h).

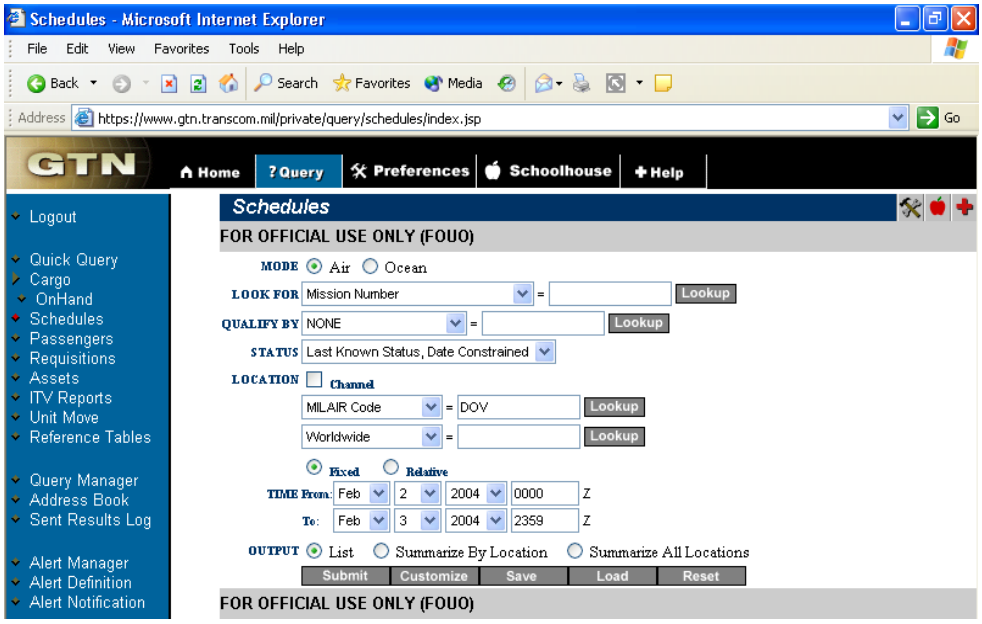

Figure 2. Screen Shot of GTN's Schedules Query (USTRANSCOM, 2004)

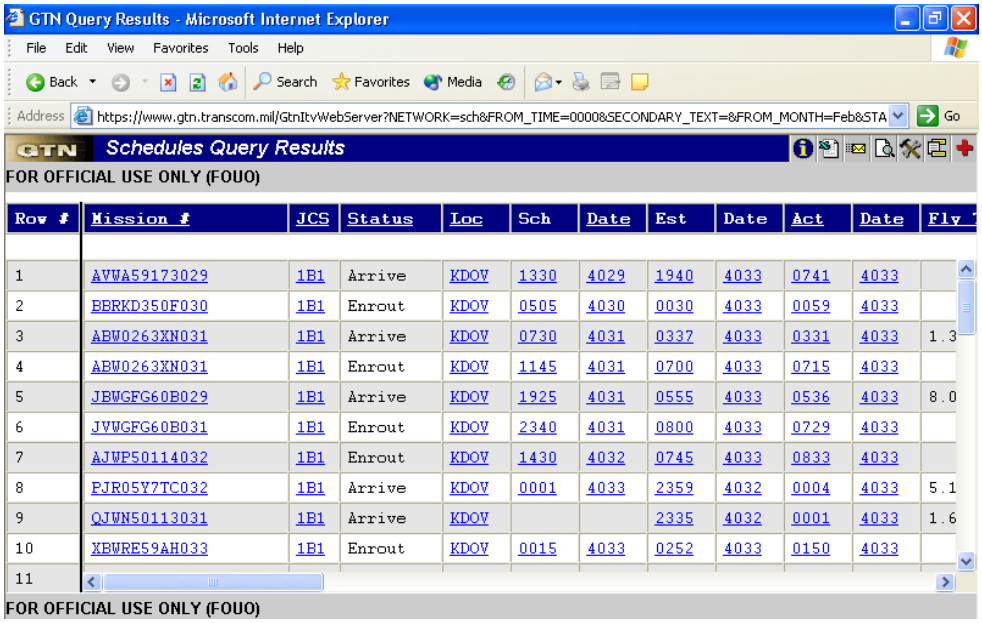

Figure 3. Screen Shot of GTN's Schedules Query Results (USTRANSCOM, 2004)

Figure 4 represents the various information systems that feed data into the GTN system. A description for each of the interface systems can be found in Appendix A.

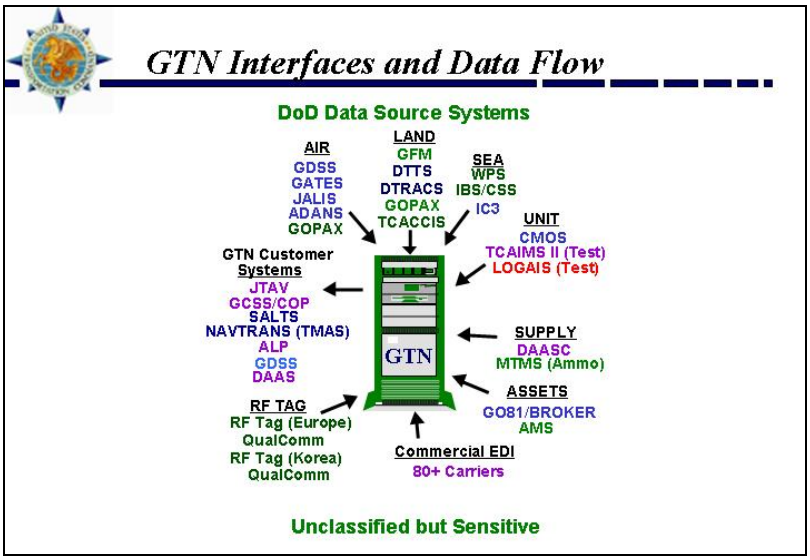

Figure 4. GTN Interfaces and Data Flow (USTRANSCOM, 2003g)

Next Generation GTN (GTN 21)

Since the terrorist attacks on September 11 2001, the military's response to the GWT has resulted in an increased usage of GTN. End-users went from 40,000 to 120,000 per month, stressing the system beyond its original design capacities (Kennedy, 2003:9). USTRANSCOM is currently acquiring a new transportation information system, known as GTN 21. The goal of GTN21 is to have one integrated database that links information systems from the service branches, defense agencies, and commercial carriers. USTRANSCOM is also trying to link GTN 21 to other transportation information systems operated throughout DoD (Caterinicchia, 2002a). For example, the Air Force's Cargo Movement Operations System (CMOS) has established a link with

both the GTN system and Global Decision Support System (GDSS) (Caterinicchia, 2002b). CMOS program office wanted to enhance their users' ability to see which aircraft contains their cargo as well as the mission itinerary so that they will know exactly when and where to expect the arrival of their cargo (Caterinicchia, 2002b).

On 26 September 2002, USTRANSCOM awarded Northrop Grumman Information Technology a $204.4 million contract for the GTN 21 development (Caterinicchia, 2002a; Kennedy, 2003). Some of the enhanced capabilities of GTN 21 are as follows:

1. Able to process up to 7.2 million data transactions per day.
2. User-tailor able application feature that allows the warfighter to select only the data fields that specific applies to their mission.
3. Improved command and control with an active data warehouse that stores data up to two years instead of the 90-day limitation.
4. Capable of supporting over 20 customer application systems and multiple command post exercises being conducted simultaneously.

Initial Operational Capability is scheduled for December 2004 with Full Operational Capability set for 2006 (Kennedy, 2003:9).

During the past eight years, ITV has been the subject of many research papers and articles. Although the U.S. military made several improvements with ITV since the Gulf War, problems still occur that have hindered DoD's ability to achieve 100% visibility. Some of those problems are input errors, lack of policy and guidance, inadequate training, lack of a communication infrastructure, and lack of data standardization between service branches (Miller, 1996:23; Wolford 1996:38, 42; Young, 1996:16-19, 27, 29, 30; Cirrincione, 1997:5; Horsey, 2003:121).

To try to get a handle on what specific problems were plaguing ITV, Young (1996) broke down the causes of ITV errors into three areas: human errors, communication errors, and data standardization errors (Young, 1996:14, 21, 24, 30). The human errors consisted of ones that were classified as either intentional or unintentional. Intentional errors are incorrect entries that a user knowingly makes while inputting data into a computer system (Determan, 1991:3; Young, 1996:16). As noted by Young (1996), these errors could be attributed to lack of integrity/discipline, lack of feedback, or motivation/morale (Young, 1996:17).

Unintentional errors are error that a user unknowingly introduces into a computer system. Young's research also addresses the issue that these types of errors are probably more common than intentional errors and that they are hard to trace back to the original input source (Young, 1996: 19).

Next, Young (1996) investigated the causes of communication errors. His research identified that vertical and horizontal disconnects as well as a lack of adequate communication infrastructure were the primary causes of data inaccuracy (Young, 1996:29). Vertical disconnects were the ones that "occur between the joint planning system used to plan the required movement of assets and the Defense Transportation System (DTS), which is responsible for the actual assets movement" (Young, 1996:24). The problem is that both systems are not linked to each other, causing many users to receive inaccurate data (Young, 1996:24).

According to Young (1996), "Horizontal disconnects occur because of the difficulty associated with trying to get all of the specialized systems of the DTS to communicate with each other" (Young, 1996:25). If these systems are not fully integrated, then end-

users could experience inaccurate and duplicated data. This disconnect is one of the reasons for creating GTN (Young, 1996:25). As previously mentioned, GTN solved this problem by establishing interfaces with government and commercial transportation information systems in order to obtain the data needed to achieve ITV (USTRANSCOM, 2003h).

Young also noted that the lack of adequate communication infrastructure was due to not spending enough money on communication (Young, 1996:27). The issue being addressed was that data transfer capability requires "big pipes" (e.g. networks) for the information to flow through. The only way to fix this problem was by investing more money into the communication infrastructure (Young 1996:27). In fact, DoD still faces this same issue today. In a recent article from GovExec.com (2003), it was reported that, "the Air Force requested $439 million for an advanced wideband system, but the House cut that to $289 million." The Air Force wanted the money so they could invest in satellite laser communications and internet protocols to improve the communication infrastructure (New, 2003).

Finally, Young's research looked at the problems that contributed to data standardization errors. At the time, Young noted, "the current lack of an overall operating policy is a cause factor for the GTN data inaccuracy" (Young, 1996: 30). His research also discovered that the training personnel received on data standards was not consistent across each of the service branches. Therefore, each service personnel learned how to perform the data input processes differently (Young, 1996:30). In addition to the problems with training, Young also noted the information systems that feed GTN would accept input in any format. The example he used was for identifying a C-5 aircraft. GTN

would recognize “00C5” as the only correct format, yet users inputted either “C5” or “c-5” into their information system (Young, 1996: 30-31).

Data standardization is still a problem that the DoD is dealing with today. In the GTN Update Newsletter (2003) published by the GTN Outreach Program Office, the article “ITV and You” continues to emphasize the need to ensure that the right data is inputted into a user’s information system (USTRANSCOM, 2003e:1). The article stresses that the automated systems will be unable to match the user’s data with other known data if the information is entered incorrectly (USTRANSCOM, 2003e:2). The article also points out that this could result in operational plans being based on bad data or worse, users not trusting the system and falling back into old habits, such as reordering more items than needed (USTRANSCOM, 2003e).

In addition to Young’s research on data inaccuracy, Wolford (1996) discovered some of the same problems with data standardization as Young, such as human interface issues, electronic data interchange (EDI) transaction set standards, and non-standardized transportation procedures (Wolford, 1996:39-40, 42). In addressing the human interface issues, Wolford looked at a sampling of ITV error rates and noted aerial ports that process cargo on a daily basis are experiencing a high operator error rate with inputting information into the system (Wolford, 1996:39). Some of the problems noted were invalid wing/group and squadron designators, incorrect aircraft type designators, attempts to add existing information already in the system, invalid aircraft tail numbers, invalid International Civil Aviation Organization (ICAO) codes, and invalid tasked unit designators (Wolford, 1996:40).

At the time of Wolford's research, EDI transaction set standards were a problem for users who wanted their information systems to exchange data between other systems. Everyone had to ensure the information being sent was in a uniform standard (Wolford, 1996:40). Although some problems might still exist with EDI transactions, it appears that communication interfaces can be easily established between various logistics information systems. For example, USTRANSCOM's GTN system currently has 105 different commercial carriers that feed data into the system (USTRANSCOM, 2003c).

Wolford's research also addressed the fact that USTRANSCOM took steps to try to solve the "lack of policy and guidance" by consolidating 38 publications into one publication known as the Defense Transportation Regulation (DTR). The DTRs were divided into four parts: passenger, cargo, mobility, and personal property (Wolford, 1996:42-43). Each part addresses movement and standardization issues during both peacetime and contingency operations. However, in a study conducted by the Air Force Inspection Agency (AFIA) (2002) on the problems preventing successful ITV implementation, the inspectors noted "The ITV process was not fully effective" and several improvements were required in the following areas: policy/guidance and processes/systems (Air Force Inspection Agency, 2002:1-2).

Miller's (1996) research looked at how GTN captures ITV source data. Although his study addressed some of the same issues Young and Wolford, Miller also looked at the level of detail required for packages/containers and Bill of Lading (Miller, 1996:25, 28). One of the biggest issues noted from his research is that military and commercial carriers require different "levels of detail" of ITV for the contents they are shipping. Commercial carriers are only concerned with the location of the cargo and are not

required to know the contents of the packages being shipped. On the other hand, the military wants to have detailed line item contents for every shipment (Wykle and Wolfe, 1993:9).

Even within the military community, some organizations require different levels of detail for ITV. During Operation Iraqi Freedom (OIF), one of the things military planners tried to do was understand the needs of the warfighter. Specifically, they were looking at the warfighters' tactical level needs (Hodierne, 2003:16). This level of detail is currently outlined in the *Joint Operation Planning and Execution System (JOPES) Volume 1 (Planning Policies and Procedures)*. JOPES breaks these levels down into the following six categories (Joint Staff, 2000:GL33-34):

- Level I: Aggregated level
- Level II: Summary level
- Level III: Detail by cargo category
- Level IV: Detail expressed as number of passengers and individual dimensional data
- Level V: Detail by priority of shipment
- Level VI: Detail expressed for passenger by name and SSAN and for cargo by National Stock Number (NSN)

(Note: Please see Appendix B for a complete description for the levels of detail)

The latest ITV research was conducted by Horsey in 2003. The purpose of his study was to look for "best practices" from commercial industry on ways the Air Force could improve ITV as well as identify gaps between industry and existing Air Force processes (Horsey, 2003:x). Much like the previous researchers (Miller, 1996; Wolford,

1996; and Young 1996), Horsey also discovered that the current ITV process contained many potential sources of error, such as manual entries, manual selection of cargo increments in the ITV system, lack of ITV data follow up, and little incentive for the airlift crew to ensure ITV (Horsey, 2003:121).

Horsey also noted three other research findings that were not covered in the previous ITV studies. First, the Air Force does not identify a single responsible agent for the ITV process (Horsey, 2003:121). He noted that while AFI 10-403, *Deployment Planning and Execution*, assigns roles and responsibilities to all levels of command, nothing is specifically stated in the regulations about who is responsible for ensuring ITV. Instead, the responsibility is implied by having specific procedures assigned (Horsey, 2003:121).

However, with the recent changes at USTRANSCOM, this issue might not be much of a concern anymore. On September 16, 2003, the Secretary of Defense designated USTRANSCOM as the Distribution Process Owner (DPO) making them the single agency responsible for the strategic distribution system (USTRANSCOM, 2004b). Under their new designation, USTRANSCOM is also responsible for improving "the overall efficiency and interoperability of distribution related activities--deployment, sustainment, and redeployment support during peace and war" (USTRANSCOM, 2004b).

Next, Horsey interviewed leaders from the commercial logistics industry and identified the gaps between industry and Air Force processes. The gaps that were identified are system architecture, operational processes, and policy and guidance (Horsey, 2003:122-123).

System Architecture

Under system architecture, Horsey's (2003) research identified a couple of areas for improvement. First, Air Force shipments are currently tracked at the item level instead of using a "hierarchy of control numbers" (Horsey, 2003:122). Although his research primarily focused on ITV within the deployment process, Horsey (2003) proposed that the Air Force's logistics information systems, such as the Logistics Module (LOGMOD), should be linked to the Defense Logistics Information Service (DLIS) (Horsey, 2003:125). DLIS is a database that contains 7.5 million national stock numbered items and other supply items used and managed by the DoD. DLIS ensures that any database updates are sent out to all their customers at every level (Horsey, 2003:125). Horsey (2003) also recommended investigating whether tracking cargo by aircraft based on association is better than tracking cargo at the item level (Horsey, 2003:125 to 126).

Second, Horsey's research noted that the Air Force could make better use of automation within the ITV process (Horsey, 2003:122). One of the areas highlighted for improvement was in how cargo is selected for aircraft load plans. Instead of the load planner having to manually sort through a list of cargo increments and then select the appropriate ones, an electronic interface could be established that automatically assigns cargo increments to an airlift mission based on an aircraft's designated load plan (Horsey, 2003:125). In turn, the automatic selection would help eliminate load-planning errors, such as missing a cargo increment or selecting the wrong one (Horsey, 2003:125).

In addition to automated load planning, Horsey (2003) recommended establishing automatic alerts that would notify managers of pending problems within the ITV process (Horsey, 2003:122). This would be considered "management by exception" and help

leadership focus their efforts on where problems are likely to occur (Horsey, 2003:125; Montgomery et al, 2002:10). In fact, in a report published by Montgomery, Holcomb, and Manrodt (2002) for top managers in the commercial logistics industry, "exception based alerting" has become part of an organization's daily operations (Montgomery et al, 2002:10).

Operational ITV Processes

Horsey (2003) then focused on the gaps that dealt with the operational ITV processes. His research noted that the Air Force does not conduct mobility exercises that focus specifically on ITV and information transmission nor is ITV discussed at Wing Battle Staff (Horsey, 2003:122 to 123). Just because the cargo might move successfully through the DTS does not guarantee that the electronic information will do the same thing. AFIA (2002) confirmed this notion during their 2002 Eagle Look Inspection by stating, "Personnelists, transporters, and logistics planners communicated their frustration with the multitude of Air Force functional systems and joint systems needed to maintain ITV. The systems fail to interface efficiently resulting in phone calls, e-mails, and spreadsheets in an attempt to establish ITV" (Air Force Inspection Agency, 2002:15-16). This issue also relates to his next finding that the Air Force primarily focuses on the physical process of moving items through the DTS instead of emphasizing ITV throughout all levels of command (Horsey, 2003:122). Horsey (2003) recommended conducting more exercises that target the ITV process and establish deployment reporting procedures that include the ITV status for wing leadership (Horsey, 2003:125).

His research also discovered that the Air Force process owners do not enforce compliance with shipment tracking. Furthermore, the Air Force does not administer

disciplinary actions on its personnel if they cause an error to occur within the ITV process. (Horsey, 2003:123). Based on his research, Horsey recommended, "If a 'human error' prevents ITV, the person causing the error should be held accountable" (Horsey, 2003:126). Also, more emphasis should be placed on the unit commander and unit deployment manager for ensuring the quality of the ITV data (Horsey, 2003:126). In addition, he recommended using the "aircrew as a final check for ITV" meaning that aircraft does not depart for a mission until ITV has been confirmed for all manifested cargo and passengers (Horsey, 2003:126).

Policy and Guidance

The final gap that Horsey (2003) addressed is the need to develop specific guidelines for system deactivation that would apply to all Air Force installations (Horsey, 2003:123). This gap was also discovered during AFIA's ITV inspection when they noted, "Air Force policy and guidance fail to identify standard processes and systems" (Air Force Inspection Agency, 2002:15). The potential impact of not correcting this problem could result in duplication of effort among information systems, varied ITV results, and ineffective personnel at executing ITV (Air Force Inspection Agency, 2002:16).

According to Horsey's research, "The Air Force has working plans to deactivate non-mission critical systems. However, there are no specific guidelines for when to execute this plan" (Horsey, 2003:123). Therefore, he recommended establishing specific guidelines and including these guidelines in AFI 10-403 and Air Force communication and information instructions (33-series) (Horsey, 2003:127).

ITV in the Private Sector

Like the military, private sector also relies upon ITV to help manage daily operations as well as meet the needs of their customers (Montgomery et al, 2002:i). Except this time, instead of troops' lives being on the line, visibility can have a direct impact on a company's profitability (Carpenter, 2003). It is also important to note that both the military and private industry define ITV differently. The following are a couple of ways ITV is defined in the private sector:

> In-transit visibility: an information system, which tells shippers, carriers, and consignees at any time where and when shipments are picked up, present location, and where and when shipments will be delivered (Logisticsworld.com, 2003).
>
> Supply Chain Inventory Visibility: software applications that permit monitoring events across a supply chain. These systems track and trace inventory globally on a line-item level and notify the user of significant deviations from plans. Companies are provided with realistic estimates of when material will arrive (Vitasek, 2003).

Even though both the military and private sector ITV definitions sound the same, the biggest difference between the two is that the private sector definitions address "information systems and software" versus a "process or ability" (Department of Defense, 2003:272; Logisticsworld.com, 2003; Vitasek, 2003).

Supply Chain Visibility

Visibility continues to play a major role within supply chain management. In a study conducted by Montgomery, Holcomb, and Manrodt (2002), they identified six drivers that every logistics and supply chain organization should possess in order to be successful. The six drivers are collaboration, optimization, connectivity, execution, speed, and visibility (Montgomery et al, 2002:2). Out of the six drivers, the researchers

noted “visibility” as the most critical driver (Montgomery et al, 2002:3). According to their research, “Visibility is more than just a tactical supply chain issue; it has profound strategic implications for the entire organization” (Montgomery et al, 2002:3).

Similar to DoD’s goal of achieving TAV, this research described how visibility enhances supply chain event management (SCEM). According to Montgomery et al (2002), visibility acts as “the glue that binds the total business decision-support and technical processes to integrate the supply chain components, both within the business, and with external providers, suppliers, and customers” (2002:5). SCEM is broken down into two parts: reflective visibility and enhanced event management. Reflective visibility acts as “the foundation of SCEM” and provides near real-time information to the supply chain members (Montgomery et al, 2002:5). Enhanced event management builds on visibility by providing users with decision-support tools used to control the supply chain (Montgomery et al, 2002:5). The diagram in Figure 5 represents the components that make up SCEM. A description of each component can be found in Appendix C.

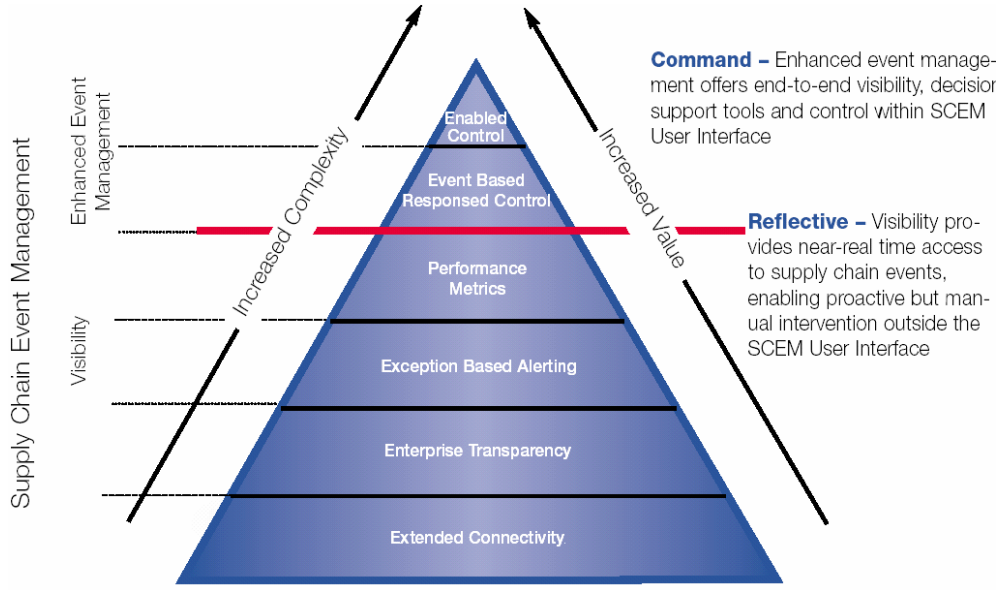

Figure 5. Diagram of SCEM (Montgomery et al, 2002:14)

Besides supply chain management, visibility is becoming increasingly important in other areas of the transportation industry. All of the transportation modes are relying on various types of visibility technology to improve the safety and security of their personnel and resources as well as enhance customer service (Coyle et al, 2000:186; Gallagher, 2002; RFID Journal, 2002; Saccomano, 2003; Sand, 2002).

First, trucking companies are using wireless communication and satellite tracking systems to provide ITV for freight and better communications for their drivers (Sand, 2002). This technology has also benefited the trucking companies' customers. Problems, such as poor weather or road conditions, can be communicated from the dispatch office to their customers. Once the customers receive this information, then they are able to make the necessary adjustments within their organization (Coyle et al, 2000:114).

Second, domestic water carriers are using radio frequency identification tags (RFID) and electronic seals (e-seals) to improve seaport and container security (RFID Journal, 2002; Saccomano, 2003). The biggest motivators for implementing this technology were the increasing threat of terrorists using weapons of mass destruction (WMD) against us (Saccomano, 2003). The RFID Journal (2002) referred to the world's three largest seaports, Hutchison-Whampoa, PSA Corp., and P&O Ports as "the most gaping holes in the domestic security of the United States." One of the security concerns is that more than 17,000 containers arrive at these ports and less than two percent are opened and inspected. Terrorists could take advantage of these "holes" by trying to smuggle WMD into the U.S (RFID Journal, 2002). In addition to the added security, RFID tags and e-seals can provide port personnel with origin, routing, and container contents information as well as identify the workers who prepared and certified the containers (Saccomano, 2003).

Third, railroads are continuing to rely more on technology in order to make themselves competitive with the other transportation modes (Coyle, 2000:142). The Terminal Railroad Association (TRRA) of St. Louis now offers its customers visibility of their railcars from origin to destination (Gallagher, 2003). Customers are able to see the railcars that are inbound to them as well as the inventory in each car. In the past, railcar visibility was lost as soon as it hit the terminal area and would not be visible to anyone until it came out the other side of the terminal. If somebody had a question about a particular railcar, they would have to call someone and have the railcar tracked down (Gallagher, 2003).

TRRA achieved railcar visibility by implementing a web-based transportation management system called RailConnect (Gallagher, 2003). This system contains three parts: transportation management, equipment management, and shipper interface (Gallagher, 2003). Transportation management is used to control the inventory and rail yard as well as provide management reporting to organizational leadership. Equipment management handles the finances by ensuring that car-hirers are paid quicker and more accurate. Finally, the shipper interface allows customers to transmit shipping instructions over the internet while trying to minimize billing errors (Gallagher, 2003).

Last, air carriers are constantly looking for new technology so that they can attract more business and stay ahead of their competitors (Coyle, 2000:186). Many of the major airlines, such as Northwest, Delta Air Lines, America West, Continental Airlines, and ATA, allow customers to check themselves in automatically (Arnoult, 2003:S19). Continental, in particular, is looking at creating individualized customer service on their website. Customers will also be able to access Continental's services by using wireless internet or self-service devices (Wejman, 2003:52).

Consumer Applications

Not only does visibility technology benefit the transportation industry, but consumers are recognizing the ease and use of this technology as well. Gasoline vendors are distributing "loyalty cards" to customers. These RFID cards allow customers to drive up to a gas pump and have instant credit authorization to pay for their purchases. In turn, these cards also allow businesses to capture valuable data, such as consumer buying patterns that can be used in guiding future business decisions (Jones, 1999).

Another use of RFID technology is giving motorists the ability to automatically pay their turnpike tolls without having to stop at a toll booth (Jones, 1999). The Pennsylvania Turnpike started their E-ZPass program on September 11, 2000 (PA Turnpike, 2003b). The turnpike's E-ZPass lanes are capable of processing 1,400 transactions per hour versus a standard lane that handles 250-350 transactions per hour (PA Turnpike, 2003a). Other states, such as Massachusetts, Maryland, Delaware, New York, New Jersey, and West Virginia, have joined the same program making travel easier between each state (PA Turnpike, 2003a).

This same technology for E-ZPass tags is also used to monitor road congestion. The San Antonio District of the Texas Department of Transportation developed the TransGuide web page that provides motorists with information about traffic conditions (e.g. accidents, congestion, and construction). Besides using RFID tags, TransGuide relies on the use of cameras, message signs, and fiber optics in order to provide motorists with the most current information. This information also improves emergency and accident responses for local police, fire, and emergency medical services personnel (TransGuide, 2003).

Air Force Transportation Information Management Systems

The Air Force primarily relies on two transportation information management systems used to process cargo and passengers through the DTS while providing the ITV capability needed to manage each of the movements. The two systems are Cargo Movement Operations System (CMOS) and the Global Air Transportation Execution System (GATES) (IRC System Report, 2003a, 2003b). Developed in the mid 1980s and

achieving full operational capability on 1 January 1995, CMOS is a "combat support system that provides automated base level processing for cargo movements during peacetime and both deployment cargo and passenger movement during contingencies for the Air Expeditionary Forces" (Anteon, 2004; IRC System Report, 2003b). The system is currently used at 206 locations worldwide, including nine Marine locations, six Navy locations, and one National Security Agency location (Wistner, 2003).

CMOS supports ITV by sending electronic data to GTN where the information can later be queried by authorized users. CMOS also enables ITV by sending advance shipping notices to other CMOS locations. Once the shipments arrive at a receiving location, freight personnel can quickly in-check cargo shipments because the source data is already in the system. This helps maintain data accuracy and allows the ITV information to be updated more efficiently (Standard Systems Group, 2004).

In an effort to streamline the information technology involved in sustaining CMOS, the program management office setup four regionalized network servers instead of having to maintain an individualized server at each location (Caterinicchia, 2002b; Smothers, 2004). The server locations were established as part of the Defense Information Systems Agency (DISA) and are located at Montgomery, Alabama; Oklahoma City, Oklahoma; Pearl Harbor, Hawaii; and Stuggart, Germany (Wistner, 2003). DISA is responsible for providing "mainframe and server computer operations, production support, technical services, and end-user assistance for command and control, combat support, and eBusiness functions across DoD" (DISA, 2004b).

In January 2002, CMOS was approved by the Joint Transportation Management Board (JTMB) to become the Joint Installation Transportation Officer/Transportation

Management Office (ITO/TMO) module of the Transportation Coordinator's-Automated Information for Movement System II (TC-AIMS II) (O'Neal, 2002; IRC System Report, 2003b). This recognition was a major milestone for the program because it meant CMOS was officially recognized throughout DoD as the "system responsible for incorporating the joint requirements for transportation" for each of the service branches (IRC System Report, 2003b). Currently, CMOS is planning to have all the joint requirements incorporated into the system within the next three years (IRC System Report, 2003b).

GATES is a "Air Mobility Command's aerial port operations and management information system designed to support automated cargo and passenger processing, the reporting of in-transit visibility data to the Global Transportation Network, and billing to Air Mobility Command's financial management directorate" (Department of Defense, 2003:221). The mission of GATES is:

> To be a fully integrated transportation system for Air Mobility Command (AMC) to support United States Transportation Command (USTRANSCOM) Defense Transportation System (DTS) 2010 Integration Plan Requirements (Wilcox and Dolphy, 2004).

AMC also has a stand alone version of the system known as the Remote Global Air Transportation Execution System (RGATES). RGATES carries the same functionality as GATES, except that the system is capable of running off a regular PC desktop or laptop (IRC Systems Report, 2003). Currently, the system has over 10,000 active users (Wilcox and Dolphy, 2004). GATES is located at 20 major aerial port locations. RGATES is being used at 28 sites throughout the world (Air Mobility Command, 2002b). In the event aerial port operations has to be established at a bare base location, AMC has a deployable version of GATES and an International Maritime Satellite System

(INMARSAT) communication system that can transmit the ITV data to GTN (Air Mobility Command, 2001:8).

Built from a series of AMC legacy transportation systems from the 1980s, GATES replaced the proprietary Honeywell DPS-90 hardware and software system to a client-server based architecture residing on open systems hardware (IRC System Report, 2003a). During fiscal year 2000/2001, GATES replaced the Remote Consolidated Aerial Port Subsystem (RCAPS) with Remote Global Air Transportation Execution System (RGATES), marking the end of AMC's legacy systems (IRC Systems Report, 2003). The wire diagram in Figure 6 below identifies the legacy systems that have been migrated into GATES.

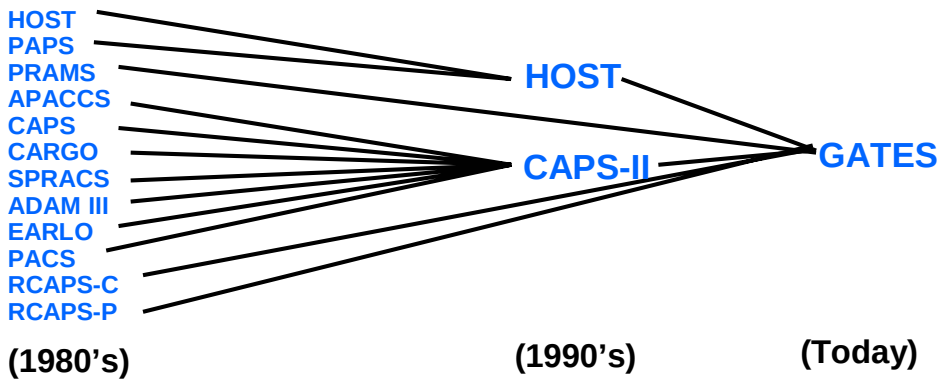

Figure 6. AMC's Migrated Transportation Systems (Bringenberg, 2004).

In July 2001, Headquarters United States Air Force Transportation Directorate (HQ USAF/ILT) tasked the Air Force Logistics Management Agency (AFLMA) to conduct a study on the "integration potential of CMOS and GATES" (Winkler, 2001:1). The overall objective of the study was to find a way of maintaining the same functionality

required for processing cargo and passengers through the DTS while eliminating duplication of effort discovered among the two systems (Winkler, 2001:1). Listed below are the specific objectives for the study (Winkler, 2001:2):

- Determine differences and similarities between CMOS and GATES.
- Identify duplicate capabilities of the two systems.
- Determine the appropriate uses for either or both systems at the base level.
- Evaluate system functionalities and determine the ability to merge the two systems.

AFLMA identified 11 functional areas between CMOS and GATES that contained a total of 290 transportation functions (Winkler, 2001:10). The results of study indicated that 153 of 290 functions had 53% similarity (or overlap) between the two systems (Winkler, 2001:iii). The study also noted a few differences in comparing the two systems. First, GATES performs day-to-day passenger movement functions while CMOS does not (Winkler, 2001:14). CMOS lacks these functions because they were not part of the system development. System development was geared towards moving units during deployments and contingencies (Winkler, 2001:14). This is why some Traffic Management Offices have to either call the Passenger Reservation Center or utilize GATES to book passengers on AMC organic or contracted missions (Winkler, 2001:14).

Second, CMOS contains more deployment functionality for moving cargo and passengers because the system has been designated as a component of the Air Force's Installation Deployment System (IDS) (Winkler, 2001:iii). IDS is made up of three other systems: Logistics Module (LOGMOD), Manpower/Personnel Module (MANPER), and Computer Aided Load Manifesting System (Winkler, 2001:13). GATES is also capable

of performing deployment functions (e.g. RGATES/DGATES). However, GATES is not integrated with the Air Force's IDS and is unable to communicate with the IDS sub-systems (Winkler, 2001:iv, 13).

In addition to deployment functionality, AFLMA received feedback from the study participants concerning the issue of using one system for routine use while having to use another system for contingencies (Winkler, 2001:16-17). The primary users of CMOS during peacetime operations are traffic management personnel (2T0XX) and they rarely use CMOS' deployment module (Winkler, 2001:17). Approximately 80% of the air transportation personnel (2T2XX) are assigned to AMC and use GATES on a routine basis (Winkler, 2003:2). However, during Air Force deployment exercises or real-world contingencies, 2T2XXs are required to use CMOS. According to AFLMA's findings, they stated "This presents a significant training problem for 2T2XX personnel, especially at aerial ports, since they use CMOS only for Air Force deployments, usually only once or twice a quarter" (Winkler, 2001:17). Also, AFLMA stated, "This situation is exacerbated since the CMOS deployment module is not taught in either 2T2 or 2T0 3-level technical training courses; training is left up to individual bases" (Winkler, 2001:17). This makes it difficult for air transportation personnel to become proficient in using both systems (Winkler, 2001:17)

Third, the AFLMA noted the "dissimilarity in systems communication" (Winkler, 2001:iv, 15). This indicated to them that trying to integrate both systems and establish an electronic data interchange would be difficult (Winkler, 2001:iv, 15). This issue is one of the reasons why cargo data has to be manually inputted into either or both transportation

systems. As noted in the study, "This results in duplication of effort for transportation personnel to maintain in-transit visibility of cargo and passengers" (Winkler, 2001:15). Therefore, AFLMA concluded the study by stating, "Preliminary study demonstrates the need for greater data integration; recommend accomplishment of this by leveraging EDI technology or other exchange technology to integrate data as if GATES and CMOS were a single system" (Winkler, 2001:23).

Based on the recommendation from the 2001 AFLMA study, the Air Force Director of Logistics Readiness (AF/ILG) and AMC Deputy Directory of Operations had AFLMA conduct a follow-up study to develop an action plan on how to integrate GATES and CMOS. Although the study identified that the "Processes for sustainment, deployment, and redeployment are generally the same" (Winkler, 2003:32), the study concluded, "Policy does not provide sufficient guidance to ensure efficient data exchange to manage and maintain visibility over cargo and passengers" (Winkler, 2003:32) and "Lack of data exchange between systems results in manual procedures to maintain in-transit visibility over resources" (Winkler, 2003:32). Thus, AFLMA recommended implementing policy guidance changes as well as the data sharing and management requirements outlined in the study (Winkler, 2003:32).

Commercial Off-The-Shelf Technology

The Federal Acquisition Regulation defines a commercial item as:

> Any item, other than real property, that is of a type customarily used by the general public or by non-governmental entities for the purposes other than governmental purposes and--has been sold, leased, or licensed to the general public; or has been offered for sale, lease, or license to the general public (General Services Administration et al, 2001:45).

DoD's reliance in procuring commercial items began in 1994 when Secretary of Defense William Perry issued a memo stating:

> To meet future needs, the Department of Defense must increase access to commercial state-of-the-art technology and must facilitate the adoption by its suppliers of business processes characteristic of world class suppliers. In addition, integration of commercial and military development and manufacturing facilitates the development of dual-use processes and products and contributes to an expanded industrial base that is capable of meeting defense needs at lower costs (Perry, 1994).

Thus, the government's policy in seeking commercial-off-the-shelf (COTS) technology was born (Perry, 1994)

Later, in 1997, Secretary of Defense William Cohen continued to emphasis the importance of COTS and relying on the commercial sector. This was due to the private sector being able to "adopt revolutionary new business and management practices in order to assure its competitive edge in the rapidly changing global marketplace" (Defenselink, 2004). He concluded that in order for the DoD to stay competitive in its "global security market", the DoD must adopt the same lessons learned used in the private sector (Defenselink, 2004).

Within the past few years, COTS has received increasing attention in procuring commercial information technology and or software for government use. In an effort to take advantage of potential cost savings by consolidating software requirements, DoD established the Enterprise Software Initiative (ESI) (Department of Defense, 2004a). ESI is a "joint DoD project to develop and implement a DoD enterprise process" (Department of Defense, 2004a). The two main objectives of the program are to save money and improve information sharing.

ESI was created because DoD realized that procuring software was not as easy as literally walking into a retail store and buying it off the shelf. Besides the actual cost of the software, DoD also had to consider other cost factors such as acquisition, distribution, training, maintenance, and support (Department of Defense, 2004a). Under ESI, DoD can negotiate with a software vendor and receive a pricing advantage, something that the individual service branches or government agencies were unable to do before. Appendix D highlights the current ESI agreements DoD has with leading software vendors (Department of Defense, 2004b).

The Air Force has wholeheartedly endorsed ESI and in a policy memorandum stated, "We should use ESI agreements, wherever they exist, for all software contracts--except in the most unusual cases with compelling justification" (Delaney, 2000). In fact, starting in January 2004, the Air Force is implementing a $1 billion program known as Expeditionary Logistics for the 21st Century (Elog21) (Streeter, 2003; Tiboni, 2003). Elog21 is aimed at improving and streamlining over 600 logistics information systems rooted in proprietary technology while ensuring the logisticians have everything they need to do their job (Streeter, 2003; Tiboni, 2003).

Although not every COTS software purchase falls under ESI, there are several examples within DoD of how COTS is being utilized. As previously mentioned, USTRANSCOM is in the process of implementing TransViz software (Patterson, 2003). The software was created by a company called MAYAViz. MAYAViz realized people were having a hard time adapting and implementing information technology. In response to this need, the company created a software program that

focused on three key elements in data presentation: visualization, interactivity, and collaboration (Patterson, 2003). In fact, after the September 11th attacks, MAYAViz rushed to finish software development so that USTRANSCOM could use TransViz as part of their daily planning and coordination meetings (Kiley, 2003).

SDDC is also taking advantage of COTS technology by having a web-based Surface Transportation Management System (STMS) developed that will replace its two legacy transportation systems: Integrated Booking System and Global Freight Management System (Cottrill, 2003:1; Military Traffic Management Command, 2003:26). Originally, these systems were developed to manage surface transportation requirements that focused on modal and regional traffic (Military Traffic Management Command, 2003:26). However, with the recent changes in SDDC and having an "end-to-end" focus of the distribution system, SDDC decided they needed a newer system with integrated surface movement capability (Military Traffic Management Command, 2003:26).

Accenture was awarded a nine-year $67 million contract for development of STMS (Cottrill, 2003:1). In addition to developing the system, Accenture will also be responsible for the daily operations of the system. SDDC has estimated that by having the contractor take care of the system, the command will save "$90 million in the first 11 years and cut out inefficiencies such as duplication of services" (Cottrill, 2003:1).

Current Issues and Trends

The U.S. military is still experiencing some problems in its attempts to achieve 100% ITV. During Operation Enduring Freedom (OEF), the warfighters had difficulty in trying to track their re-supply items such as food, water, and ammunition (Henry, 2002). These issues prompted USTRANSCOM to standup an ITV Contingency Cell so that problems could be minimized while trying to maintain near-real time ITV (Henry, 2002). Initially, the contingency cell's mission was to track deployment missions and assist the theater with solving other problems such as firewall/LAN issues and data exchange issues throughout each of the service branches (Henry, 2002; USTRANSCOM, 2002b).

After the initial deployments for OEF, USTRANSCOM's ITV Contingency Cell expanded its role to track not just deployments, but also intra-theater and redeployment missions (USTRANSCOM, 2002b). USTRANSCOM is also responsible for ensuring that GTN captures ITV level four data in the GTN system (USTRANSCOM, 2002b). An example of level four data would be the number of passengers and cargo information identified by unit line number (ULN) (USTRANSCOM, 2002b). If the ITV cell notices any problems with the level four data, then the problem is referred to AMC's ITV Contingency Cell.

AMC's ITV Contingency Cell was also established to assist the warfighter in achieving ITV as well as resolve any issues in the field. They track the same type of missions and deployments as USTRANSCOM's ITV cell except, AMC is primarily responsible for ensuring that level six data is captured within GTN. Level six data is "drillable data" that allows users to review detailed information about the cargo (USTRANSCOM, 2003f). Additionally, AMC is also capable of sending out ITV teams

to the field to assist the warfighters in setting up and managing the deployable AMC computer systems so that ITV data can ultimately be captured by GTN (Air Mobility Command, 2002).

Besides USTRANSCOM and AMC, Air Force Material Command (AFMC) stood up the CONUS Distribution Management Cell (CDMC) to react to the needs of the warfighter by providing them with "single-stop service to locate, divert, expedite, and provide visibility for any mission-critical cargo shipped in support of Operation Enduring Freedom" (Michno, 2002:11). It is interesting to note that the CDMC relies on a number of logistics information systems, such as GTN, GDSS, CMOS, Global Air Transportation Execution System, Tracker, FedEx website, and UPS website (Fisher, 2003). Together, these systems help provide them the "total picture" of where a particular piece of cargo might be located.

Refinement of Scope

With DoD's continuing emphasis of providing the warfighters with TAV, integrated information systems are becoming essential in being able to manage and provide visibility throughout the distribution pipeline. Although the military has made great strides in trying to improve its information technology, the DoD still experienced visibility problems during Operation Iraqi Freedom. In a preliminary report released by the General Accounting Office (GAO) (2003), the GAO stated, "DoD did not have adequate visibility over all equipment and supplies transported to, within, and from the theater of operations in support of OIF" (United States General Accounting Office, 2003:3). The report further noted, "units operating in the theater did not have adequate

access to, or could not fully use, DoD's logistics and asset visibility systems in order to track equipment and supplies because these systems were not fully interoperable and capable of exchanging information or transmitting data over required distances" (United States General Accounting Office, 2003:3).

In reviewing the literature, more DoD organizations are turning to the private sector for implementation of COTS technology and or software. Although previous studies have focused on system functionality and integration potential between CMOS and GATES, the researcher could not identify any other studies that compared the Air Force's transportation information management systems to commercially available software capable of performing the same functionality. The purpose of this research is to provide insight into the study's overarching question: How does commercial logistics software packages compare to the Air Force's transportation information management systems in being able to provide the same functionality required to achieve in-transit visibility?

Summary

Operation Desert Shield and Desert Storm serve as great reminders to what can happen if the military does not have TAV capability over its resources. Although the DoD has made great strides in trying to correct the ITV deficiencies from the Gulf War, problems still exist as highlighted during military operations in Iraq. Numerous studies have outlined these problems and recommended solutions. Even though logistics in the military and private sector operate under different objectives, both sectors see visibility as a key element in order to conduct daily operations. As the commercial sector is able to capitalize on the latest information technology, the military continues to look at how they

can incorporate this same technology in order to better integrate their existing information systems. Studies conducted on the Air Force's two transportation information management systems indicate more integration is needed. However, the researcher could not find any studies that indicated whether commercial logistics software packages were capable of performing the same functions used to support ITV.

III. Methodology

Chapter Overview

The purpose of this chapter is to describe the methodology selected to carry out the research for this study. Based on the literature reviewed from Creswell (2003), Leedy and Ormrod (2001) and Yin (2003), a qualitative methodology was chosen along with a case study strategy as the research design. Once the data was collected, the researcher conducted a gap analysis using a matrix diagram.

Although a gap analysis is commonly used as a survey instrument, the tool served the researcher's purpose in being able to answer the research questions and investigative questions that were stated in Chapter 1 of the study (Foster, 2000:456). Constructing a 6 by 290 matrix diagram allowed the researcher to compare the similarities between the Air Force and commercial software packages (Foster, 2000:457).

Research Design

Creswell identifies three different approaches that could be used in research design. The three approaches are quantitative, qualitative, and mixed method (Creswell, 2003:17). *Quantitative research* is defined by Creswell (2003:18) as

> ...One in which the investigator primarily uses postpositivist claims for developing knowledge (i.e. cause and effect thinking, reduction to specific variables and hypotheses and questions, use of measurement and observation, and the test of theories), employs strategies of inquiry such as experiments and surveys, and collects data on predetermined instruments that yield statistical data (Creswell, 2003:18).

In contrast to quantitative research, he defines *qualitative research* as

> An inquiry process of understanding based on distinct methodological traditions of inquiry that explore a social or human problem. The researcher builds a complex, holistic picture, analyzes words, reports detailed views of informants, and conducts the study in a natural setting (Creswell, 1998:15).

Leedy et al (2001) further explains that qualitative methods are "used to answer questions about the complex nature of phenomena, often with the purpose of describing and understanding the phenomena from the participants' point of view" (Leedy and Ormrod, 2001:101).

Finally, Creswell explains that a research design could be setup that includes both quantitative and qualitative methodologies. Creswell (2003) identifies this approach as a mixed method. A *mixed method* is defined as:

> …One in which the researcher tends to base knowledge claims on pragmatic grounds (e.g. consequence-oriented, problem-centered, and pluralistic). It employs strategies of inquiry that involve collecting data either simultaneously or sequentially to best understand research problems. The data collection also involves gathering both numeric information (e.g. on instruments) as well as text information (e.g. on interviews) so that the final database represents both quantitative and qualitative information (Creswell, 2003:18-19).

Before a researcher makes their final decision on which research approach would be more appropriate for a particular study, Creswell (2003) points out that the researcher should think about three considerations (Creswell, 2003:21). First, the researcher should make sure there is a match between the problem and approach. For example, if the researcher is writing a biography for their study, then their approach will more than likely be qualitative. However, if the researcher wants to study the factors that affect retail sales, then they would probably take a quantitative approach (Creswell, 2003:21-22).

Table 1 identifies the three types of approaches that researchers can use. It is important to note a researcher is not specifically tied to using just a quantitative or qualitative method, but could actually use a mixture from both approaches (Creswell, 2003:17).

Table 1. Research Method Procedures

Quantitative	Qualitative	Mixed Methods
- Predetermined - Instrument based questions - Performance data, attitude data, observational data, and census data - Statistical analysis	- Emerging methods - Open-ended questions - Interview data, observation data, document data, and audiovisual data - Text and image analysis	- Both predetermined and emerging methods - Both open- and closed-ended questions - Multiple forms of data drawing on all possibilities - Statistical and text analysis

(Creswell, 2003:17)

Second, a person should consider his or her own personal experiences in conducting the research. Creswell (2003) explains that individuals who have technical, scientific writing, statistics, and computer background may be more likely to choose a quantitative design. Whereas, a person writing in a literary style and conducting open-ended interviews might lean towards using a qualitative method instead (Creswell, 2003:22). It is important to note that people should not pick their research method based on their comfort level or whether they think the method will be easier to use (Creswell, 1998:16). Their decision should be based on whether a strong rationale exists for choosing a particular method and whether there are enough compelling reasons to conduct the study (Creswell, 1998:17).

Third, the researcher should consider the audience to which they will be reporting their research to in the end. The audience could be made up of such groups as graduate committees, conference attendees, journal editors, and journal readers. Creswell (2003) also states "Students should consider the approaches typically support and used by their advisers" (Creswell, 2003:23). If the adviser has no opinion either way and leaves the decision up to their student, then the best advice to keep in mind is "the methodology to be used for a particular research problem must always take into account the nature of the data that will be collected in the resolution of the problem" (Leedy and Ormrod, 2001:100).

Qualitative Method

Several characteristics distinguish qualitative research from the other research methodologies. First, a qualitative study takes place in the "field" or a natural setting where the researcher can gather extensive data about the subject of their study. Being in the field also helps the researcher gain valuable insight because they are actively involved and able to share the same experiences of those who are being studied (Creswell, 1998:16; 2003:181). The one caution to be aware of in this situation is bringing bias into the study. Leedy and Ormrod (2001) noted that this would become a problem only if the researcher fails "to acknowledge the likelihood of biased data or fail to recognize the possibility of bias in the study" (Leedy and Ormrod, 2001:222 to 223).

Second, the researcher becomes the "key instrument of data collection" and the "bulk of the data is dependent on their personal involvement" (Creswell, 1998:16; Leedy and Ormrod, 2001:102). This also means that throughout the data collection and analysis process, the researcher has to be careful that biases, values, or personal interests do not

detract from the overall study (Creswell 2003:184). Since qualitative research relies on the researcher's interpretations of the data, Creswell (2003) states that these issues should be addressed up front and multiple validity strategies should be used to create confidence in the research findings (Creswell, 2003:184).

Third, the researcher uses one or more inquiry strategy in order to guide their procedures for conducting a qualitative study (Creswell, 2003:183). Some of the strategies mentioned by Creswell are narrative, phenomenology, ethnography, case study, and grounded theory (Creswell, 2003:183). These strategies help the researcher focus on data collection, data analysis, and writing Creswell, 2003:183). However, Leedy and Ormrod (2001) caution researchers, "There are no magic formulas, no cookbook recipes for conducting a qualitative study" (Leedy and Ormrod, 2001:149). He further states that books written about qualitative research give the researcher, "general guidelines based on the experiences of those qualitative researchers" and the specific methods used are only constrained by the researcher's imagination (Leedy and Ormrod, 2001:149).

According to Creswell (1998:17 to 18), a person could choose a qualitative study based on a "strong rationale" along any of the following reasons:

1. Nature of the research question
2. Topic needs to be explored
3. The need to present a detailed view of the topic
4. Study individuals in their natural setting
5. Interest in writing in a literacy style
6. Sufficient time and resources to spend on extensive data collection in the field and detailed data analysis of "text" information

Rationale for Selecting a Qualitative Methodology

The reason a qualitative methodology was chosen for this study was due to the nature of the study's research questions and type of data being collected. This study starts out with an overarching research question followed by three investigative questions. Based on Creswell's (2003) information, the research questions being asked in this study would be considered qualitative research questions because they take on two forms: a central question followed by associated sub-questions (Creswell, 2003:105). Central questions are usually asked in broad form "so as to not limit the inquiry" (Creswell, 2003:105). Sub-questions are used to narrow the researcher's focus and identify the information needed to conduct the study (Creswell, 1998:101; 2003:106).

Once it was decided that a qualitative methodology would be used for this study, the researcher's next decision was to select an appropriate tradition of inquiry (Creswell, 1998:21). The five traditions of inquiry are ethnography, grounded theory, case study, phenomenological research, and narrative research (also known as bibliography from his previous work) (Creswell, 1998:7; 2003:15). Each tradition is defined as the following:

- Ethnography: the study of an intact cultural or social group (or an individual or individuals within the group) based primarily on observations and a prolonged period of time spent by the researcher in the field (Creswell, 1998:246)

- Grounded Theory: the researcher generates an abstract analytical schema of a phenomenon, a theory that explains some process, action, or interaction grounded in the views of participants in a study (Creswell, 1998:241; 2003:14)

- Case Study: the researcher explores in depth a program, an event, an activity, a process, or one or more individuals. The case(s) are bounded by time and activity, and researchers collect detailed information using a variety of data collection procedures over a sustained period of time (Stake, 1995:2; Creswell, 1998:249; 2003:15)

- Phenomenological Research: the researcher identifies the "essence" of human experiences concerning a phenomenon, as described by the participants in a study (Creswell, 1998:236; 2003:15)

- Narrative Research: a form of inquiry in which the researcher studies the lives of individuals and asks one or more individuals to provide stories about their lives (Creswell, 2003:15)

Creswell's (1998) diagram in Figure 7 below also helped clarify and differentiate between each of the traditions (Creswell, 1998:37).

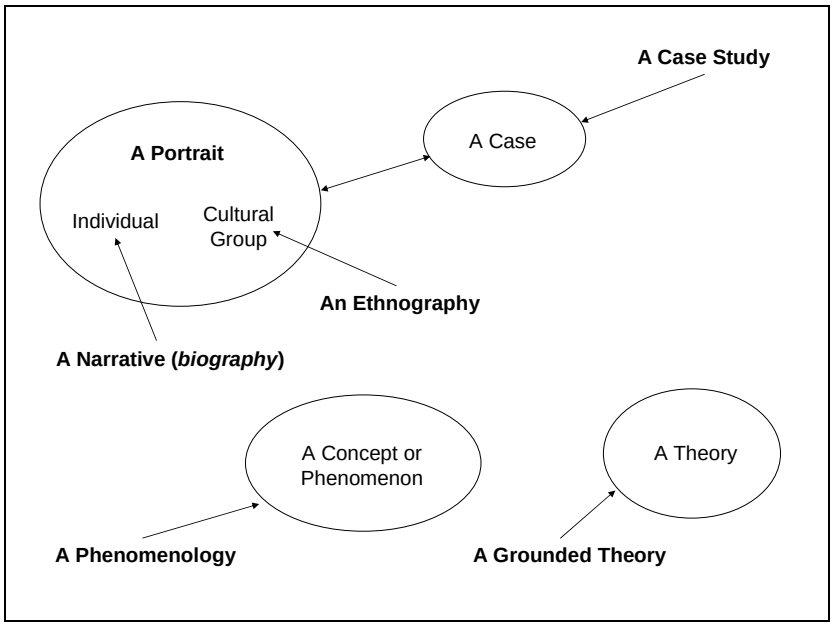

Figure 7. Differentiating Tradition by Foci (Creswell, 1998:37)

It is important to note that each tradition of inquiry has a specific focus. Traditions, such as a biography and ethnography have the capability of turning into a case study. While other traditions like phenomenology and grounded theory, focus on one specific area.

Ultimately, selecting the appropriate tradition of inquiry is critical because this will help facilitate data collection, analysis, and writing of the research report (Creswell, 1998: 37; 2003:183).

The challenge in selecting a particular tradition for this study was that qualitative research is traditionally used for such disciplines as education, nursing, healthcare, sociology, and psychology (Creswell, 1998:6, 15). During the initial literature reviewed for qualitative studies (Creswell, 1998, 2003; Leedy et al, 2001; Yin, 2003), little to no information was found that addressed conducting research on information systems. Other research articles written by Benbasat et al (1987) and Shakir (2002) helped identify that the case study was an appropriate tradition to use in studying information systems.

Benbasat et al (1987) noted three reasons a case study strategy was appropriate for researching information systems (1987:370). First, it allows the researcher to study these systems in a natural setting. It also gives the researcher a chance to learn about the technology behind the system as well as any applicable theories that apply to how the system is setup (Benbasat et al, 1987:370). Second, the case study allows the researcher to "understand the nature and complexity of the processes taking place" (Benbasat et al, 1987:370). Third, the case study strategy is appropriate for studying information systems, especially if little to no research has been conducted in this area (Benbasat et al, 1987:370).

Shakir (2002) also agreed that a case study approach is appropriate in studying information systems implementations (Shakir, 2002:191). However rather than just conduct a single case study, he noted that "the multiple case study approach is believed to be more appropriate to the study of typical cases of IS implementation" (Shakir,

2002:191). The reason is because multiple case studies help strengthen the validity and reliability of the research (Shakir, 2002:191).

Case Study Approach

A case study approach was chosen for this thesis research. The selection was based on three conditions outlined by Yin (2003) in determining an appropriate research strategy. The three conditions are types of research questions; extent of control an investigator has over actual behavioral events; and degree of focus on contemporary as opposed to historical events (Yin, 2003:5 to 7). Table 2 below outlines the recommended research strategy based on these conditions.

Table 2. Different Research Strategies

Strategy	Form of Research Question	Requires Control of Behavioral Events?	Focuses on Contemporary events?
Experiment	How, why?	Yes	Yes
Survey	Who, what, where, how many, how much?	No	Yes
Archival Analysis	Who, what, where, how many, how much?	No	Yes/No
History	How, why?	No	No
Case Study	How, why?	No	Yes

(Yin, 2003:5)

The research and investigative questions, stated in chapter 1, consist of a "how" and "what" type of questions. Although Yin (2003) highlights that for a case study the questions should address "how" and "why", he also points out that "what" type questions

can also be used (Yin, 2003:5 to 6). The reason is because they can be considered exploratory in nature or are part of the "'How many' or 'how much' line of inquiry" (Yin, 2003:5 to 6). In addition to the types of questions being asked and the qualitative nature of this study, the researcher does not require control of behavioral events. This study is also considered a contemporary event because it is focusing on current transportation information management software available in the private sector.

Once the case study methodology was selected, Yin (2003) outlines five components that are important in setting up the research design. The five components are a study's questions; its propositions (if any); its unit(s) of analysis; the logic linking the data to the propositions; and the criteria for interpreting the findings (Yin, 2003:21). The research and investigative questions previously mentioned fulfill the criteria of the first component for research design.

The second component, study propositions, is used to help direct the researcher to areas of the study that need examined as part of the overall study (Yin, 2003:22). The investigative questions in chapter 1 perform this very function. The other benefit of using propositions is it helps identify to the researcher where to look for data or evidence needed in developing a case (Yin, 2003:22). Yin (2003) also points out that not all studies require propositions. Certain research methods, such as an experiment or survey, already drive the direction of the study (Yin, 2003:22). In lieu of using propositions, Yin states, "the design for an exploratory study should state this purpose, as well as the criteria by which an exploration will be judged successful" (Yin, 2003:22).

In addressing the third component, the unit of analysis helps define "what the 'case' is" being studied (Yin, 2003:22). The case or unit of analysis could consist of an

individual (single case study) or group of individuals (multiple-case study) (Yin, 2003:22 to 23). The same analogy could also be applied to studying an event or multiple events (Yin, 2003:23). For the purposes of this study, the researcher defined the unit of analysis as "software packages" that perform transportation functions. The software packages will be explained more in-depth in the Data Collection section below.

According to Yin (2003), the fourth and fifth component is "the least well developed in case studies" (Yin, 2003:26). The purpose of *linking data to propositions and criteria for interpreting the findings* are used to help setup the data analysis (Yin, 2003:26). In order to provide this "link", the researcher used a gap analysis technique to compare the functions between the Air Force and commercial transportation information management systems. Foster (2001) describes a gap analysis as "a term associated with the SERVQUAL survey instrument; gap analysis is a technique designed to assess the gap that can exist between a service that is offered and customer expectations" (Foster, 2001:456). The gap analysis helps managers focus on areas that need attention or require process improvement (Foster, 2001:132).

Although this technique is usually associated in analyzing surveys, a gap analysis can be applied in comparing functionality between the commercial and Air Force systems. The idea for using a gap analysis came from Lofton (2003) who did a comparative study between the development of two IT applications for managing munitions: the Warrior Support Tool and Agile Munitions Support Tool (Lofton, 2003:x). Construction of this table was also based on how AFLMA setup their analysis to compare system functionality between GATES and CMOS (Winkler, 2001:29).

Table 3 gives an example of how the gap analysis was setup to compare functionality between the commercial and Air Force systems. Details of the study's data analysis are described in Chapter 4.

Table 3. Example of Gap Analysis Layout

Function Name	Functional Description	AF	CMOS	GATES	$COTS_1$
$Function_1$	$Description_1$	Yes	Yes	No	Yes
$Function_1$	$Description_2$	Yes	No	Yes	No
$Function_1$	$Description_3$	Yes	Yes	Yes	Yes

(Lofton, 2003:26; Winkler, 2001:29)

Case Study Design

After laying out the research design, the next task was to choose a case study design. The four types of designs are single-case (holistic), single-case (embedded), multiple-case (holistic), and multiple-case (embedded) (Yin, 2003:39). A multiple-case (holistic) design was chosen based on the researcher's decision to analyze commercial logistics packages from SAP, Oracle, and PeopleSoft. Multiple case designs are recommended over single case designs because "the evidence from multiple cases is often considered more compelling, and the overall study is therefore regarded as being more robust" (Shakir, 2002:191; Yin, 2003:46).

Case Study Protocol

Since this research will be using a multiple-case study design, it is also important to address setting up the case study protocol for this research. Yin (2003) states "a case

study protocol is desirable under all circumstances, but it is essential if you are doing a multiple-case study" (Yin, 2003:67). The case study protocol helps guide the researcher throughout the data collection and analysis process as well as increases research reliability (Yin, 2003:67). Yin outlines four areas that case study protocol needs to address (Yin, 2003:68):

1. Introduction to the case study and purpose of protocol
2. Data collection procedures
3. Outline of case study report
4. Case study questions

In addressing the first area, chapters 1 and 2 provide the introduction and background information for this case study. Second, the data collection procedures follow Creswell's suggestion of data collection activities a researcher should consider before collecting the data (Creswell, 1998:110). These activities are outlined in greater detail below. For the third area, this thesis was written based on the information contained in the Air Force Institute of Technology's style guide (Office of Research and Consulting, 2002). Last, the investigative questions stated in chapter 1 serve as the case study questions.

Data Collection

The data collected for this study was characteristic of the type of data found in qualitative studies. Depending on the specific qualitative study used for the research, data collection can occur in multiple forms. Creswell (1998) identifies the four basic forms of qualitative data as observations, interviews, documents, and audio-visual

materials (Creswell, 1998:121). He also points out that each type has an "advantage" and "limitation" that the researcher should consider in planning their research design (Creswell, 2003:186-187). For this particular study, the data collected consisted primarily of documents and interviews. Table 4 contains the advantage and limitation for each method used in the study.

Table 4. Advantages and Limitations for Data Collection Types

Data Collection Used in Study	Advantages	Limitations
Documents	- Enables a researcher to obtain the language and words of participants - Can be accessed at a time convenient to the researcher- an unobtrusive source of information - Represents data that are thoughtful, in that participants have given attention to compiling - As written evidence, it saves a researcher the time and expense of transcribing	- May be protected information unavailable to public or private access - Requires the researcher to search out the information in hard-to-find places - Requires transcribing or optically scanning for computer entry - Materials may be incomplete - The documents may not be authentic or accurate
Interviews	- Useful when participants cannot be observed directly - Participants can provide historical information - Allows researcher "control" over the line of questioning	- Provides "indirect" information filtered through the views of interviewees - Provides information in a designated "place" rather than the natural field setting - Researcher's presence may bias responses - People are not equally articulate and perceptive

(Creswell, 2003:186 to 187)

The researcher's strategy for collecting the data is based on Creswell's (1998) Data Collection Activities diagram in Figure 8 (Creswell, 1998:110). This diagram depicts "series of interrelated activities aimed at gathering good information to answer emerging research questions" (Creswell, 1998:110).

Although Creswell points out that a researcher may start from any point located around the circle, he usually begins with the "Locating Site/Individual" (Creswell, 1998:110).

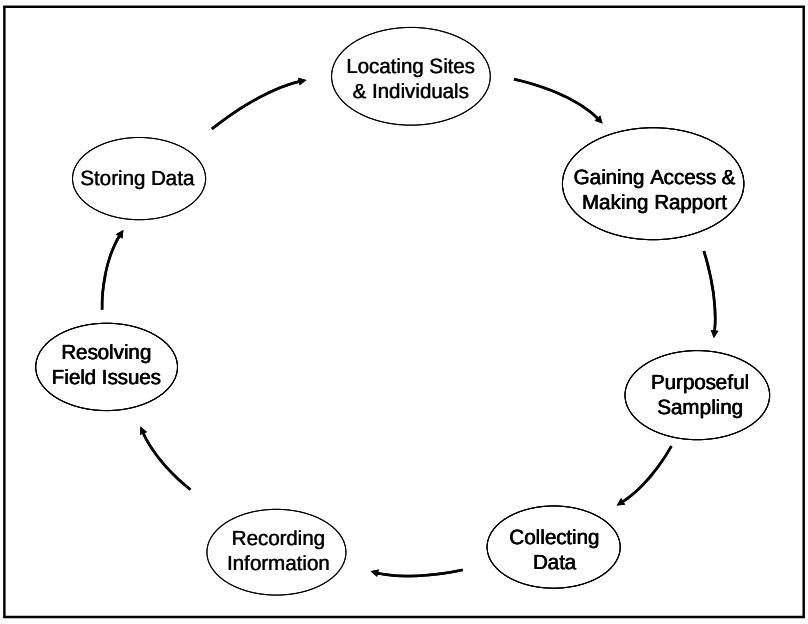

Figure 8. Data Collection Activities (Creswell, 1998:110)

1. Locating Sites & Individuals

Determining what sites or individuals to select can be based on a number of different criteria. Since this case study primarily focuses on transportation information management systems, Benbasat et al (1987) recommended researchers consider characteristics such as industry type, company size, organizational structure, profit/not-for-profit status, public or private ownership, geographic coverage, and degree of vertical or horizontal integration in establishing the criteria for site selection (Benbasat et al, 1987:373). The criterion for this study's site selection was based on the percentage of market share held by the top three companies. Two independent studies indicated that

SAP, Oracle, and PeopleSoft were the top three companies that provided enterprise resource planning (ERP) and supply chain management (SCM) solutions. The first study reported SAP controlled 18.1%, of the market share (Wall Street Journal, 2004). Oracle and PeopleSoft both held 5.4%, and the remaining 71.1% belonged to a number of smaller companies (Wall Street Journal, 2004). Gartner's study (2003) indicated that SAP, Oracle, and PeopleSoft were the ERP market leaders. Table 5 shows the overall ERP market share percentage for each of these companies as well as others in the industry.

Table 5. ERP Market Share Percentages

Company	2002 Market Share (%)	2001 Market Share (%)
SAP AG	25.1	24.7
Oracle	7.0	7.9
PeopleSoft	6.5	7.6
SAGE	5.4	4.6
Microsoft Business Solutions	4.9	4.6
Others	51.1	50.3
Total Market Share	100.0	100.0

(Gartner, 2003)

Once the sites were selected the next step was to gain access and establish a rapport with each of the locations (Creswell, 1998:110).

2. Gaining Access & Making Rapport

From the start, the researcher decided to establish contact with the public relations representatives at each of the three companies in order to gain access to the commercial software package literature. Initially, this step proved the most challenging because it was difficult getting in contact with someone in public relations. In the end, rapports

were established with SAP and PeopleSoft. Although attempts were made to establish contact with Oracle, the researcher decided that their website contained enough information to form a case study.

3. Purposeful Sampling

Creswell (2003) states the objective of purposeful sampling is to "purposefully select participants or sites (or documents or visual material) that will best help the researcher understand the problem and the research question" (Creswell, 2003:185). The criterion for purposeful sampling was based on the top three companies who held the largest percentage of market shares in the ERP industry.

4. Collecting Data

As previously mentioned, the researcher collected the data from documents and interviews. The documents primarily came from the companies' website or by conducting a search of the internet. Once all the data was collected, the information was then organized in spreadsheets and converted to searchable Adobe Acrobat document files.

Although the original intent of using interviews was only for finding sources of information or clarification purposes, the researcher had to rely on direct input from PeopleSoft's Project Manager of Logistics due to the limited amount of software information available capable of providing the detail needed to compare PeopleSoft with the Air Force systems. In this case, a list of the 290 transportation functions was emailed to the project manager. A follow-up teleconference was then established that allowed the researcher to run down the list with the project manager and check off the transportation functions that PeopleSoft could provide.

5. Recording Information

Functionality for each commercial software package was recorded as either "Yes" or "No" using the gap analysis worksheets. Appendix E, F, and G contain the recorded information for SAP, Oracle, and PeopleSoft.

6. Resolving Field Issues

The primary field issues encountered were establishing initial contact with the software companies and having difficult locating documents for PeopleSoft. There were a few times when some product document had to be scrutinized because they appeared to have an advertising slant to them. In these instances the researcher tried to focus on finding specific functional detail.

7. Storing Data

Multiple copies of the data collection were made in order to safe guard against accidentally deleting files or having the multimedia become corrupted (e.g. not being able to read from a zip disk). When warranted, hard copies of the information were printed out and stored with the rest of the research documentation.

Validity and Reliability

The last area of research design that needs to be addressed is the validity and reliability of the research method. Validity is described by Leedy et al (2001) as "the accuracy, meaningfulness, and credibility of *the research project as a* whole" (Leedy et al, 2001:103). Reliability looks at "the consistency with which a measuring instrument yields a certain result when the entity being measured hasn't changed" (Leedy et al, 2001:31).

In dealing with validity and reliability, four tests have been identified as being relevant to case study research (Yin, 2003:33). The four tests are construct validity, internal validity, external validity, and reliability. Table 6 outlines the four tests and tactics used to address each of the tests.

Table 6. Case Study Tactics for Four Design Tests

Tests	Case Study Tactic	Phase of research in which tactic occurs
Construct Validity	- Use multiple sources of evidence - Establish chain of evidence - Have key informants review draft of case study report	Data collection Data collection Composition
Internal Validity	- Do pattern-matching - Do explanation-building - Address rival explanations - Use logic models	Data analysis Data analysis Data analysis Data analysis
External Validity	- Use theory in single-case studies - Use replication logic in multiple-case studies	Research design Research design
Reliability	- Use case study protocol - Develop case study database	Data collection Data collection

(Yin, 2003:34)

Summary

This chapter described the research design and specific methodology selected to conduct the thesis study. A multiple-case study design was chosen for researching the logistics software packages provided by SAP, Oracle, and PeopleSoft. The researcher collected the data primarily from documents and interviews. Once all the relevant information was identified, the researcher selected a gap analysis tool in order to identify

the similarities between the commercial and Air Force transportation information management systems. Chapter 4 will discuss the results of the gap analysis.

IV. Analysis and Results

Chapter Overview

The purpose of this chapter is to explain the analysis and results from the case study. This chapter starts by first discussing the answers to the investigative questions posed at the beginning of the study. Next, the research findings are discussed followed by recommendations to consider from this study.

Research Assumptions

During the analysis phase of the study, the researcher had to make two assumptions in order to compare the commercial and Air Force transportation information management systems. The first assumption dealt with the 290 transportation functions that were identified in AFLMA's study of CMOS and GATES (Winkler, 2001:11). When comparing the Air Force and commercial systems, the researcher had to address the issue of CMOS indicating it can provide the functionality yet GATES can not. Table 7 gives an example of the functionality difference that is common throughout the data analysis. In this example, CMOS is able to provide "Deployment Passenger Backlog" and "Exercise and Deployment Preparation". However, GATES cannot provide those functions.

Table 7. Example of Differences in Functionality between CMOS and GATES

Function Name	Function	AF	CMOS	GATES	SAP
Deployment Management	Contains the actions necessary to monitor and direct transportation deployment activity. Interfaces between the various systems that provide cargo and passenger records based on planned taskings.	Yes	Yes	Yes	Yes
Deployment Passenger Backlog	Provides the capability to interface MANPER formatted or DeMS formatted passenger data.	Yes	Yes	No	Yes
Exercise and Deployment Executions	Prepares, executes, and interfaces data for a deployment, deployment exercise, or training session. Provides the capability to work in deployment, exercise and/or training simultaneously. Process routine peacetime TCNs without interrupting deployments.	Yes	Yes	Yes	Yes
Exercise and Deployment Preparation	Provides the capability to select a deployment plan mode; remove unneeded data from the database prior to beginning a deployment, deployment exercise, or training session; as well as, initiate and terminate a deployment, deployment exercise, or training session.	Yes	Yes	No	Yes

For the purposes of this study, the researcher made an assumption that if CMOS and GATES were integrated into one system, the system would be able to perform all 290 transportation functions. This assumption also proved valuable to the analysis for two reasons. First, it established a baseline and allowed a comparison of all 290 transportation functions. Second, it allowed the research to see software package if a particular commercial system aligned itself with CMOS, GATES or the Air Force combined system. Investigative Question Three will cover these results more in-depth.

The second assumption deals specifically with how the researcher dealt with comparing commercial systems to the "System Communication" functionality. Since the software packages provided by SAP, Oracle, and PeopleSoft are built as integrated modules, the researcher made an assumption that all three companies have the capability to establish EDI links for each of the military's logistics information systems. These systems are listed under the communication header in the System Communication tab of Appendix E, F, and G. However, the researcher did compare the first five functions for each commercial system because they were generalized enough and did not reference a specific information system.

Investigative Question One

What logistics software packages are commercially available?

Since the DoD is interested in improving TAV throughout the distribution pipeline, the researcher decided to focus on companies that provide either supply chain management (SCM) or enterprise resource planning (ERP) solutions. According to Inbound Logistics' website of "The Top 100 Logistics IT Companies", there are 81 companies capable of providing SCM solutions. Twenty one of these same companies also provide the capability to implement ERP solutions (Inbound Logistics, 2004). One study in particular that focused on just SCM software identified 160 software companies capable of providing SCM solutions (Askoy and Derbez, 2003).

Based on the number software packages available, the researcher narrowed the study's focus and chose the top three companies based on percentage of market shares. One study identified that SAP controlled 18.1%, Oracle - 5.4%, PeopleSoft - 5.4%, and the remaining 71.1% belonged to numerous smaller companies (Wall Street Journal, 2004). Another study indicated that SAP, Oracle, and PeopleSoft were the ERP market leaders (Gartner, 2003). It is important to note that although the two studies report different market share percentages, they both agree that SAP, Oracle, and PeopleSoft are indeed the top three companies (Gartner, 2003; Wall Street Journal, 2004).

Investigative Question Two

What are the similarities between the commercial software packages and the Air Force's transportation information management systems?

The overall percentages of functional similarity between the commercial and Air Force Transportation information management systems are presented in Table 8. Based on the data collected, all three commercial packages are capable of performing a majority of the 290 transportation functions identified for CMOS and GATES. However, SAP has the highest percentage of similarity with CMOS, GATES, and Air Force combined system. Oracle was identified as the second highest followed by PeopleSoft who had the lowest percentage of similarity among the Air Force systems.

Table 8. Percentages of Functional Similarity

	GATES & CMOS	SAP & CMOS	Oracle & CMOS	PeopleSoft & CMOS
# of Functions Similar	152	189	177	141
Total # of Functions	290	198	198	198
Overall Percentage Similar	**52.41%**	**95.45%**	**89.39%**	**71.21%**

	GATES & CMOS	SAP & GATES	Oracle & GATES	PeopleSoft & GATES
# of Functions Similar	152	221	178	147
Total # of Functions	290	243	243	243
Overall Percentage Similar	**52.41%**	**90.95%**	**73.25%**	**60.49%**

	GATES & CMOS	SAP & AF	Oracle & AF	PeopleSoft & AF
# of Functions Similar	152	263	216	184
Total # of Functions	290	290	290	290
Overall Percentage Similar	**52.41%**	**90.69%**	**74.48%**	**63.45%**

It is important to note that none of the commercial packages in Table 8 are capable of providing 100% of the functionality required by the Air Force systems. In fact, not only are there differences between the Air Force and commercial packages, there are also differences among the commercial packages. A major difference between SAP, Oracle, and PeopleSoft is that Oracle and PeopleSoft are either limited or unable to provide functionality in four of the 11 functional areas of the study. Table 9 gives an overview of the functional areas covered by the commercial software packages. It also indicates areas where there are limitations or no functionality is present.

Table 9. Functionality Not Provided by Commercial Software Packages

Functional Areas	SAP	Oracle	PeopleSoft
System Administration	X	X	X
Surface Cargo Processing	X	X	X
Air Cargo Processing	X	X	X
Automated Identification Technology (AIT)	X	X	
Deployment Management	X	L	L
Passenger Processing	X		
Resource Management	X	X	X
Decision Support	X	X	X
System Communication	X	X	X
World Wide Web	X	L	X
Mission Status	X	X	X

In reference to Table 10, both Oracle and PeopleSoft are unable to perform passenger processing functions while SAP has over 87% functional similarity between CMOS, GATES, and the Air Force combined system. The two companies are also limited in being able to perform the deployment management functions as indicated in Table 11. During an interview with PeopleSoft's Project Manager for Logistics, he

indicated that because military deployments are so dynamic, they would probably be unable to meet the requirements (Petersen, 2004). In addition, Oracle is also very limited in being able to provide specific web-based transportation functionality as outlined in this study. The percentage of similarity for web-based functionality is shown in Table 12.

Table 10. Percentage of Similarity for Passenger Processing

	CMOS	GATES	AF
SAP	100.00%	87.80%	88.10%
Oracle	0.00%	0.00%	0.00%
PeopleSoft	0.00%	0.00%	0.00%

Table 11. Percentage of Similarity for Deployment Management

	CMOS	GATES	AF
SAP	100.00%	100.00%	100.00%
Oracle	25.00%	0.00%	25.00%
PeopleSoft	12.50%	0.00%	12.50%

Table 12. Percentage of Similarity for World Wide Web Functionality

	CMOS	GATES	AF
SAP	33.33%	53.85%	53.85%
Oracle	33.33%	7.69%	7.69%
PeopleSoft	33.33%	23.08%	23.08%

Even though Oracle does not provide passenger processing functionality themselves, they do have partnerships established with other companies capable of providing this functionality. For example, under Oracle's Partner Network Solutions

Catalog, Ultra Electronics Limited provides the technology for flight information display systems (FIDS) (Oracle, 2004). The company is also capable of setting up baggage reconciliation systems (BRS) used to manage and track baggage security (Oracle, 2004). However, researching the functions that business partners can provide was beyond the scope of this study.

The study's data analysis also indicates that PeopleSoft is unable to provide the functionality required for automated identification technology. Instead, PeopleSoft has business partnerships established with other companies capable of providing the AIT functionality themselves. However, during the interview with PeopleSoft, it was indicated that the company should be able to provide automated identification technology within the next 12 months (Petersen, 2004). Table 13 shows the overall percentage of similarity for automated identification technology.

Table 13. Percentage of Similarity for Automated Identification Technology

	CMOS	GATES	AF
SAP	97.14%	87.80%	85.71%
Oracle	100.00%	90.24%	88.10%
PeopleSoft	0.00%	0.00%	0.00%

One last note about PeopleSoft, although their software is capable of performing the decision support functions, it was indicated the software probably would not be responsive enough to meet the military's needs (Petersen, 2004). Since measuring

software effectiveness was not part of the study, the researcher went ahead and indicated that PeopleSoft could provide this functionality.

Investigative Question Three

What commercial software packages best aligns themselves with CMOS, GATES, and an Air Force combined system?

To help answer this question, Table 14 was created showing the percentage of similarity among each of the commercial and Air Force transportation information management systems. As individual systems, SAP, Oracle, and PeopleSoft best align themselves to CMOS, achieving 95.45%, 89.39%, and 71.21% respectively. On the other hand, when considering which commercial software packages share more functionality with the Air Force systems, SAP achieves the highest percentage of similarity with CMOS, GATES, and the Air Force combined system. Oracle has the second highest percentage of similarity followed by PeopleSoft. These results are indicated in Table 15.

Table 14. Individual Systems Alignment

	CMOS	GATES	AF
SAP	95.45%	90.95%	90.69%
Oracle	89.39%	73.25%	74.48%
PeopleSoft	71.21%	60.49%	63.45%

Table 15. Overall Systems Alignment

	CMOS	GATES	AF
SAP	95.45%	90.95%	90.69%
Oracle	89.39%	73.25%	74.48%
PeopleSoft	71.21%	60.49%	63.45%

Research Findings

This section addresses the following research findings that were identified either through the literature reviewed or data collection and analysis:

1. SAP is more similar with CMOS, GATES, and the Air Force combined systems.

Based on the results in Table 15, SAP has the highest percentage of similarity with the Air Force transportation information management systems out of the three commercial software packages. Although SAP is unable to achieve 100% functional similarity, SAP had software functionality for all 11 functional areas. Therefore, based on this initial study, it appears SAP would be a likely candidate if the Air Force chooses to adopt a COTS system.

2. Both Oracle and PeopleSoft lacked deployment management and passenger processing functionality.

It was interesting to note the percentage differences among SAP, Oracle, and PeopleSoft. In comparing the 290 transportation functions to these commercial software packages, one would expect to see higher percentages of similarity with Oracle and PeopleSoft. However, Oracle was unable to perform passenger processing functionality and had limited deployment management and web-enabled transportation functionality.

PeopleSoft also had no passenger processing or automated identification technology functionality and provided limited functions for deployment management.

Although this study did not consider whether these functional areas were important to the private sector, one would think they are critical to the military. Not having passenger processing or deployment functionality would severely limit the Air Force's ability to process passengers or manage deployments during both peacetime and contingency operations.

3. PeopleSoft does not provide automated identification technology functionality.

AIT functionality is needed to help streamline cargo processing and reduce the number of potential errors that could affect the DoD's ability to achieve ITV. This is accomplished by "facilitating the collection of the initial source data, reducing processing times, and improving data accuracy" (Department of Defense, 2004c). In fact, AIT has received so much attention that the DoD established the Logistics Automatic Identification Technology Office in order to coordinate AIT issues among each of the service branches (Department of Defense, 2004c).

4. COTS solutions may have additional software requirements before the actual software package is implemented within an organization.

COTS software packages carry the connotation that a solution can be purchased today and implemented tomorrow. Based on interview with PeopleSoft's Project Manager for Logistics, additional software is required to be installed first before implementing their SCM solutions. Unfortunately, this area was not considered as part of the study's scope and would require further research into the issue.

Recommendations

Based on the preliminary findings from this study, the Air Force should consider adopting SAP as their COTS system for enhancing cargo and passenger movements while providing functionality needed to achieve ITV. However, more research is needed to address the feasibility of implementing this type of system. As previously mentioned, this study only looked at software functionality between the three commercial software packages and the Air Force transportation information management systems. Additional requirements for implementation (e.g. software or hardware) were not considered in the original scope of the study.

Summary

The purpose of this chapter was to discuss the analysis and results from the case study in an attempt to address the overarching research question stated at the beginning of this study. SAP, Oracle, and PeopleSoft were identified as the leading companies capable of providing logistics software packages. These packages were then compared to the Air Force's transportation information management systems using the 290 transportation functions identified from the AFLMA study on CMOS and GATES (Winkler, 2001:11). Last, the research offered recommendations to continue evaluating information technology from the commercial sector.

V. Conclusions

Chapter Overview

The purpose of this chapter is to identify the limitations encountered by the researcher and recommend areas for future research that were beyond the scope of this study.

Limitations

During the course of this study, several limitations were encountered that could have either introduced bias or limited the scope of research. This section will address each of the limitations:

1. ***Researcher only compared the CMOS and GATES functions to the commercial software packages.***

As previously stated, the 290 transportation functions were the baseline for comparing the commercial software packages with CMOS and GATES. This research did not establish a baseline for the commercial functions and then make a comparison with the Air Force systems. Therefore, this study did not consider whether the commercial software packages could provide additional functionality that might have been beneficial to the Air Force.

2. ***The 290 transportation functions identified as the baseline for the study are only a snapshot in time.***

The 290 transportation functions for CMOS and GATES are based on AFLMA's 2001 study (Winkler, 2001:11). Although contact was made with each system's program

management office to verify that all the functions were still current, the system contractors could be creating new or updated functionality that could change the results of subsequent studies.

3. ***Researcher did not address if any additional software was required before implementing or using any of the three commercial software packages.***

During the interview with PeopleSoft's Project Manager for Logistics, he commented that other software or modules (e.g. general ledger or payables) would have to be installed first before the supply chain management solution package could be implemented (Petersen, 2004). This issue was not addressed as part of the study and could play an important factor on whether an organization decides to implement a COTS solution. This limitation also emphasizes another point made during the interview that very few commercial software packages can be implemented directly "off the shelf" (Petersen, 2004).

4. ***Researcher did not observe the use of either the Air Force or commercial systems within their work environment.***

Observing the actual systems in action would have enhanced this research experience and reduced the chances of misinterpreting the information collected. It would also have provided the opportunity to see how the software/hardware was setup and learn how long it took the organization to implement the system.

5. ***Functionality interpretation acted as a hindrance in trying to match CMOS and GATES functions to commercial systems.***

Researcher had to rely on finding the functional descriptions of the commercial logistics software packages rather than try to match up the actual functional name. In matching the functions between the commercial and Air Force systems, the researcher

sometimes had to make a judgment on whether a specific software package could perform a certain transportation function. For example, one of the functions evaluated under Surface Cargo Processing was being able to generate human remain messages. Although PeopleSoft might not have a function that specifically states "human remains messages", they do have message generating capability. Since the company is able to provide the functionality then all they would have to do is customize the program to meet the Air Force's specific needs.

6. ***Due to the proprietary nature of commercial products, searching for software specifics about functionality was hard to obtain.***

Most of the literature on the companies' websites contained product pamphlets or data sheets that either provided an overview or gave a brief discussion of the software functionality. The researcher was able to find a good bit of information on logistics software provided by SAP and Oracle. However, when it came to PeopleSoft, product information was very limited and required the assistance of their Project Manager for Logistics to help identify whether their software was capable of performing the CMOS and GATES transportation functions.

The other concern is that bias could have been introduced into the study by allowing the project manager to provide the information. PeopleSoft is a profit making company and some employees do not want to make their company look bad. Without having a way to confirm or verify the data provided during the interview, the researcher does not know the motives of the person providing the information.

7. Researcher limited the scope to three commercial logistics software packages.

By incorporating more companies that can provide logistic software packages, the researcher could have conducted a broader gap analysis and determined which companies are able to achieve the same transportation functionality provided by CMOS and GATES. This information could then be used to help the Air Force or other military organizations identify and procure the best COTS products that fit the organization's needs.

Recommendation for Future Research

While conducting this study, the researcher noted several areas for future research that could possibly expand the scope of this thesis. First, a future research effort could identify whether SAP, Oracle, and PeopleSoft have additional functionality that was not considered during this study. A possible start for this research effort would be to identify all of the functions provided by the commercial software packages and then compare this list with the Air Force's CMOS and GATES functions. This would help identify functionality that neither the CMOS nor GATES program management offices have considered before. In addition to identifying a list of software functions, another research effort could be to compare the commercial packages among each other and determine the similarities among the functionalities.

A follow-on research effort could be to survey users of both the commercial logistics software packages as well as CMOS and GATES users. The survey could be used to compare user perceptions and customer satisfaction among both groups of systems in order to suggest areas where future enhancements or upgrades could be made to the system. Based on the percentage of similarity identified between each commercial

and Air Force transportation information management system, the results of the survey could be used to confirm whether or not implementing a commercial software package would be beneficial to the Air Force.

Last, the scope of this study could be expanded to include more commercial logistics software packages. By selecting only three companies based on set criteria, it is possible that the researcher overlooked other logistics software companies capable of providing transportation functionality. Expanding the scope would also help to identify other transportation functions that might not have been considered. This future research effort could also be used to help identify companies the Air Force might be interested in for bench marking purposes.

Research Summary

The purpose of this research was to identify commercial logistics software packages and determine whether they are capable of providing the same functionality as the two Air Force transportation information management systems currently employed. Using a case study methodology, the researcher collected information on the logistics software packages provided by SAP, Oracle, and PeopleSoft. A gap analysis was then conducted to identify the percentage of similarity between the Air Force and commercial systems. The results of the research show SAP having the highest percentage of similarity with each of the Air Force systems followed by Oracle and then PeopleSoft.

Although all three companies share similar functionality with CMOS and GATES, neither system is capable of providing 100% of the transportation functionality required

to sustain ITV. Therefore, the Air Force should continue to seek COTS products that will enhance the capabilities of our current transportation information management systems.

Appendix A: Description of GTN Feeder Systems

The following information was obtained from GTN's Information Home Page (USTRANSCOM, 2003g).

Source Systems Interfaces. TCCs, DOD Agencies, Service systems, and commercial systems will provide source data critical to transportation management. An illustration of these interface requirements is provided in Figure 4. The external interfaces listed below are anticipated requirements. It is not an all-inclusive list and is subject to change. An Interface Requirements/Design Document (IR/DD) is developed for each source system interface with exact specifications on what data is exchanged. (See Interface Requirements Specifications for details of data requirements from interfacing systems.) Existing interfaces are identified below with an * prior to the system name, the remaining systems are potential interfaces. A brief description of key systems interfaced to GTN follows:

a. ***AMC Deployment Analysis System** (**ADANS**). ADANS is the current system supporting AMC airlift and air mobility planning and scheduling. It provides the planners and schedulers the automated tools necessary to plan for and schedule the extensive number of air mobility missions flown by AMC during peacetime and contingency operations. ADANS schedules airlift and air refueling missions under all scenarios.

b. ***Asset Management System** (**AMS**). AMS is a transportation management system that automates the management of the DoD Interchange Freight Car Fleet and the Common User Container Fleet. It will provide greater asset visibility; enhance utilization, and improve maintenance, tracking and rail revenue auditing.

c. **Consolidated Air Mobility Planning System** (**CAMPS**). CAMPS is a migration system for ADANS and currently under development. It will support peacetime, crisis/ contingency, and wartime mobility planning, scheduling, and analysis for air transportation assets. CAMPS primarily supports AMC military airlift, aerial refueling, and commercial aircraft missions. CAMPS and the Global Decision Support System (GDSS) do planning and scheduling for transportation airlift missions, thus providing planning visibility from origination of the mission requirement to the actual scheduling. CAMPS will provide GTN with channel requirements data, DD Form 1249 SAAM Airlift Requests, and air refueling quarterly planning schedules.

d. ***Cargo Movement Operations System** (**CMOS**). CMOS is the Air Force's unclassified system for transportation units that provides the capability to effectively plan, document and manage outbound and inbound cargo, airlift manifests, truck manifests, pallets, shipment units loaded into all consolidation containers TCMD, single shipment units TCMD, outsized dimensions, ammunition round count, hazardous material, stock number and IMCO classification, net explosive weight and lot number(s), general miscellaneous information, additional required hazardous material information, end manifests, passenger manifest records, passenger header records, passenger data records. CMOS enables users to plan, schedule, and monitor the execution of transportation activities in support of deployment and reception of forces. The CMOS traffic management module is to migrate to TCAIMS II.

e. ***Consolidated Aerial Port System II** (**CAPS II**). CAPS II is an AMC unclassified automated system, which provides cargo and passenger movement data to HOST and PRAMS. CAPS II has three application modules, which encompass aerial port command and control operations, passenger processing and manifesting, and cargo movement processes. The Global Air Transportation Execution System (GATES) is being developed to replace CAPS II.

f. ***CONUS Freight Management** (**CFM**). CFM is MTMC's unclassified system providing automated support to TOs and MOs for transportation processing and planning. CFM receives EDI transactions from transportation systems. CFM will provide movement status (Implementation Convention 858) on cargo moved within CONUS.

g. ***Defense Automatic Addressing System Center** (**DAASC**). DAASC is the Defense Logistics Agency's (DLA's) unclassified system for automatically routing Military Standard Requisition and Issue Procedures (MILSTRIP) transactions among customers, suppliers, depots, and shipping activities. DAASC will supply GTN information on the status of requisitions ordered via MILSTRIP. Currently, not all requisitions are routed through DAASC.

h. ***Defense Transportation Tracking System** (**DTTS**). DTTS is operated by the Naval Supply Systems Command/Navy Material Transportation Office for DoD. DTTS is the DoD unclassified system for near real-time tracking of Class I-IV explosives shipments moving via truck or train within CONUS. DTTS receives location reports every two hours from trucks and trains using commercial satellite-based tracking systems. An interface to GTN provides movement and shipment data.

i. **Financial Air Clearance Transportation System** (**FACTS**). FACTS consolidates all Service/Agency Air Clearance Authority and transportation financial management systems' functionality into a single, automated DOD air clearance authority and financial management system.

j. ***Global Air Transportation Execution System** (**GATES**). GATES automates support for receipt, movement and billing of cargo and passengers. GATES replaces AMC's command and control transportation applications currently residing on a mainframe, which include the Headquarters On-line System for Transportation (HOST), the Passenger Reservation and Manifest System (PRAMS) and the Consolidated Aerial Port System, Second Generation (CAPS II). GATES will provide enhanced capability through a graphical user interface and increased architecture, which will improve communications from the aerial ports.

k. ****GO81/Broker Aircraft Maintenance System**. G081 is an AMC maintenance system for the C-5, C-141, KC-10, KC-135 and C-17 aircraft, and has provisions to accommodate other transient aircraft. GO81 provides automated support for maintenance activities at fixed and key enroute strategic airlift locations. GTN will use GO81 to report aircraft availability based on maintenance priorities. The system has a central computer at *Tinker AFB Data Service Center* (TDSC). User terminals located both at the central base and numerous remote sites are connected back to the host computer through base level communications processors. All user terminals worldwide operate in a direct connect "slave" mode with the central Tinker computer. The **BROKER** system provides compatible physical and functional connectivity between C2IPS and G081. C2IPS and G081 share data through automated traffic exchanged via BROKER. BROKER provides routing to the appropriate system, translates, and reformats passed data items as needed for input to the receiving system. The AMC **C2IPS** is a command-wide, automated system designed to support the activities associated with C2 of the AMC's worldwide airlift mission responsibilities primarily supporting aircraft scheduling, execution, and flight-following functions, which support the AMC "Global Reach" air mobility mission. C2IPS consists of fixed and deployed nodes that can be interconnected by various communications media. A node consists of the following components: (1) File Server; (2) Communications Processor; (3) Local Area Network; (4) Workstations; and (5) *AUTODIN Front-End Processor* (AFEP). The communications media used by C2IPS includes *High Frequency* (HF), *AUTODIN, Digital Data Network* (DDN), *Ultra High Frequency* (UHF) *Satellite Communications* (UHF SATCOM), and wireline.

l. ***Global Command and Control System** (**GCCS**). GCCS is the primary joint system designed to fulfill the requirement for a capability to move a US fighting force on the globe at any time providing the services, unified commander and components with the information and direction necessary to complete their mission. GCCS objective is to provide the war fighter with a common, real-time picture of the battle space and the ability to order, respond, and coordinate horizontally and vertically to accomplish the mission. GTN serves as the transportation module for GCCS, providing planning, command and control, and intransit visibility of aircraft/departure, aircraft scheduling and status information. GTN provides GCCS scheduling and movement information.

m. ***Global Decision Support System** (**GDSS**). GDSS, AMC's primary C^2 system, is the source of planned and actual itineraries, and scheduled ULN allocations for all AMC carriers and tankers. GDSS provides GTN with real time updates as information changes. GDSS provides data concerning airlift mission schedules, actual departures and arrivals of aircraft, and summary information on what the aircraft (AMC organic or commercial) is carrying, to include OPLAN ULNs, short tons of cargo, and number of passengers being transported. Consolidated Air Mobility Planning System (CAMPS), the AMC system used to schedule airlift missions, including the planned cargo allocation, provides schedule/allocation data via GDSS. GDSS sends USMTF formatted messages to GTN.

n. ***Groups Operational Passenger** (**GOPAX**) System. The GOPAX system is MTMC's automated support for movement of DoD groups of 21 or more passengers on air, bus, or rail carriers within CONUS. The GOPAX system receives requests for service from installations via Transportation Coordinator's Automated Information for Movements Systems (TCAIMS), telephone, mail, and direct access to GOPAX. Routing instructions are sent to the carrier and to the ITO/customer. GOPAX provides GTN with group movement data. GOPAX provides GTN bus carrier information pertaining to offer confirmation, requests, and passenger names.

o. ***Integrated Booking System** (**IBS**). IBS is the first automated system to standardize cargo booking procedures for unit and non-unit CONUS to OCONUS ocean-eligible cargo. IBS will receive cargo offerings from the shipper, recommend the cost favorable carrier and appropriate Sealift Port of Embarkation (SPOE) and pass the offering to the selected carrier. IBS then passes booking strategy, based on MSC contracts/agreements, to the port for booking. Additionally, it schedules unit arrivals at ports and issues port calls to units.

p. *__Integrated Command, Control, and Communication (IC^3) System__. IC^3 is MSC's system for planning, monitoring, and controlling the movement of ships owned and chartered by MSC. IC^3 will integrate Headquarters Locator Module (HELM), MSC Ship Register (P504), Sealift Strategic Analysis System (SEASTRAT), Operations Support System (OSS), and Bulk Petroleum, Oil and Lubricants (POL), all of which are existing C^2, transportation, and planning systems. IC^3 interface will provide GTN with ship schedules, ship position data, and ship port information.

q. ***Joint Air Logistics Information System** (**JALIS**). JALIS assists USTRANSCOM with schedule coordination for operational support aircraft from all Services. It provides schedules, itineraries, and information for OSA aircraft to GTN.

r. **Joint Simulation System** (**JSIMS**). JSIMS will produce products that create and sustain a simulation environment capable of meeting a broad set of requirements for training and mission rehearsal (exercise). Interface with GTN is a key performance parameter for the JSIMS program. This interface will allow a GTN user to train or exercise using GTN with information provided from the JSIMS environment. There should be no difference between using real world data or JSIMS provided data. GTN will interface with JSIMS to provide the transportation, deployment and redeployment modeling and simulation requirements.

s. **Joint Warfighting System** (**JWARS**). JWARS is a closed-form, constructive simulation of multi-sided joint warfare for analysis. Users of JWARs include combatant commanders, Joint Staff, Services OSD and other DoD organizations. Applications include evaluation of courses of action; analysis of force sufficiency, assessment of force structure alternatives; Joint Warfare Capability Assessment (development of joint capability issues and assessment of trade-offs); determination of requirements for new warfighting capabilities; analysis of weapon system alternatives, in particular, cost and operational effectiveness analysis; and analysis of alternatives for program and budget reviews.

t. **Munitions Transportation Management System** (**MTMS**). MTMS is an Army Material Command (AMC) system used by the Joint Munitions Transportation Coordinating Activity (JMTCA) for ship planning unique to munitions movements. MTMS receives Service export munitions movement requirements and consolidates them into shipload packages that are offered for lift to the respective MTMC area commands. MTMS provides MTMC with key shipment information and Service, CINC, and receiving facility representatives with advanced ship planning information. MTMS is used to identify commercial asset requirements (rail/truck) to support each ship plan. Manifests from departing vessels are reconciled with ship plans.

u. **Radio Frequency Tags (RF TAG).** RF Tag technology provides near real time remote monitoring, tracking, and location of assets. RF Tags placed on containers, pallets, and other equipment emit a radio frequency signal that when passes through an interrogator positioned at key choke points and transportation nodes such as airfields, container/pallet holding areas, rail heads, gates, and bridges provides data updates as the tag equipped container/equipment progresses from its point of origin to its destination.

v. **Other Logistics Systems**. Currently, requisitions for Petroleum, Oil and Lubricants (POL), ammunition, rations, medical supplies, and Army and Air Force Exchange System (AAFES)/Navy Exchange (NEX) System personal convenience items do not go through the Defense Automatic Addressing System Center (DAASC). Also, third party logistics systems are not necessarily captured in DoD supply/transportation systems. Procedural and technical changes will be necessary to change the current routing of data for these items. If it is not possible to route all requests for supplies through DAASC, individual GTN interfaces with each of the systems used to process these types of commodities will be necessary.

w. **TRANSCOM Regulating and Command and Control Evacuation System (TRAC^{2}ES)**. TRAC^{2}ES is the DoD medical regulating and aeromedical evacuation patient movement system. TRAC^{2}ES merges medical regulating and aeromedical evacuation flight planning into a single comprehensive system to support the cost effective transportation of DoD patients in peace and war. TRAC^{2}ES will provide GTN ITV of patients, patient attendants, and aeromedical evacuation crews and equipment, via planned and actual information for medical evacuation missions manifested in TRAC^{2}ES. GTN will provide TRAC^{2}ES with visibility of inter- and intra- theater lift assets and movements of lift capable of being used for medical evacuation.

x. ***Transportation Coordinator Automated Command and Control Information System** (**TCACCIS**). TCACCIS is a unit movement and ITO support system, which supports U.S. Army deployments during both day-to-day operations and crisis situations. It focuses on providing automated support to the planning and execution functions of transporting unit equipment, personnel, and cargo under full mobilization and deployment conditions at all organizational levels. It standardizes operations in the areas of data collection, shipment accountability, shipment processing, documentation, and reporting. This interface will be phased-out when TC-AIMS II becomes operational.

y. ***Transportation Coordinator's-Automated Information for Movements System** (**Marine Corps**)(**TC-AIMS (MC)**). Marine Air-Ground Task Force/Logistics Automated Information System (MAGTF/LOG AIS) is a family of systems designed to plan, manage, and execute U.S. Marine Corps unit deployments and redeployments. It provides USMC operating forces (active and reserve), base, station, commanders with automated tools for command and control (C^2) of force deployment planning and execution and assistance with day-to-day management of transportation activities. Within TCAIMS(MC)/MAGTF Deployment Support System II (MDSS II), capabilities exist to create and maintain an inventory of transportation support assets; and to create, send, receive and execute transportation and support requirements. Additionally, it provides an interface with JOPES. This interface will be phased-out as TC-AIMS II becomes operational.

z. **Transportation Coordinator's-Automated Information for Movements System II** (**TC-AIMS II**). TC-AIMS II consolidates the management of the installation-level transportation functions of unit movement, load planning, and ITO/TMO operations. TC-AIMS II becomes the standard installation-level unit deployment and sustainment system for all Services. The functionality contained in the cargo and passenger movement portions of the ITO/TMO segment of TC-AIMS II are the core of the application. While the planning of unit movements has several unique aspects, the execution of unit movement operations are largely a specialized case of personnel and cargo movement. TC-AIMS II must have the capability to create container-content relationship records for Exercise cargo before interface with WPS and IBS. TC-AIMS II will use the same core of functionality to support routine ITO/TMO operations and unit movement execution.

aa. ***Worldwide Port System** (**WPS**). WPS is the MTMC worldwide-unclassified system for managing export and import of DOD cargo at water ports. It provides detailed data concerning items of cargo arriving, departing, and on-hand at water ports. WPS records cargo data for surface movements at MTMC area commands; receipt, staging, and loading cargo at ports; and generates the ship manifest/booking upon completion of vessel loading.

Systems Interfaces. GTN supports transportation information that needs to be integrated into customers' command and control and/or logistics decision support systems. Customer systems interfaces are interfaces with other primary customer support systems. GTN will provide data access to customer systems. The capability to provide customer-defined data sets to external systems without specific customer requests for each transmission is required. Database distribution software needs to support this data flow along with keeping redundant data synchronized. Anticipated customer system interfaces (not all-inclusive and is subject to change) are listed below:

a. *__Advanced Logistics Program__ (__ALP__). GTN provides ALP access to GTN database to provide integrated transportation data to advanced logistics technologies development. By providing ALP access to GTN database, GTN can take advantage of future transportation technology development and other emerging technologies that are targeted at gaining control of the entire logistics pipeline.

b. *__Defense Automatic Addressing System Center__ (__DAASC__). See paragraph (g) for system description. GTN uses DAASC to provide movement status for requisitions released for shipment.

c. *__Global Command and Control System__ (__GCCS__). See paragraph (m) for system description. GTN provides GCCS with movement status for forces, equipment, and sustainment in support of operations.

d. *__Global Combat Support System__ (__GCSS__). GTN provides the ITV portion of GCSS's common operating picture (COP) and shared data environment for focused logistics.

e. __GTN Models__ (__AMP, JFAST__, etc.). Refer to paragraph 4.2.2.2 (page 20) of the GTN Operational Requirements Document.

f. __Joint Simulation System__ (__JSIMS__). GTN provides ITV and C^2 information to JSIMS as yet to be determined.

g. *__Joint Total Asset Visibility__ (__JTAV__). GTN provides JTAV updated ITV data (air, surface, unit movement) every 10 minutes.

h. __Joint Warfighting System__ (__JWARS__). GTN provides JWARS C2 and ITV information yet to be determined.

i. __Munitions Transportation Management System__ (__MTMS__). See paragraph (v) for system description. GTN provides shipping information.

j. *__NAVTRANS Metrics__. GTN provides data to NAVTRANS for their development of transportation metrics analysis.

k. *__Streamlined Automated Logistics Transmission System__ (SALTS). GTN sends requisition ITV data to ships at sea.

l. __TRANSCOM Regulating and Command and Control Evacuation System__ (__TRAC^{2}ES__). See paragraph (x) for system description. GTN provides TRAC^{2}ES with air mission schedules from GDSS.

m. **Defense Medical Logistics Standard System** (**DMLSS**). GTN to provide DMLSS ITV data to the medical logistics community, including the Joint Medical Asset Repository (JMAR) and the Single Integrated Medical Logistics Managers (U.S. Medical Materiel Center-Europe (USAMMC-E); 16th Medical Logistics Battalion, Korea).

n. **Other Customer Interfaces. As required.**

Appendix B: ITV Level of Detail Description

LEVEL OF DETAIL	DESCRIPTION
Level I	Aggregated level. Expressed as total number of passengers and total short tons, total measurement tons, total square feet and/or total thousands of barrels by unit line number (ULN), cargo increment number (CIN), and personnel increment number (PIN).
Level II	Summary level. Expressed as total number of passengers by ULN and cargo summarized as follows: Bulk, oversized, outsized and non-air transportable STONS. Vehicular, non-self deployable aircraft and boats, and other MTONS in SQFT. Thousands of barrels of POL.
Level III	Total passengers and cargo STONs, MTONS, SQFT, and thousands of barrels broken down by cargo category.
Level IV	Detail expressed as number of passengers and individual dimensional data (expressed in length, width, and height in number of inches) of cargo by equipment type by ULN.
Level V	Detail by priority of shipment. Expressed as total number of passengers by Service specialty code in deployment sequence by ULN individual weight (in pounds) and dimensional data (expressed in length, width, and height in number of inches) of equipment in deployment sequence by ULN.
Level VI	Detail expressed for passengers by name and SSAN or for coalition forces and civilians by country national identification number; and for cargo by Transportation Control Number (TCN) . Non-Unit cargo includes FSN/NSN detail. Cargo can be nested. Cargo with TCNs that are nested are referred to as “secondary load”. Example: 11 vehicles of the same type would be represented by 11 level VI records. These records would be summed to I in level IV record.

(Joint Staff, 2001:GL-33,34)

Appendix C: Description of SCEM Components

The visibility study describes each of the components as the following: (Montgomery et al, 2002:6, 8, 10, 11, 13, 14)

Extended Connectivity: enables suppliers, logistic providers, and customers to share supply chain event transactions through the use of internal legacy systems

Enterprise Transparency: allows distributed business users to see order, inventory, and shipment information that is important to their role in the supply chain

Exception Based Alerting: rule-based management by exception, that allows managers to focus on exceptions to the process rather than every single event

Performance metrics: provides the functional areas, departments, divisions, business units, suppliers, customers, and logistics providers with the tools needed to evaluate their contribution to the supply chain

Event Based Response: functionality provides the decision support and optimization capabilities to dynamically respond and re-plan to alerts in a near real-time basis

Enabled Control: allows managers to build an organization that will respond to changes semi-automatically in the future

Appendix D: Current ESI Agreement Highlights

The following information was obtained from ESI's webpage (Department of Defense, 2004b):

- **Microsoft's** software products for desktop configurations, servers and other products at up to 38% off GSA FSS pricing by nine resellers. **Microsoft's** *Premier Support Services* provided at 4% off list price.
- **Network Associates**, **Symantec**, and **Trend Micro's** anti-virus products are provided *at no cost* through ESI!
- **CAC Middleware** products now available through ESI from **Datakey**, **Litronic**, **Schlumberger**, and **Spyrus**.
- **WinZip's** compression software is provided at 94.7% off list price through ESI!
- **CA Unicenter** enterprise management software is available at 64% off GSA FSS prices!
- **Sun Support Total Enterprise Warranty (SSTEW)** is offered at 35% to 57% off GSA FSS prices.
- **Adobe** software at up to 13% off GSA FSS pricing - home use authorized too!
- **SAP** enterprise resource planning software at 16% off GSA FSS prices.
- **Oracle's** pre-negotiated discounts reach 27% off GSA FSS prices. Greater discounts available for "special offers" on database and application software licenses, support, training, and consulting services.
- **Sybase's** limited "Golden Disk" for Adaptive Server Enterprise (ASE) entitles DoD to unlimited seats at 64% off GSA FSS prices - but the Army SPM can beat any current prices in DoD. ASE, Software Licenses, Software Maintenance and Consulting Services, NT Servers, NT Seats, Unix Servers, Unix seats, LINUX Servers, and LINUX Seats are all covered in this agreement.
- **Novell** offers discounts of 48% off list pricing for NetWare, GroupWise, ZenWorks, and more!
- **Crunchy Technologies** and **HiSoftware** offer automated tools to help DoD IT managers comply with Section 508 of the Rehabilitation Amendments of 1998. **Crunchy's** *PageScreamer* discount is 70% to 83% off GSA FSS pricing and **HiSoftware's** *AccRepair*, *AccVerify*, and *AccMonitor* tools range from $75 to $1049 per seat/server.
- **Computer Associates'** *CA BPwin* and *Erwin* modeling tools (including product, maintenance, and upgrades) are available at 56% off GSA FSS prices.
- **Merant's** PVCS Change Management Software is offered at discounts of 21% off GSA FSS pricing.
- **Popkin Software's** System Architect software license for Enterprise Modeling, and all Popkin add-on products are available at up to 15% off GSA FSS prices.
- **IBM's Informix** database software is available at up to 27% off GSA FSS pricing.
- **PeopleSoft** ERP software is now available at up to 20% off GSA FSS pricing.
- **Telos's** *Xacta* Web C&A automated security accreditation tool is priced at 36% - 46% off GSA FSS. More aggressive discounts are available for large enterprise subscriptions.
- **IBM's** *Rational* enterprise architecture software and maintenance discounts up to 14% off GSA FSS.
- **Asynchrony Solutions'** *Envoke Software*, a collaboration tool, is available with discounts up to 63% off GSA FSS.

Appendix E: Gap Analysis of SAP and Air Force Systems

1. System Administration:

Function Name	Function	AF	CMOS	GATES	SAP
Database Creation	System will provide the capability to create and maintain services in normal operations mode.	Yes	Yes	Yes	Yes
Database Update	System will provide capability to modify the database structure while retaining any existing data.	Yes	Yes	Yes	Yes
Database Table Maintenance	System allows the user to add, change, delete, or inquire about data stored in database tables.	Yes	Yes	Yes	Yes
File System Maintenance	User can add, change, delete, or inquire about files in the system.	Yes	Yes	Yes	Yes
Site Specific Data	System will provide capabilities to manage each site independently.	Yes	Yes	Yes	Yes
Training Database MX	System provides database schema that will support user training.	Yes	Yes	Yes	No
Archives	System provides three levels of historical archiving.	Yes	Yes	Yes	Yes
Error Messages	Client and server standardized error messages will be displayed.	Yes	Yes	Yes	Yes
Query Capability	System provides the capability to connect to the database from system server.	Yes	Yes	Yes	Yes
Help Menu	System provides help function which will allow the user to obtain info describing an operation of products.	Yes	Yes	Yes	Yes
Reports and Inquires	System provides reports of functional and system related activity.	Yes	Yes	Yes	Yes
Reports	System provides reports of info collected by the system.	Yes	Yes	Yes	Yes
Message Generation	System provides a function for the user to create, edit, save, and print standard Air Force messages.	Yes	Yes	Yes	Yes
MAJCOM Query	System provides the capability to allow each USAF MAJCOM to retrieve real-time transportation data.	Yes	Yes	Yes	Yes
Legacy Systems	System allows user to add, change, delete, or inquire about the history of legacy systems that have been incorporated.	Yes	No	Yes	No
Express Carrier Modules	System interfaces with all participating express carriers, and will provide a capability to transmit Electronic Data.	Yes	Yes	No	Yes

	GATES & CMOS	SAP & CMOS	SAP & GATES	SAP & AF
# of Functions Similar	**14**	**14**	**13**	**14**
Total # of Functions	**16**	**15**	**15**	**16**
Percentage Similar	**87.50%**	**93.33%**	**86.67%**	**87.50%**

2. Surface Cargo Processing:

Function Name	Function	AF	CMOS	GATES	SAP
Airlift Clearance Authority (ACA)	System provides programs to ensure the accuracy and validity of ACA data.	Yes	Yes	Yes	Yes
ATCMD	Hosts will maintain ATCMD data IAW MILSTAMP for shipments.	Yes	Yes	Yes	Yes
ACA Process	System will send ATCMDs to the ACA electronically.	Yes	Yes	No	Yes
Cleared Shipments	System provides cleared shipments through the ACA electronically.	Yes	Yes	No	Yes
ATCMD History	System provides the capability to review ATCMD history for shipment processed in the system.	Yes	Yes	Yes	Yes
Shipment Record	Systems provides the capability to preview the shipment record for shipment.	Yes	Yes	Yes	Yes
Shipment MX	System provides the capability to create shipment records.	Yes	Yes	Yes	Yes
DD Form 1149	System provides the capability to process manual shipments by providing a means to accept and print form data.	Yes	Yes	No	Yes
Partial Shipment	System provides the capability to create partial shipments	Yes	Yes	Yes	Yes
Split Shipments	System provides the capability to split TCNs into multiple shipments.	Yes	Yes	Yes	Yes
Trailer Data	System provides the capability to enter additional data into the system.	Yes	Yes	Yes	Yes
Increment Cargo	System provides the capability to automatically match increment TCNs to stock numbers within the database.	Yes	Yes	No	Yes
Carrier Schedule Record	System provides the capability to enter and display cargo data.	Yes	Yes	No	Yes
Shipment Processing	Provides capability to display all shipments requiring proces4sing by each functional area.	Yes	Yes	Yes	Yes
Frustrate Shipment	Provides the capability to enter and clear frustrate codes and remarks.	Yes	Yes	Yes	Yes
Small Parcel Shipment (FedEx and UPS) non-I2P	Provides capability to process small parcel shipments.	Yes	Yes	No	Yes
In-check Cargo	In-check function matches received cargo records to actual cargo received.	Yes	Yes	Yes	Yes
In-check via HHT	In-check TCN data into to database.	Yes	Yes	Yes	Yes
Reference Tables	Creates and maintains reference data tables for storing basic shipment data.	Yes	Yes	Yes	Yes
Hazardous Cargo	Capability to enter necessary data and print Shipper's Declaration.	Yes	Yes	No	Yes
DODAAC Data	Provides capability to create, edit, and delete TCMD data.	Yes	Yes	Yes	Yes
UMMIPS Data	Monitors shipment processing times for compliance standards.	Yes	Yes	Yes	Yes
Deployment TCMD	Provides the capability to create, edit, and delete TCMD data.	Yes	Yes	Yes	Yes
Report Shipment Data	Reports data to support cargo movements.	Yes	Yes	Yes	Yes
Land bridge	User can inquire about or change information on land bridge cargo.	Yes	No	Yes	Yes
Human Remains Message	User can make inquiries about, change information, or display information about human remains shipments.	Yes	No	Yes	Yes
Mass Incheck	Function allows the user to check in an entire pallet or pallets of cargo at once.	Yes	Yes	Yes	Yes

Function Name	Function	Yes	CMOS	GATES	SAP
Military Shipment Label	User can make changes or inquire and print military shipment labels.	Yes	Yes	Yes	Yes
View and Update Bay Location	User can display cargo location or change information on cargo location.	Yes	Yes	Yes	Yes
Pallet Processing	Functions allow the user to display and change information about palletized shipments.	Yes	Yes	Yes	Yes
Shipping Documents (*GATES can print the TCMD and MSL*)	System provides the capability to create, edit, and print the following forms: DD Form 1149, DD Form 1384 (TCMD), DD Form 1348-1A, DD Form 1387 (Shipping Label), bar coded Express Carrier Label, DD Form 1387-2 Special Handling Data Certification Form, Shipper's Declaration for Dangerous Goods, and DD Form 1907.	Yes	Yes	No	Yes
Consolidation (*GATES can reconsolidate a shipment that was previously split*)	Assigns and removes air and surface shipments from a consolidation, assign lead TCN, close a consolidation.	Yes	Yes	No	Yes
Consolidation (*GATES can reconsolidate a shipment that was previously split*)	Assigns and removes air and surface shipments from a consolidation, assign lead TCN, close a consolidation.	Yes	Yes	No	Yes
Containerization	Assigns and remove air and surface shipments from either vans or unitized containers.	Yes	Yes	No	Yes
Export Traffic Releases	Processes Route Orders and ETRs function prepares route order requests, electronically or manually; transmits route order requests to MTMC; and receives electronic responses from shipments requiring routing authority.	Yes	Yes	No	No
Routing Data	Provides the capability to maintain freight classification data and routing instruction note info to support the outbound cargo process.	Yes	Yes	No	Yes
Conus Freight Management	Provides the capability to originate, update, and transmit shipment request to CONUS Freight Management (CFM). User can view shipment status, view shipment response, and view or delete message sent by CFM.	Yes	Yes	No	Yes
DAMMS Routing Request	Provides capability to enter routing and movement support request to the Army Movement Management System Redesign and to view the request response.	Yes	Yes	No	Yes
Shipment Clearance Request	Provides the capability to flag a TCN or Chalk for transmission to the Consolidation and Containerization Point, to the Airlift Clearance Authority, and the Water Clearance Authority	Yes	Yes	No	Yes
Surface Freight Outbound	The Surface Freight Outbound function tracks and documents outbound processes to include movement document production and traffic distribution.	Yes	Yes	Yes	Yes
Tonnage Distribution Report	Provides the capability to view, edit remarks, print commercial carrier tonnage distribution information, reset Tonnage Distribution Register weights, and establish the Tonnage Distribution Register relationship of states and regions.	Yes	Yes	No	No

Function Name	Function	AF	CMOS	GATES	SAP
Surface Movement Documents	Provides the capability to assign TCNs to and remove TCNs from surface movement documents, selects a commercial carrier, and print surface movement documents	Yes	Yes	Yes	Yes
GBL Production and Correction (*GATES sends this info to CMOS for BL creation*)	Provides the capability to enter GBL data, merge this data with TCN data, and release and print GBL. Also provides the capability to correct data on a previously released GBL by creating, editing, and printing a GBL Correction Notice.	Yes	Yes	No	No
CBL Production	Provides the capability to enter CBL data, merge this data with TCN data, and release and print a CBL. The CBL allows for the assignment of TCNs to conveyances.	Yes	Yes	No	Yes
Military Truck Manifest	Provides the capability to create, edit, and print a Military Truck Manifest. Provides the capability to create a truck manifest diskette compatible within the military airlift system.	Yes	Yes	Yes	Yes
European and Pacific Movement Docs and Japanese and Korean Bills of Lading	Provides the capability to create, edit, and print the British Freight Consignment Note, the Freight Warrant, the US Bill of Lading Commercial Freight Warrant and Japanese and Korean Bills of Ladings.	Yes	Yes	No	Yes

	GATES & CMOS	SAP & CMOS	SAP & GATES	SAP & AF
# of Functions Similar	**24**	**41**	**26**	**43**
Total # of Functions	**45**	**43**	**26**	**45**
Percentage Similar	**53.33%**	**95.35%**	**100.00%**	**95.56%**

3. Air Cargo Processing:

Function Name	Function	AF	CMOS	GATES	SAP
Missions	These functions allow the user to make changes to numerous elements and actions involved in mission management and cargo handling.	Yes	Yes	Yes	Yes
Inquire Mission Information	Functions allow user to make changes and inquire for information about missions.	Yes	Yes	Yes	Yes
Receive Mission Information	User can display information about a mission.	Yes	Yes	Yes	Yes
Transport Location Capability	User can make changes to a transportation location's capabilities and display information about a location.	Yes	Yes	Yes	Yes
Airlift Schedule Change Notification	User can display changes to the airlift schedule. The functions allow the user to inquire about mission segments, inbound and outbound missions, mission aborts, and schedule of events: add, delete, or change mission segments, swap aircraft for missions.	Yes	Yes	Yes	Yes

Function Name	Function	AF	CMOS	GATES	SAP
Rehandle Functions	These functions display workloads due to rehandling of passenger information and aircraft servicing.	Yes	No	Yes	Yes
Airlift Load Message	User can make changes to data on loads and display information concerning the load.	Yes	No	Yes	Yes
Human Remains Message	User can make inquiries about, change information, or display information about human remains shipments.	Yes	No	Yes	Yes
Air Freight Outbound	Controls and tracks the movement of cargo using air freight modes.	Yes	Yes	Yes	Yes
Pallet Build-up via Hand Held Terminals (HHT)	Provides the capability to create new air pallet identifications access previously created Pallet Ids and attach loose on-hand cargo.	Yes	Yes	Yes	Yes
Pallet Build-up and Pallet Build-up Data	Assembles individual TCNs into a pallet and provides the capability to create, query, update, and edit air Pallet Build-up.	Yes	Yes	Yes	Yes
Placard Printing	Prints pallet identifier data (with bar code, if required) on AF Form 2775.	Yes	Yes	Yes	Yes
Air Manifest and Air Manifest Data	Produces air manifests and other associated shipment documents, link TCNs and built up pallets to manifest numbers, prints the air manifest, produces diskettes to accompany the cargo, and prints a pallet inventory list for each pallet on the manifest. Creates manifests, assign TCNs and pallets to newly created or existing manifests, and release completed manifests, and create diskettes.	Yes	Yes	Yes	Yes
Air Manifest Printing	Provides the capability to print an air manifest containing certification statements.	Yes	Yes	Yes	Yes
AALPS	AALPS provides the capability to download selected TCNs, pallet, and chalk data to a data diskette for load planning.	Yes	No	Yes	No
Computer Assisted Load Planning	Provides the capability to download selected TCNs, pallet, and chalk data to a CALM data diskette for load planning.	Yes	Yes	No	No
Air Manifest Discrepancies	Provides the capabilities to identify manifested TCNS not physically sent with the shipment. Provides a means to abort missions with an actual flight departure data and within a specific number of days from mission departure.	Yes	Yes	Yes	Yes
Process Inbound Cargo	This function contains all action necessary to process inbound cargo including the ability to establish advanced inbound records, the ability to receive inbound freight and documentation from delivering carriers, the ability to verify quantity and condition of subject freight, the ability to distribute the cargo.	Yes	Yes	Yes	Yes

Function Name	Function	AF	CMOS	GATES	SAP
Establish Advance Inbound Record	Establish Advance Inbound Records function receives advanced shipment data via the communications interfaces from originating activities, depots, and other interfacing systems. The system determines the intransit status of cargo and provides for both a REPSHIP capability and discrepancy reporting.	Yes	Yes	Yes	Yes
Backlog/Manifest Printing and Processing	Provides the capability to print the inbound backlog/manifest to include addressing and cargo characteristics. This capability includes both air and surface inbound cargo shipments. Also provides the capability to display the Surface Due in Backlog/manifest (by movement document number or by assigned TCN). Provides the capability to enter trailer card data required for TCMD transactions and the DD Form 1371, Consignee's Receipt for Delivery at Stop off Unloading Point.	Yes	Yes	Yes	Yes
Inbound Cargo Diskette	Provides the capability to process data from a truck manifest diskette into the database. Truck manifest diskette data with be TCMD formatted for transportation by military owned or controlled vehicles.	Yes	Yes	Yes	Yes
Rep Ship Data	Provides the capability to display unreceived REPSHIPs and the means to enter a tracer date for overdue REPSHIPs. System will provide both manual (via messages) and electronic capabilities. Provides the means for the system user to select which cargo transaction requires a REPSHIP and print the document.	Yes	Yes	No	Yes
Receive and Distribute Surface/Air Freight	Uses an HHT or client workstation to incheck shipments and to record received shipment data and Over, Short, or Damaged Information	Yes	Yes	Yes	Yes
Incheck via HHT	Provides the capability to incheck air or inbound cargo using HHT.	Yes	Yes	Yes	Yes
Incheck via Workstation	Provides the capability for rapid data entry and manual incheck of inbound surface cargo. Provides for the inchecking of an entire movement document or an individual TCN, as well as the capability to indicate cargo has been received by the customer.	Yes	Yes	Yes	Yes
Distribute Cargo	Provides the capability to indicate cargo has been turned over to a customer and to process intransit TCNs and pallets. Inbound TCNs that are intransit to the current site will be transferred to the outbound database for processing and onward movement.	Yes	Yes	Yes	Yes
SF361 Processing	Provides the capability to track Over, Short, or Damaged discrepancies and to update and print SF 361 forms. User may create an SF 361 without entering a movement document, or for a TCN that is not assigned to a movement document.	Yes	Yes	Yes	Yes
Convert to Piece Control and Convert to Shipment Control	Shipment can be accounted for either by individual pieces or as an entire shipment.	Yes	Yes	Yes	Yes

Function Name	Function	AF	CMOS	GATES	SAP
Truck Routes	User can add, change, delete, or inquire about truck routes.	Yes	Yes	Yes	Yes
Air Manifest on Hold	User can display manifests for cargo that is in a hold status.	Yes	Yes	Yes	Yes
Surface Conveyance	These functions allow the user to manage and control surface shipments.	Yes	Yes	Yes	Yes
MAI Channel Information	User can add, change, delete, or inquire about information for specific transportation channels.	Yes	Yes	Yes	Yes
TDR and ROD	User can add, change, delete, or inquire about a Transportation Discrepancy Report (TDR) or a Report of Discrepancy (ROD).	Yes	Yes	Yes	Yes
Overdue Inbound GBL TCNs	User can inquire about and display information, by Transportation Control Number (TCN), on overdue shipments.	Yes	Yes	Yes	Yes
Over/Short Shipment Processing	These functions allow the user to display, add, change, delete, or inquire about incorrect shipment quantities, and to report these discrepancies.	Yes	Yes	Yes	Yes
Audit Trail	User can query all transactions of a TCN identifying changes to a specific user.	Yes	No	Yes	Yes
Ad Hoc Cargo Queries	User can make specific inquiries about cargo the transportation unit is handling.	Yes	Yes	Yes	Yes
Reports	These functions generate reports about numerous operations, functions, and processes involved in the management of an aerial port.	Yes	No	Yes	Yes
Scheduled Reports	These functions add, change, delete, or inquire about scheduled reports the system can generate.	Yes	Yes	Yes	Yes
Cargo Management	Functions provide data on cargo awaiting transport.	Yes	Yes	Yes	Yes
Manifest Information and Surface Manifest Information	Function provides information on air and surface cargo manifests.	Yes	Yes	Yes	Yes
Pallet Information	Users can display or change information about palletized cargo.	Yes	Yes	Yes	Yes
TCMD Information	User can display or change information on a Transportation Control Movement Document.	Yes	Yes	Yes	Yes
Trailer Information	User can create manifest trailers or attachments for manifests on cargo that requires special handling or processing.	Yes	Yes	Yes	Yes
Cancel Manifest or Load Suspended Manifest	These two functions allow the user cancel a cargo manifest, or display a suspended manifest.	Yes	Yes	Yes	Yes
Manifest Register Assign	User can add or change information about manifests and their numbers in the register.	Yes	Yes	Yes	Yes
Common Dropdowns	These functions are available to provide help when using any of the functions in the module.	Yes	Yes	Yes	Yes
Help	Help files for any function	Yes	Yes	Yes	Yes

	GATES & CMOS	SAP & CMOS	SAP & GATES	SAP & AF
# of Functions Similar	**40**	**41**	**45**	**46**
Total # of Functions	**48**	**42**	**46**	**48**
Percentage Similar	**83.33%**	**97.62%**	**97.83%**	**95.83%**

4. Automatic Identification Technology (AIT):

Function Name	Function	AF	CMOS	GATES	SAP
Pallet Processing	Functions allow user to manage and process palletized cargo. User can being building a pallet, suspend or resume the process, and display data on suspended pallet builds.	Yes	Yes	Yes	Yes
Join Session	This function is used to allow more than one person to build a pallet.	Yes	No	Yes	No
Build in Progress Pallets	This inquiry will identify pallets that are not completely built.	Yes	Yes	Yes	Yes
Frustrate/Unfrustrate Pallets	These functions allow a user to place a pallet in frustrated status, or remove the pallet from frustrated status.	Yes	Yes	Yes	Yes
Consolidate Shipment	User can combine two or more shipments, with individual Transportation Control and Movement Document (TCMDs), into one shipment, on a single TCMD. GATES definition is, a previously split TCN can be consolidated. Two or more shipments with the first 14 characters of the TCN different cannot be consolidated in GATES.	Yes	Yes	Yes	Yes
Split Shipment	User can break down a shipment, on one TCMD, into two or more shipments and create a TCMD for each separate shipment.	Yes	Yes	Yes	Yes
Edit TCMD	User can change data on a TCMD.	Yes	Yes	Yes	Yes
Cap and Edit Pallet	User can cap finished pallet, and edit the documentation to reflect the contents of a pallet.	Yes	Yes	Yes	Yes
Pallet Placard and Pallet Summary	User can create a placard for a pallet, or display a list of pallets and their contents.	Yes	Yes	Yes	Yes
Transportation Control Numbers (TCN)	User can inquire about TCN for shipments.	Yes	Yes	Yes	Yes
Bump Cargo	User can bump cargo by pallet or TCN, and inquire about bumped cargo.	Yes	Yes	Yes	Yes
Bay/Grid Inventory	Functions provide information about cargo locations. User can create new inventories, join existing inventories, or suspend or resume creation of an inventory.	Yes	No	Yes	Yes
Air Inbound	User can process inbound shipments.	Yes	Yes	Yes	Yes
Pallet Incheck	Functions allow user to process air inbound pallets.	Yes	Yes	Yes	Yes
Pallet Incheck - SC	The user can process multi-piece shipments at once instead of scanning each piece. The Piece Number defaults to SC (Shipment Control).	Yes	Yes	Yes	Yes
MSL	User can print Military Shipping Label (MSL) for inbound air cargo.	Yes	Yes	Yes	Yes
Loose Incheck	User can check in loose cargo.	Yes	Yes	Yes	Yes
Intransit Incheck	User can check in cargo that is transiting the aerial port.	Yes	Yes	Yes	Yes
Truck Incheck	Functions allow user to check in cargo that arrives by truck.	Yes	Yes	Yes	Yes
New Truck - No Hit	Truck ID is not in the database. User must create a new truck record. This is for a No-hit TCN, when no ATCMD is submitted. The user must enter all ATCMD data.	Yes	Yes	Yes	Yes
Land bridge and Loose Cargo Incheck	User can check in land bridge-shipped cargo and a loose-cargo shipment.	Yes	No	Yes	Yes

Function Name	Function	AF	CMOS	GATES	SAP
Close Truck	User indicates that the truck is empty.	Yes	Yes	Yes	Yes
Unchecked TCNs	If the truck is not empty when Close Truck function is used, the system will display a list of TCNs that have not been in checked as yet.	Yes	Yes	Yes	Yes
Pallet Breakdown and Pallet Buildup	Users can breakdown a pallet or buildup a pallet using these functions.	Yes	Yes	Yes	Yes
Load Surface Conveyance	User can load a truck, and plan the movement of the cargo.	Yes	Yes	Yes	Yes
Truck Load	This function allows the user to process cargo for a surface shipment.	Yes	Yes	Yes	Yes
Available Cargo Criteria	The user selects the cargo for a truck shipment by bay location, routes, consignees, or can select "All Pallets".	Yes	Yes	Yes	Yes
Available Routes	User can display the list of truck routes	Yes	Yes	Yes	Yes
Assignable Consignees	User can display the list of consignees who can be used for the cargo shipment.	Yes	Yes	Yes	No
Load Cargo and Delete Cargo	User prepares the load for the truck and can delete cargo from the truck load.	Yes	Yes	Yes	Yes
Cargo Summary	Function will display a summary list of cargo loaded on the truck.	Yes	Yes	Yes	Yes
Add Stop and Delete Stop	User can add or delete a stop from the planned route depending on cargo load.	Yes	Yes	Yes	Yes
Surface Manifest	User can display a manifest for a surface shipment.	Yes	Yes	Yes	No
New Conveyance	The user can select or enter an existing surface conveyance number, or generate a new surface conveyance number to be saved in the database.	Yes	Yes	Yes	Yes
Delete Conveyance	The user can delete an existing number from the database.	Yes	Yes	Yes	Yes
Truck Load Depart	When the truck is loaded and the trip is planned, the user enters the date/time that the truck leaves the aerial port.	Yes	No	Yes	Yes
Passenger Processing	Functions allow the user to process passengers for air transport.	Yes	No	Yes	No
Read Baggage Tag	The baggage tag is scanned into the system	Yes	No	No	No
Read Boarding Pass	The passenger's boarding pass is scanned into the system.	Yes	No	Yes	No
Edit/Create Trailers	User can create trailers (additional information) to identify types of cargo that require special handling or processing.	Yes	Yes	Yes	Yes
Edit TCMD Record	User can query the database to view a record, edit a record, or create a new TCMD record.	Yes	Yes	Yes	Yes
System/Device Functions	User can select printers available for the system to use.	Yes	Yes	Yes	Yes

	GATES & CMOS	SAP & CMOS	SAP & GATES	SAP & AF
# of Functions Similar	**35**	**34**	**36**	**36**
Total # of Functions	**42**	**35**	**41**	**42**
Percentage Similar	**83.33%**	**97.14%**	**87.80%**	**85.71%**

5. Deployment Management:

Function Name	Function	AF	CMOS	GATES	SAP
Deployment Management	Contains the actions necessary to monitor and direct transportation deployment activity. Interfaces between the various systems that provide cargo and passenger records based on planned taskings.	Yes	Yes	Yes	Yes
Deployment Passenger Backlog	Provides the capability to interface MANPER formatted or DeMS formatted passenger data.	Yes	Yes	No	Yes
Exercise and Deployment Executions	Prepares, executes, and interfaces data for a deployment, deployment exercise, or training session. Provides the capability to work in deployment, exercise and/or training simultaneously. Process routine peacetime TCNs without interrupting deployments.	Yes	Yes	Yes	Yes
Exercise and Deployment Preparation	Provides the capability to select a deployment plan mode; remove unneeded data from the database prior to beginning a deployment, deployment exercise, or training session; as well as, initiate and terminate a deployment, deployment exercise, or training session.	Yes	Yes	No	Yes
READY Augmentee Data	Provides the capability to enter, display, edit, and print deployment augmentee information. Users will have the capability to manage augmentee training and assign deployment duties.	Yes	Yes	No	Yes
Deployment Data	Provides the capability to display all data unloads from LOGMOD, and MANPER, since the beginning of the latest deployment or deployment exercise. Provides the capability to display chalk cargo and passenger information and to interface this data with the LOGMOD system.	Yes	Yes	No	Yes
Airlift Data	Provides the capability to create a Request for Additional Airlift (DD Form 1249) and to transmit the requirements to the site co-located with their MAJCOM. Provides the capability to display and print an Airlift Inspection Checklist.	Yes	Yes	No	Yes
Post Exercise Deployment Execution Analysis	This function contains the processes necessary to terminate a deployment, deployment exercise, or training session and to analyze the deployment or deployment exercise results. Provides the capability to create a report of CALM related data for specified increment TCNs	Yes	Yes	No	Yes

	GATES & CMOS	SAP & CMOS	SAP & GATES	SAP & AF
# of Functions Similar	**2**	**8**	**2**	**8**
Total # of Functions	**8**	**8**	**2**	**8**
Percentage Similar	**25.00%**	**100.00%**	**100.00%**	**100.00%**

6. Passenger Processing:

Function Name	Function	AF	CMOS	GATES	SAP
Pet Reservation	User can make a pet reservation on AMC passenger bookable missions, to include the commercial Patriot Express Missions	Yes	No	Yes	No
Passenger Reservation	User can make a passenger reservation on AMC passenger bookable missions, to include the commercial Patriot Express Missions.	Yes	No	Yes	Yes
View Mission Availability	Allows users worldwide to view available bookable missions for all AMC channels.	Yes	No	Yes	Yes
Group Reservations	User can make group reservations.	Yes	No	Yes	Yes
Itinerary	Provided booked passengers information relating to passengers itinerary and reporting time.	Yes	No	Yes	Yes
Reservation Report	Provides a reservation report.	Yes	No	Yes	Yes
Passenger Ineligible Listing	Does not allow the processing of passengers denied travel by servicing HQ with GATES.	Yes	No	Yes	Yes
Port Booking	Provides aerial port booking capability after flight locks out at HQ level.	Yes	No	Yes	No
Passenger and Baggage Incheck	Provides the capability to create, display, edit, and print a passenger manifest for both deployment (air and surface) passengers and non deployment passengers. After passenger manifests are released, they are transmitted to the enroute and final destination. This will apply for both air and surface types.	Yes	No	Yes	Yes
Inbound Passenger Processing	Provides the capability to update inbound passenger arrival date and time at enroute stop or the final destination. Provides a means to maintain inbound manifest passenger data.	Yes	Yes	Yes	Yes
Convoy and Fleet Status	Provides the capability to enter, display, edit, and delete convoy schedule and track data. Provides the capability to enter and update fleet service status data.	Yes	Yes	No	Yes
Passenger Check-in	The user can accomplish all actions necessary to board passengers and their luggage for a flight.	Yes	Yes	Yes	Yes
Passenger List	User can query the passenger reservation database.	Yes	Yes	Yes	Yes
Modify Reservation	User can make any necessary changes to a passenger's reservation.	Yes	Yes	Yes	Yes
Process Baggage	Passenger's carry-on and checked baggage is processed for the flight.	Yes	Yes	Yes	Yes
Seat Map	This function provides a view of available seating on the aircraft.	Yes	No	Yes	Yes
Process Seat Assignments	User can display seat assignments, and add, change, or delete passenger's choices.	Yes	No	Yes	Yes
Process Meal Requests	User can display meal requests, and add, change, or delete passenger's choices.	Yes	No	Yes	Yes
Charges and Charges - Amount Tendered and Change Due	Functions compute passenger's charges. Passenger pays the charges and receives change due.	Yes	No	Yes	Yes
Issue Boarding Pass	User issues a boarding pass from a PC workstation.	Yes	No	Yes	Yes

Function Name	Function	AF	CMOS	GATES	SAP
Issue Boarding Pass (AIT)	A boarding pass is prepared and issued using the Automated Identification Technology (AIT) hand held terminal.	Yes	No	Yes	No
Space A	User displays Space Available seats on the flight and assigns seats to passengers traveling in Space Available status.	Yes	No	Yes	Yes
Space R	Users view Space Required seating on the flight and makes Space Required seat assignments.	Yes	No	Yes	Yes
Bag Tag and Bag Tag (AIT)	Bag tags are prepared and issued using a workstation or hand held terminal.	Yes	No	Yes	Yes
Billing Confirmation	User enters data into the system so a bill can be prepared and sent to the agency or organization that will pay for the flight.	Yes	No	Yes	Yes
DoD ID Card Reader	The passenger's ID card is electronically read.	Yes	No	Yes	No
Transportation Working Capital Fund (TWCF) Passenger List	User can query the passenger list, and make changes to the list.	Yes	No	Yes	Yes
TWCF Passenger Manifest	User can view or print the TWCF passenger manifest.	Yes	No	Yes	Yes
Crew Meals	User views the meals available for the crew and can add, change, or delete crew requests for meals.	Yes	No	Yes	Yes
Mishandled Baggage	User processes reports of lost or misdirected baggage.	Yes	No	Yes	Yes
Create Case and Update Case File	A mishandled baggage report is entered or updated in the system.	Yes	No	Yes	Yes
Audit Trail	The user can view and/or change information about mishandled baggage.	Yes	No	Yes	Yes
Rush Baggage Manifest	Mishandled baggage that has been located and will be sent to the passenger(s).	Yes	No	Yes	Yes
Flight Status	User can display information about flights based on APOE and Mission ID.	Yes	Yes	Yes	Yes
Aircraft Fleet Service	User tracks all Fleet Service Activities.	Yes	No	Yes	Yes
Gate Control	These functions allow the user to make inquiries about available or in-use gates, and make gate assignment changes.	Yes	No	Yes	Yes
FIDS (Flight Information Display System)	These functions allow the user to make changes to the FIDS. The FIDS presents information on arrivals, departures, local information in a locally designed Power Point Slide Presentation, and available seating for flights originating or transiting the aerial port.	Yes	No	Yes	No
Audit Trail	User can query all transactions of a passenger identifying changes to a specific user.	Yes	No	Yes	Yes
Passenger Reports	These functions allow the user to display or print numerous reports that contain information about passengers using the aerial port.	Yes	No	Yes	Yes
PRC Responsiveness	This function produces a report from/about the Passenger Reservation Center (PRC).	Yes	No	Yes	Yes

Function Name	Function	AF	CMOS	GATES	SAP
Common Dropdowns	This function provides information or definitions to help the user complete passenger processing function.	Yes	Yes	Yes	Yes
Diskette Input	This function allows the user to share data, on diskette, with a location that uses the Remote Global Air Transportation and Execution System as well as other systems.	Yes	Yes	Yes	Yes

	GATES & CMOS	SAP & CMOS	SAP & GATES	SAP & AF
# of Functions Similar	**8**	**9**	**36**	**37**
Total # of Functions	**42**	**9**	**41**	**42**
Percentage Similar	**19.05%**	**100.00%**	**87.80%**	**88.10%**

7. Resource Management:

Function Name	Function	AF	CMOS	GATES	SAP
Air Terminal Personnel	Data on the personnel assigned to the air terminal is maintained in this section.	Yes	Yes	Yes	Yes
Add, Modify, Delete, Inquire Air Terminal Personnel and Training	These functions allow changes in personnel and personnel status, inquiries about personnel status, and changes/status inquiries about special training and equipment qualifications	Yes	Yes	Yes	Yes
Add, Modify, Delete, Inquire Personnel Mobility or TDY Status	These functions allow changes and status inquires about the mobility qualifications and/or TDY status of assigned personnel.	Yes	Yes	Yes	Yes
Add, Modify, Delete, Inquire Air Terminal Equipment and Air Terminal Equipment TDY	Information on equipment at the air terminal in maintained in this section. These functions allow changes and status inquiries about the various equipment at the air terminal and equipment at a TDY location.	Yes	No	Yes	Yes
Add, Modify, Delete, Inquire Air Terminal Equipment Maintenance	These functions allow changes and status inquires about the maintenance on equipment assigned to the air terminal.	Yes	No	Yes	Yes
Equipment/Supply	Information about the equipment/supply inventory at each air terminal.	Yes	Yes	Yes	Yes
Add, Modify, Delete, Inquire Equipment Inventory/Supply	These functions allow changes and status inquires about the system-wide equipment inventory.	Yes	No	Yes	Yes
Work Center Log Book	These functions allow users to display or print information maintained in the Work Center Log Book. Additionally, these functions allow users to review or change manpower data, wing training and exercise information, and generate the Monthly Station Traffic Handling Report.	Yes	No	Yes	Yes

Function Name	Function	AF	CMOS	GATES	SAP
Station Traffic Handling and Add, Mod, Station Traffic Handling	Station real-time and exercise workloads and individual work center workloads are maintained. Users can add or modify real-time station traffic information, or inquire about station traffic.	Yes	No	Yes	Yes
Station Traffic Exercise	Users can access information on workloads as a result of an exercise.	Yes	No	Yes	No
Work Center Station Traffic	Users can access workloads at individual work centers at the aerial port.	Yes	Yes	Yes	Yes
Reports	The user can generate reports on all data and activity during a specific period.	Yes	Yes	Yes	Yes

	GATES & CMOS	SAP & CMOS	SAP & GATES	SAP & AF
# of Functions Similar	**6**	**6**	**11**	**11**
Total # of Functions	**12**	**6**	**12**	**12**
Percentage Similar	**50.00%**	**100.00%**	**91.67%**	**91.67%**

8. Decision Support:

Function Name	Function	AF	CMOS	GATES	SAP
Movement Forecasting	These functions provide forecasts of future transportation requirements.	Yes	No	Yes	Yes
Short Term Movement Forecast	User can add, change, delete, or make an inquiry about short term transportation requirements, by functional area, and plan or schedule accordingly.	Yes	No	Yes	Yes
Long Term Movement Forecast	User can add, change, delete, or make an inquiry about long term transportation requirements, by functional area, and plan or schedule accordingly.	Yes	No	Yes	Yes
Commercial Cargo Movement	These functions provide information about cargo movement by commercial carriers.	Yes	Yes	Yes	Yes
Modify, Change Transport Location	The user can make changes to or inquire about cargo movements by commercial carriers.	Yes	Yes	Yes	Yes
Channel Management	These functions provide information about transportation channels.	Yes	Yes	Yes	Yes
Add, Modify, Delete, Inquire Channel	Users can change or inquire about transportation channels.	Yes	Yes	Yes	Yes
Tariff Data	These functions provide information about tariffs accessed on cargo movements. (Commercial Cost with carriers).	Yes	No	Yes	Yes
Add, Change, Delete, Inquire Tariff Information	Users can make changes or inquire about tariffs.	Yes	No	Yes	Yes
Commercial Air Cost	Cost information on commercial air shipments.	Yes	Yes	Yes	Yes
Add, Change, Delete, Inquire CLIN	These functions allow users to make changes or inquiries about Contract Line Item Numbers (CLIN) when scheduling a commercial air cargo movement.	Yes	Yes	Yes	Yes

Function Name	Function	AF	CMOS	GATES	SAP
Commercial Organization	These functions provide information about organizations who handle cargo movements.	Yes	Yes	Yes	No
Add, Change, Delete, Inquire Commercial Organization	User can make changes or inquire about commercial organizations that are contracted to move cargo.	Yes	Yes	Yes	Yes
Add, Change, Delete, Inquire Commercial Contract	These functions allow the user to make changes or inquire about contracts with commercial organizations.	Yes	Yes	Yes	Yes
Common Dropdowns	Available to the user while working with any of the functions in the system.	Yes	Yes	Yes	Yes
Address Type, Phone Type, ATL-PAC Code, IATA (International Air Transport Association) Category	Placed here instead of with Movement Forecasting (1.2) since these functions are Common Dropdowns available to all functions in the system.	Yes	No	Yes	No
Reports	These functions allow the user to generate reports about current, future, and past cargo movements.	Yes	Yes	Yes	Yes

	GATES & CMOS	SAP & CMOS	SAP & GATES	SAP & AF
# of Functions Similar	**11**	**10**	**15**	**15**
Total # of Functions	**17**	**11**	**17**	**17**
Percentage Similar	**64.71%**	**90.91%**	**88.24%**	**88.24%**

9. System Communication:

Function Name	Function	AF	CMOS	GATES	SAP
System Communications	The outgoing capabilities process data and messages/data that are being sent from the local site to agencies or entities that are external to the local site and other sites.	Yes	Yes	Yes	Yes
Library Functions	Provides functions to support the repetitive processing requirements for formatters and distributors. They include, but are not limited to, functions which log into the database, report errors, do copies, write strings and integers to the same file, perform database inserts and updates.	Yes	Yes	Yes	Yes
Interactive Communications Interface (ICI)	The ICI adapter will retrieve incoming data from the ICI handler, format the data into the Data Log format, and then place the data into the Incoming Data Log.	Yes	Yes	No	Yes

Function Name	Function	AF	CMOS	GATES	SAP
Defense Data Network (DDN)	Will provide a general purpose DDN Status program that runs independently and checks to see if the DDN communications capability is up or down.	Yes	Yes	No	No
Express Shipment Processor	Will provide an express carrier module process to perform rating and routing of express shipments. Carrier software will reside on the server to perform this function. A separate module will be available for each carrier's participation in the Express Carrier Program.	Yes	Yes	No	Yes
NAME	***COMMUNICATION***				
Standard Base Supply System	2-Way	Yes	Yes	No	Yes
Integrated Logistics System	2-Way	Yes	Yes	No	Yes
Airlift Clearance Authority	2-Way	Yes	Yes	Yes	Yes
Airlift Clearance Authority	1-Way	Yes	Yes	Yes	Yes
Water Port Systems	2-Way	Yes	Yes	No	Yes
Combat Ammunitions System Base Level	1-Way	Yes	Yes	No	Yes
Department of Army Movements Management	2-Way	Yes	Yes	No	Yes
Logistics Module	2-Way	Yes	Yes	No	Yes
Computer Aided Load Manifesting	2-Way	Yes	Yes	No	Yes
CONUS Freight Management	2-Way	Yes	Yes	No	Yes
Manpower Personnel Module	1-Way	Yes	Yes	No	Yes
Advanced Traceability and Control System	1-Way	Yes	Yes	No	Yes
Express Carrier System	1-Way	Yes	Yes	No	Yes
Global Transportation Network	1-Way	Yes	Yes	Yes	Yes
Power Track	1-Way	Yes	Yes	No	Yes
Automated Manifesting System	1-Way	Yes	Yes	No	Yes
Business Process Server	2-Way	Yes	Yes	No	Yes
Army Airlift Clearance Authority (AACA)	1-Way	Yes	No	Yes	Yes
Automated Air Load Planning System (AALPS)	2-Way	Yes	No	Yes	Yes
AMC Business Decision Model (ABDM)	1-Way	Yes	No	Yes	Yes
Airlift Service Industrial Fund Integrated Computer System (ASIFICS)	2-Way	Yes	No	Yes	Yes

Function Name	Function	AF	CMOS	GATES	SAP
Advanced Shipping Notice (ASN)	1-Way	Yes	No	Yes	Yes
Consolidated Air Mobility Planning System (CAMPS)	1-Way	Yes	No	Yes	Yes
Commercial Movement Interface (CMI)	1-Way	Yes	No	Yes	Yes
Distribution Standard System (DSS)	1-Way	Yes	Yes	Yes	Yes
Enhanced Transportation Automated Data System (ETADS)	2-Way	Yes	Yes	Yes	Yes
Financial and Air Clearance Transportation System (FACTS)	2-Way	Yes	Yes	Yes	Yes
Global Decision Support System (GDSS)	2-Way	Yes	No	Yes	Yes
Integrated Management Tool (IMT)	1-Way	Yes	No	Yes	Yes
International Traffic Management System (ITRAM)	1-Way	Yes	No	Yes	Yes
Logistics Intelligence File (LIF)	1-Way	Yes	No	Yes	Yes
Remote Consolidated Aerial Port Subsystem (RCAPS)	2-Way	Yes	No	Yes	Yes
Transportation Coordinator-Automated Command and Control Information System (TC-ACCIS)	1-Way	Yes	No	Yes	Yes
Transportation Coordinator's-Automated Information for Movement System II (TC-AIMS II)	1-Way	Yes	Yes	Yes	Yes
Table Management Distribution System (TMDS)	1-Way	Yes	No	Yes	Yes

	GATES & CMOS	SAP & CMOS	SAP & GATES	SAP & AF
# of Functions Similar	**9**	**25**	**23**	**39**
Total # of Functions	**40**	**26**	**23**	**40**
Percentage Similar	**22.50%**	**96.15%**	**100.00%**	**97.50%**

10. World Wide Web:

Function Name	Function	AF	CMOS	GATES	SAP
Warning Message	It is assumed that a message states that the site is for official government business only.	Yes	Yes	Yes	Yes
Common Dropdown	User can query the database to get information needed for Space-A signup and to view the Flight Information Display System (FIDS).	Yes	No	Yes	Yes
Signup	User can sign up for a Space A flight.	Yes	Yes	Yes	No
Space A Backlog	User can view the list of Space A requests.	Yes	Yes	Yes	No
FIDS	Display the FIDS.	Yes	No	Yes	No
FIDS - Arrivals	Information on arriving/departing flights with Space A seating is displayed.	Yes	No	Yes	No
Pet Reservation	User can make a pet reservation on AMC passenger bookable missions, to include the commercial Patriot Express missions.	Yes	No	Yes	No
View Mission Availability	Allows users worldwide to view available bookable missions for all AMC channels.	Yes	No	Yes	Yes
Group Reservations	User can make group reservations.	Yes	No	Yes	Yes
Itinerary	Provided booked passengers information relating to passengers itinerary and reporting time.	Yes	No	Yes	Yes
Reservation Report		Yes	No	Yes	Yes
Passenger Ineligible Listing	Does not allow the processing of passengers denied travel by servicing HQ within GATES.	Yes	No	Yes	No
Passenger Reservations	User can make a passenger reservation on AMC passenger bookable missions, to include the commercial Patriot Express missions using the WWW.	Yes	No	Yes	Yes

	GATES & CMOS	SAP & CMOS	SAP & GATES	SAP & AF
# of Functions Similar	**3**	**1**	**7**	**7**
Total # of Functions	**13**	**3**	**13**	**13**
Percentage Similar	**23.08%**	**33.33%**	**53.85%**	**53.85%**

11. Mission Status:

Function Name	Function	AF	CMOS	GATES	SAP
Mission Monitor	Automated mission tracking through GDSS interface. Provides mission number, MDS, ETA, ETD, ATA, ATD, and complete station routing, etc.	Yes	No	Yes	Yes
SOE Library	Tracks all actions performed by various work centers to ensure on-time departure.	Yes	No	Yes	Yes
Mission Reports	These functions allow the user to display or print numerous reports that contain information about missions and mission folders.	Yes	No	Yes	Yes
Station Workload	Allows user to display/view any station workload in Mission Monitor.	Yes	No	Yes	Yes
MICAP	User can track MICAP information.	Yes	No	Yes	Yes

Function Name	Function	AF	CMOS	GATES	SAP
Create Divert Manifest	System generates a diverted manifest for passengers and cargo when a mission overflys, reroutes, etc. a manifested down line station.	Yes	No	Yes	Yes
Space Blocks	User can track higher headquarter space blocks	Yes	No	Yes	Yes

	GATES & CMOS	SAP & CMOS	SAP & GATES	SAP & AF
# of Functions Similar	**0**	**0**	**7**	**7**
Total # of Functions	**7**	**0**	**7**	**7**
Percentage Similar	**0.00%**	**0.00%**	**100.00%**	**100.00%**

12. Summary of Results:

Functional Headings	GATES & CMOS	SAP & CMOS	SAP & GATES	SAP & AF
System Administration				
# of Functions Similar	14	14	13	14
Total # of Functions	16	15	15	16
Percentage Similar	87.50%	93.33%	86.67%	87.50%
Surface Cargo Processing				
# of Functions Similar	24	41	26	43
Total # of Functions	45	43	26	45
Percentage Similar	53.33%	95.35%	100.00%	95.56%
Air Cargo Processing				
# of Functions Similar	40	41	45	46
Total # of Functions	48	42	46	48
Percentage Similar	83.33%	97.62%	97.83%	95.83%
Automated Identification Technology (AIT)				
# of Functions Similar	35	34	36	36
Total # of Functions	42	35	41	42
Percentage Similar	83.33%	97.14%	87.80%	85.71%
Deployment Management				
# of Functions Similar	2	8	2	8
Total # of Functions	8	8	2	8
Percentage Similar	25.00%	100.00%	100.00%	100.00%
Passenger Processing				
# of Functions Similar	8	9	36	37
Total # of Functions	42	9	41	42
Percentage Similar	19.05%	100.00%	87.80%	88.10%
Resource Management				
# of Functions Similar	6	6	11	11
Total # of Functions	12	6	12	12
Percentage Similar	50.00%	100.00%	91.67%	91.67%
Decision Support				
# of Functions Similar	11	10	15	15
Total # of Functions	17	11	17	17
Percentage Similar	64.71%	90.91%	88.24%	88.24%
System Communication				
# of Functions Similar	9	25	23	39
Total # of Functions	40	26	23	40
Percentage Similar	22.50%	96.15%	100.00%	97.50%
WWW-Based Functionality				
# of Functions Similar	3	1	7	7
Total # of Functions	13	3	13	13
Percentage Similar	23.08%	33.33%	53.85%	53.85%
Mission Status				
# of Functions Similar	0	0	7	7
Total # of Functions	7	0	7	7
Percentage Similar	0.00%	0.00%	100.00%	100.00%
	GATES & CMOS	**SAP & CMOS**	**SAP & GATES**	**SAP & AF**
# of Functions Similar	**152**	**189**	**221**	**263**
Total # of Functions	**290**	**198**	**243**	**290**
Overall Percentage Similar	**52.41%**	**95.45%**	**90.95%**	**90.69%**

Appendix F: Gap Analysis of Oracle and Air Force Systems

1. System Administration:

Function Name	Function	AF	CMOS	GATES	Oracle
Database Creation	System will provide the capability to create and maintain services in normal operations mode.	Yes	Yes	Yes	Yes
Database Update	System will provide capability to modify the database structure while retaining any existing data.	Yes	Yes	Yes	Yes
Database Table Maintenance	System allows the user to add, change, delete, or inquire about data stored in database tables.	Yes	Yes	Yes	Yes
File System Maintenance	User can add, change, delete, or inquire about files in the system.	Yes	Yes	Yes	Yes
Site Specific Data	System will provide capabilities to manage each site independently.	Yes	Yes	Yes	Yes
Training Database MX	System provides database schema that will support user training.	Yes	Yes	Yes	No
Archives	System provides three levels of historical archiving.	Yes	Yes	Yes	Yes
Error Messages	Client and server standardized error messages will be displayed.	Yes	Yes	Yes	Yes
Query Capability	System provides the capability to connect to the database from system server.	Yes	Yes	Yes	Yes
Help Menu	System provides help function which will allow the user to obtain info describing an operation of products.	Yes	Yes	Yes	Yes
Reports and Inquires	System provides reports of functional and system related activity.	Yes	Yes	Yes	Yes
Reports	System provides reports of info collected by the system.	Yes	Yes	Yes	Yes
Message Generation	System provides a function for the user to create, edit, save, and print standard Air Force messages.	Yes	Yes	Yes	Yes
MAJCOM Query	System provides the capability to allow each USAF MAJCOM to retrieve real-time transportation data.	Yes	Yes	Yes	Yes
Legacy Systems	System allows user to add, change, delete, or inquire about the history of legacy systems that have been incorporated.	Yes	No	Yes	No
Express Carrier Modules	System interfaces with all participating express carriers, and will provide a capability to transmit Electronic Data.	Yes	Yes	No	Yes

	CMOS & GATES	Oracle & CMOS	Oracle & GATES	Oracle & AF
# of Functions Similar	**14**	**14**	**13**	**14**
Total # of Functions	**16**	**15**	**15**	**16**
Percentage Similar	**87.50%**	**93.33%**	**86.67%**	**87.50%**

2. Surface Cargo Processing:

Function Name	Function	AF	CMOS	GATES	Oracle
Airlift Clearance Authority (ACA)	System provides programs to ensure the accuracy and validity of ACA data.	Yes	Yes	Yes	Yes
ATCMD	Hosts will maintain ATCMD data IAW MILSTAMP for shipments.	Yes	Yes	Yes	Yes
ACA Process	System will send ATCMDs to the ACA electronically.	Yes	Yes	No	Yes
Cleared Shipments	System provides cleared shipments through the ACA electronically.	Yes	Yes	No	No
ATCMD History	System provides the capability to review ATCMD history for shipment processed in the system.	Yes	Yes	Yes	Yes
Shipment Record	Systems provides the capability to preview the shipment record for shipment.	Yes	Yes	Yes	Yes
Shipment MX	System provides the capability to create shipment records.	Yes	Yes	Yes	Yes
DD Form 1149	System provides the capability to process manual shipments by providing a means to accept and print form data.	Yes	Yes	No	Yes
Partial Shipment	System provides the capability to create partial shipments	Yes	Yes	Yes	Yes
Split Shipments	System provides the capability to split TCNs into multiple shipments.	Yes	Yes	Yes	Yes
Trailer Data	System provides the capability to enter additional data into the system.	Yes	Yes	Yes	Yes
Increment Cargo	System provides the capability to automatically match increment TCNs to stock numbers within the database.	Yes	Yes	No	Yes
Carrier Schedule Record	System provides the capability to enter and display cargo data.	Yes	Yes	No	Yes
Shipment Processing	Provides capability to display all shipments requiring proces4sing by each functional area.	Yes	Yes	Yes	Yes
Frustrate Shipment	Provides the capability to enter and clear frustrate codes and remarks.	Yes	Yes	Yes	Yes
Small Parcel Shipment (FedEx and UPS) non-I2P	Provides capability to process small parcel shipments.	Yes	Yes	No	Yes
In-check Cargo	In-check function matches received cargo records to actual cargo received.	Yes	Yes	Yes	Yes
In-check via HHT	In-check TCN data into to database.	Yes	Yes	Yes	Yes
Reference Tables	Creates and maintains reference data tables for storing basic shipment data.	Yes	Yes	Yes	Yes
Hazardous Cargo	Capability to enter necessary data and print Shipper's Declaration.	Yes	Yes	No	Yes
DODAAC Data	Provides capability to create, edit, and delete TCMD data.	Yes	Yes	Yes	Yes
UMMIPS Data	Monitors shipment processing times for compliance standards.	Yes	Yes	Yes	Yes
Deployment TCMD	Provides the capability to create, edit, and delete TCMD data.	Yes	Yes	Yes	Yes
Report Shipment Data	Reports data to support cargo movements.	Yes	Yes	Yes	Yes
Land bridge	User can inquire about or change information on land bridge cargo.	Yes	No	Yes	Yes
Human Remains Message	User can make inquiries about, change information, or display information about human remains shipments.	Yes	No	Yes	Yes
Mass Incheck	Function allows the user to check in an entire pallet or pallets of cargo at once.	Yes	Yes	Yes	Yes

Function Name	Function	AF	CMOS	GATES	Oracle
Military Shipment Label	User can make changes or inquire and print military shipment labels.	Yes	Yes	Yes	Yes
View and Update Bay Location	User can display cargo location or change information on cargo location.	Yes	Yes	Yes	Yes
Pallet Processing	Functions allow the user to display and change information about palletized shipments.	Yes	Yes	Yes	Yes
Shipping Documents (*GATES can print the TCMD and MSL*)	System provides the capability to create, edit, and print the following forms: DD Form 1149, DD Form 1384 (TCMD), DD Form 1348-1A, DD Form 1387 (Shipping Label), bar coded Express Carrier Label, DD Form 1387-2 Special Handling Data Certification Form, Shipper's Declaration for Dangerous Goods, and DD Form 1907.	Yes	Yes	No	Yes
Consolidation (*GATES can reconsolidate a shipment that was previously split*)	Assigns and removes air and surface shipments from a consolidation, assign lead TCN, close a consolidation.	Yes	Yes	No	Yes
Containerization	Assigns and remove air and surface shipments from either vans or unitized containers.	Yes	Yes	No	Yes
Export Traffic Releases	Processes Route Orders and ETRs function prepares route order requests, electronically or manually; transmits route order requests to MTMC; and receives electronic responses from shipments requiring routing authority.	Yes	Yes	No	Yes
Routing Data	Provides the capability to maintain freight classification data and routing instruction note info to support the outbound cargo process.	Yes	Yes	No	Yes
Conus Freight Management	Provides the capability to originate, update, and transmit shipment request to CONUS Freight Management (CFM). User can view shipment status, view shipment response, and view or delete message sent by CFM.	Yes	Yes	No	Yes
DAMMS Routing Request	Provides capability to enter routing and movement support request to the Army Movement Management System Redesign and to view the request response.	Yes	Yes	No	No
Shipment Clearance Request	Provides the capability to flag a TCN or Chalk for transmission to the Consolidation and Containerization Point, to the Airlift Clearance Authority, and the Water Clearance Authority	Yes	Yes	No	Yes
Surface Freight Outbound	The Surface Freight Outbound function tracks and documents outbound processes to include movement document production and traffic distribution.	Yes	Yes	Yes	Yes
Tonnage Distribution Report	Provides the capability to view, edit remarks, print commercial carrier tonnage distribution information, reset Tonnage Distribution Register weights, and establish the Tonnage Distribution Register relationship of states and regions.	Yes	Yes	No	Yes

Function Name	Function	AF	CMOS	GATES	Oracle
Surface Movement Documents	Provides the capability to assign TCNs to and remove TCNs from surface movement documents, selects a commercial carrier, and print surface movement documents	Yes	Yes	Yes	Yes
GBL Production and Correction (*GATES sends this info to CMOS for BL creation*)	Provides the capability to enter GBL data, merge this data with TCN data, and release and print GBL. Also provides the capability to correct data on a previously released GBL by creating, editing, and printing a GBL Correction Notice.	Yes	Yes	No	Yes
CBL Production	Provides the capability to enter CBL data, merge this data with TCN data, and release and print a CBL. The CBL allows for the assignment of TCNs to conveyances.	Yes	Yes	No	Yes
Military Truck Manifest	Provides the capability to create, edit, and print a Military Truck Manifest. Provides the capability to create a truck manifest diskette compatible within the military airlift system.	Yes	Yes	Yes	Yes
European and Pacific Movement Docs and Japanese and Korean Bills of Lading	Provides the capability to create, edit, and print the British Freight Consignment Note, the Freight Warrant, the US Bill of Lading Commercial Freight Warrant and Japanese and Korean Bills of Ladings.	Yes	Yes	No	Yes

	CMOS & GATES	Oracle & CMOS	Oracle & GATES	Oracle & AF
# of Functions Similar	**24**	**41**	**26**	**43**
Total # of Functions	**45**	**43**	**26**	**45**
Percentage Similar	**53.33%**	**95.35%**	**100.00%**	**95.56%**

3. Air Cargo Processing:

Function Name	Function	AF	CMOS	GATES	Oracle
Missions	These functions allow the user to make changes to numerous elements and actions involved in mission management and cargo handling.	Yes	Yes	Yes	Yes
Inquire Mission Information	Functions allow user to make changes and inquire for information about missions.	Yes	Yes	Yes	Yes
Receive Mission Information	User can display information about a mission.	Yes	Yes	Yes	Yes
Transport Location Capability	User can make changes to a transportation location's capabilities and display information about a location.	Yes	Yes	Yes	Yes
Airlift Schedule Change Notification	User can display changes to the airlift schedule. The functions allow the user to inquire about mission segments, inbound and outbound missions, mission aborts, and schedule of events: add, delete, or change mission segments, swap aircraft for missions.	Yes	Yes	Yes	Yes

Function Name	Function	AF	CMOS	GATES	Oracle
Rehandle Functions	These functions display workloads due to rehandling of passenger information and aircraft servicing.	Yes	No	Yes	No
Airlift Load Message	User can make changes to data on loads and display information concerning the load.	Yes	No	Yes	Yes
Human Remains Message	User can make inquiries about, change information, or display information about human remains shipments.	Yes	No	Yes	Yes
Air Freight Outbound	Controls and tracks the movement of cargo using air freight modes.	Yes	Yes	Yes	Yes
Pallet Build-up via Hand Held Terminals (HHT)	Provides the capability to create new air pallet identifications access previously created Pallet Ids and attach loose on-hand cargo.	Yes	Yes	Yes	Yes
Pallet Build-up and Pallet Build-up Data	Assembles individual TCNs into a pallet and provides the capability to create, query, update, and edit air Pallet Build-up.	Yes	Yes	Yes	Yes
Placard Printing	Prints pallet identifier data (with bar code, if required) on AF Form 2775.	Yes	Yes	Yes	Yes
Air Manifest and Air Manifest Data	Produces air manifests and other associated shipment documents, link TCNs and built up pallets to manifest numbers, prints the air manifest, produces diskettes to accompany the cargo, and prints a pallet inventory list for each pallet on the manifest. Creates manifests, assign TCNs and pallets to newly created or existing manifests, and release completed manifests, and create diskettes.	Yes	Yes	Yes	Yes
Air Manifest Printing	Provides the capability to print an air manifest containing certification statements.	Yes	Yes	Yes	Yes
AALPS	AALPS provides the capability to download selected TCNs, pallet, and chalk data to a data diskette for load planning.	Yes	No	Yes	Yes
Computer Assisted Load Planning	Provides the capability to download selected TCNs, pallet, and chalk data to a CALM data diskette for load planning.	Yes	Yes	No	Yes
Air Manifest Discrepancies	Provides the capabilities to identify manifested TCNS not physically sent with the shipment. Provides a means to abort missions with an actual flight departure data and within a specific number of days from mission departure.	Yes	Yes	Yes	Yes
Process Inbound Cargo	This function contains all action necessary to process inbound cargo including the ability to establish advanced inbound records, the ability to receive inbound freight and documentation from delivering carriers, the ability to verify quantity and condition of subject freight, the ability to distribute the cargo.	Yes	Yes	Yes	Yes

Function Name	Function	AF	CMOS	GATES	Oracle
Establish Advance Inbound Record	Establish Advance Inbound Records function receives advanced shipment data via the communications interfaces from originating activities, depots, and other interfacing systems. The system determines the intransit status of cargo and provides for both a REPSHIP capability and discrepancy reporting.	Yes	Yes	Yes	Yes
Backlog/Manifest Printing and Processing	Provides the capability to print the inbound backlog/manifest to include addressing and cargo characteristics. This capability includes both air and surface inbound cargo shipments. Also provides the capability to display the Surface Due in Backlog/manifest (by movement document number or by assigned TCN). Provides the capability to enter trailer card data required for TCMD transactions and the DD Form 1371, Consignee's Receipt for Delivery at Stop off Unloading Point.	Yes	Yes	Yes	Yes
Inbound Cargo Diskette	Provides the capability to process data from a truck manifest diskette into the database. Truck manifest diskette data with be TCMD formatted for transportation by military owned or controlled vehicles.	Yes	Yes	Yes	Yes
Rep Ship Data	Provides the capability to display unreceived REPSHIPs and the means to enter a tracer date for overdue REPSHIPs. System will provide both manual (via messages) and electronic capabilities. Provides the means for the system user to select which cargo transaction requires a REPSHIP and print the document.	Yes	Yes	No	Yes
Receive and Distribute Surface/Air Freight	Uses an HHT or client workstation to incheck shipments and to record received shipment data and Over, Short, or Damaged Information	Yes	Yes	Yes	Yes
Incheck via HHT	Provides the capability to incheck air or inbound cargo using HHT.	Yes	Yes	Yes	Yes
Incheck via Workstation	Provides the capability for rapid data entry and manual incheck of inbound surface cargo. Provides for the inchecking of an entire movement document or an individual TCN, as well as the capability to indicate cargo has been received by the customer.	Yes	Yes	Yes	Yes
Distribute Cargo	Provides the capability to indicate cargo has been turned over to a customer and to process intransit TCNs and pallets. Inbound TCNs that are intransit to the current site will be transferred to the outbound database for processing and onward movement.	Yes	Yes	Yes	Yes
SF361 Processing	Provides the capability to track Over, Short, or Damaged discrepancies and to update and print SF 361 forms. User may create an SF 361 without entering a movement document, or for a TCN that is not assigned to a movement document.	Yes	Yes	Yes	Yes

Function Name	Function	AF	CMOS	GATES	Oracle
Convert to Piece Control and Convert to Shipment Control	Shipment can be accounted for either by individual pieces or as an entire shipment.	Yes	Yes	Yes	Yes
Truck Routes	User can add, change, delete, or inquire about truck routes.	Yes	Yes	Yes	Yes
Air Manifest on Hold	User can display manifests for cargo that is in a hold status.	Yes	Yes	Yes	Yes
Surface Conveyance	These functions allow the user to manage and control surface shipments.	Yes	Yes	Yes	Yes
MAI Channel Information	User can add, change, delete, or inquire about information for specific transportation channels.	Yes	Yes	Yes	Yes
TDR and ROD	User can add, change, delete, or inquire about a Transportation Discrepancy Report (TDR) or a Report of Discrepancy (ROD).	Yes	Yes	Yes	Yes
Overdue Inbound GBL TCNs	User can inquire about and display information, by Transportation Control Number (TCN), on overdue shipments.	Yes	Yes	Yes	Yes
Over/Short Shipment Processing	These functions allow the user to display, add, change, delete, or inquire about incorrect shipment quantities, and to report these discrepancies.	Yes	Yes	Yes	Yes
Audit Trail	User can query all transactions of a TCN identifying changes to a specific user.	Yes	No	Yes	Yes
Ad Hoc Cargo Queries	User can make specific inquiries about cargo the transportation unit is handling.	Yes	Yes	Yes	Yes
Reports	These functions generate reports about numerous operations, functions, and processes involved in the management of an aerial port.	Yes	No	Yes	Yes
Scheduled Reports	These functions add, change, delete, or inquire about scheduled reports the system can generate.	Yes	Yes	Yes	Yes
Cargo Management	Functions provide data on cargo awaiting transport.	Yes	Yes	Yes	Yes
Manifest Information and Surface Manifest Information	Function provide information on air and surface cargo manifests.	Yes	Yes	Yes	Yes
Pallet Information	Users can display or change information about palletized cargo.	Yes	Yes	Yes	Yes
TCMD Information	User can display or change information on a Transportation Control Movement Document.	Yes	Yes	Yes	Yes
Trailer Information	User can create manifest trailers or attachments for manifests on cargo that requires special handling or processing.	Yes	Yes	Yes	Yes
Cancel Manifest or Load Suspended Manifest	These two functions allow the user cancel a cargo manifest, or display a suspended manifest.	Yes	Yes	Yes	Yes
Manifest Register Assign	User can add or change information about manifests and their numbers in the register.	Yes	Yes	Yes	Yes
Common Dropdowns	These functions are available to provide help when using any of the functions in the module.	Yes	Yes	Yes	Yes
Help	Help files for any function	Yes	Yes	Yes	Yes
		CMOS & GATES	**Oracle & CMOS**	**Oracle & GATES**	**Oracle & AF**
	# of Functions Similar	**40**	**42**	**45**	**47**
	Total # of Functions	**48**	**42**	**46**	**48**
	Percentage Similar	**83.33%**	**100.00%**	**97.83%**	**97.92%**

4. Automatic Identification Technology (AIT)

Function Name	Function	AF	CMOS	GATES	Oracle
Pallet Processing	Functions allow user to manage and process palletized cargo. User can being building a pallet, suspend or resume the process, and display data on suspended pallet builds.	Yes	Yes	Yes	Yes
Join Session	This function is used to allow more than one person to build a pallet.	Yes	No	Yes	No
Build in Progress Pallets	This inquiry will identify pallets that are not completely built.	Yes	Yes	Yes	Yes
Frustrate/Unfrustrate Pallets	These functions allow a user to place a pallet in frustrated status, or remove the pallet from frustrated status.	Yes	Yes	Yes	Yes
Consolidate Shipment	User can combine two or more shipments, with individual Transportation Control and Movement Document (TCMDs), into one shipment, on a single TCMD. GATES definition is, a previously split TCN can be consolidated. Two or more shipments with the first 14 characters of the TCN different cannot be consolidated in GATES.	Yes	Yes	Yes	Yes
Split Shipment	User can break down a shipment, on one TCMD, into two or more shipments and create a TCMD for each separate shipment.	Yes	Yes	Yes	Yes
Edit TCMD	User can change data on a TCMD.	Yes	Yes	Yes	Yes
Cap and Edit Pallet	User can cap finished pallet, and edit the documentation to reflect the contents of a pallet.	Yes	Yes	Yes	Yes
Pallet Placard and Pallet Summary	User can create a placard for a pallet, or display a list of pallets and their contents.	Yes	Yes	Yes	Yes
Transportation Control Numbers (TCN)	User can inquire about TCN for shipments.	Yes	Yes	Yes	Yes
Bump Cargo	User can bump cargo by pallet or TCN, and inquire about bumped cargo.	Yes	Yes	Yes	Yes
Bay/Grid Inventory	Functions provide information about cargo locations. User can create new inventories, join existing inventories, or suspend or resume creation of an inventory.	Yes	No	Yes	Yes
Air Inbound	User can process inbound shipments.	Yes	Yes	Yes	Yes
Pallet Incheck	Functions allow user to process air inbound pallets.	Yes	Yes	Yes	Yes
Pallet Incheck - SC	The user can process multi-piece shipments at once instead of scanning each piece. The Piece Number defaults to SC (Shipment Control).	Yes	Yes	Yes	Yes
MSL	User can print Military Shipping Label (MSL) for inbound air cargo.	Yes	Yes	Yes	Yes
Loose Incheck	User can check in loose cargo.	Yes	Yes	Yes	Yes
Intransit Incheck	User can check in cargo that is transiting the aerial port.	Yes	Yes	Yes	Yes
Truck Incheck	Functions allow user to check in cargo that arrives by truck.	Yes	Yes	Yes	Yes
New Truck - No Hit	Truck ID is not in the database. User must create a new truck record. This is for a No-hit TCN, when no ATCMD is submitted. The user must enter all ATCMD data.	Yes	Yes	Yes	No
Land bridge and Loose Cargo Incheck	User can check in land bridge-shipped cargo and a loose-cargo shipment.	Yes	No	Yes	Yes

Function Name	Function	AF	CMOS	GATES	Oracle
Close Truck	User indicates that the truck is empty.	Yes	Yes	Yes	Yes
Unchecked TCNs	If the truck is not empty when Close Truck function is used, the system will display a list of TCNs that have not been in checked as yet.	Yes	Yes	Yes	Yes
Pallet Breakdown and Pallet Buildup	User can breakdown a pallet or buildup a pallet using these functions.	Yes	Yes	Yes	Yes
Load Surface Conveyance	User can load a truck, and plan the movement of the cargo.	Yes	Yes	Yes	Yes
Truck Load	This function allows the user to process cargo for a surface shipment.	Yes	Yes	Yes	Yes
Available Cargo Criteria	The user selects the cargo for a truck shipment by bay location, routes, consignees, or can select "All Pallets".	Yes	Yes	Yes	Yes
Available Routes	User can display the list of truck routes	Yes	Yes	Yes	Yes
Assignable Consignees	User can display the list of consignees who can be used for the cargo shipment.	Yes	Yes	Yes	Yes
Load Cargo and Delete Cargo	User prepares the load for the truck and can delete cargo from the truck load.	Yes	Yes	Yes	Yes
Cargo Summary	Function will display a summary list of cargo loaded on the truck.	Yes	Yes	Yes	Yes
Add Stop and Delete Stop	User can add or delete a stop from the planned route depending on cargo load.	Yes	Yes	Yes	Yes
Surface Manifest	User can display a manifest for a surface shipment.	Yes	Yes	Yes	Yes
New Conveyance	The user can select or enter an existing surface conveyance number, or generate a new surface conveyance number to be saved in the database.	Yes	Yes	Yes	Yes
Delete Conveyance	The user can delete an existing number from the database.	Yes	Yes	Yes	Yes
Truck Load Depart	When the truck is loaded and the trip is planned, the user enters the date/time that the truck leaves the aerial port.	Yes	No	Yes	Yes
Passenger Processing	Functions allow the user to process passengers for air transport.	Yes	No	Yes	No
Read Baggage Tag	The baggage tag is scanned into the system	Yes	No	No	No
Read Boarding Pass	The passenger's boarding pass is scanned into the system.	Yes	No	Yes	No
Edit/Create Trailers	User can create trailers (additional information) to identify types of cargo that require special handling or processing.	Yes	Yes	Yes	Yes
Edit TCMD Record	User can query the database to view a record, edit a record, or create a new TCMD record.	Yes	Yes	Yes	Yes
System/Device Functions	User can select printers available for the system to use.	Yes	Yes	Yes	Yes

	CMOS & GATES	Oracle & CMOS	Oracle & GATES	Oracle & AF
# of Functions Similar	**35**	**35**	**37**	**37**
Total # of Functions	**42**	**35**	**41**	**42**
Percentage Similar	**83.33%**	**100.00%**	**90.24%**	**88.10%**

5. Deployment Management

Function Name	Function	AF	CMOS	GATES	Oracle
Deployment Management	Contains the actions necessary to monitor and direct transportation deployment activity. Interfaces between the various systems that provide cargo and passenger records based on planned taskings.	Yes	Yes	Yes	No
Deployment Passenger Backlog	Provides the capability to interface MANPER formatted or DeMS formatted passenger data.	Yes	Yes	No	No
Exercise and Deployment Executions	Prepares, executes, and interfaces data for a deployment, deployment exercise, or training session. Provides the capability to work in deployment, exercise and/or training simultaneously. Process routine peacetime TCNs without interrupting deployments.	Yes	Yes	Yes	No
Exercise and Deployment Preparation	Provides the capability to select a deployment plan mode; remove unneeded data from the database prior to beginning a deployment, deployment exercise, or training session; as well as, initiate and terminate a deployment, deployment exercise, or training session.	Yes	Yes	No	No
READY Augmentee Data	Provides the capability to enter, display, edit, and print deployment augmentee information. Users will have the capability to manage augmentee training and assign deployment duties.	Yes	Yes	No	Yes
Deployment Data	Provides the capability to display all data unloads from LOGMOD, and MANPER, since the beginning of the latest deployment or deployment exercise. Provides the capability to display chalk cargo and passenger information and to interface this data with the LOGMOD system.	Yes	Yes	No	No
Airlift Data	Provides the capability to create a Request for Additional Airlift (DD Form 1249) and to transmit the requirements to the site co-located with their MAJCOM. Provides the capability to display and print an Airlift Inspection Checklist.	Yes	Yes	No	Yes
Post Exercise Deployment Execution Analysis	This function contains the processes necessary to terminate a deployment, deployment exercise, or training session and to analyze the deployment or deployment exercise results. Provides the capability to create a report of CALM related data for specified increment TCNs	Yes	Yes	No	No

	CMOS & GATES	Oracle & CMOS	Oracle & GATES	Oracle & AF
# of Functions Similar	**2**	**2**	**0**	**2**
Total # of Functions	**8**	**8**	**2**	**8**
Percentage Similar	**25.00%**	**25.00%**	**0.00%**	**25.00%**

6. Passenger Processing

Function Name	Function	AF	CMOS	GATES	Oracle
Pet Reservation	User can make a pet reservation on AMC passenger bookable missions, to include the commercial Patriot Express Missions	Yes	No	Yes	No
Passenger Reservation	User can make a passenger reservation on AMC passenger bookable missions, to include the commercial Patriot Express Missions.	Yes	No	Yes	No
View Mission Availability	Allows users worldwide to view available bookable missions for all AMC channels.	Yes	No	Yes	No
Group Reservations	User can make group reservations.	Yes	No	Yes	No
Itinerary	Provided booked passengers information relating to passengers itinerary and reporting time.	Yes	No	Yes	No
Reservation Report	Provides a reservation report.	Yes	No	Yes	No
Passenger Ineligible Listing	Does not allow the processing of passengers denied travel by servicing HQ with GATES.	Yes	No	Yes	No
Port Booking	Provides aerial port booking capability after flight locks out at HQ level.	Yes	No	Yes	No
Passenger and Baggage Incheck	Provides the capability to create, display, edit, and print a passenger manifest for both deployment (air and surface) passengers and non deployment passengers. After passenger manifests are released, they are transmitted to the enroute and final destination. This will apply for both air and surface types.	Yes	No	Yes	No
Inbound Passenger Processing	Provides the capability to update inbound passenger arrival date and time at enroute stop or the final destination. Provides a means to maintain inbound manifest passenger data.	Yes	Yes	Yes	No
Convoy and Fleet Status	Provides the capability to enter, display, edit, and delete convoy schedule and track data. Provides the capability to enter and update fleet service status data.	Yes	Yes	No	No
Passenger Check-in	The user can accomplish all actions necessary to board passengers and their luggage for a flight.	Yes	Yes	Yes	No
Passenger List	User can query the passenger reservation database.	Yes	Yes	Yes	No
Modify Reservation	User can make any necessary changes to a passenger's reservation.	Yes	Yes	Yes	No
Process Baggage	Passenger's carry-on and checked baggage is processed for the flight.	Yes	Yes	Yes	No
Seat Map	This function provides a view of available seating on the aircraft.	Yes	No	Yes	No
Process Seat Assignments	User can display seat assignments, and add, change, or delete passenger's choices.	Yes	No	Yes	No
Process Meal Requests	User can display meal requests, and add, change, or delete passenger's choices.	Yes	No	Yes	No
Charges and Charges - Amount Tendered and Change Due	Functions compute passenger's charges. Passenger pays the charges and receives change due.	Yes	No	Yes	No

Function Name	Function	AF	CMOS	GATES	Oracle
Issue Boarding Pass	User issues a boarding pass from a PC workstation.	Yes	No	Yes	No
Issue Boarding Pass (AIT)	A boarding pass is prepared and issued using the Automated Identification Technology (AIT) hand held terminal.	Yes	No	Yes	No
Space A	User displays Space Available seats on the flight and assigns seats to passengers traveling in Space Available status.	Yes	No	Yes	No
Space R	Users view Space Required seating on the flight and makes Space Required seat assignments.	Yes	No	Yes	No
Bag Tag and Bag Tag (AIT)	Bag tags are prepared and issued using a workstation or hand held terminal.	Yes	No	Yes	No
Billing Confirmation	User enters data into the system so a bill can be prepared and sent to the agency or organization that will pay for the flight.	Yes	No	Yes	No
DoD ID Card Reader	The passenger's ID card is electronically read.	Yes	No	Yes	No
Transportation Working Capital Fund (TWCF) Passenger List	User can query the passenger list, and make changes to the list.	Yes	No	Yes	No
TWCF Passenger Manifest	User can view or print the TWCF passenger manifest.	Yes	No	Yes	No
Crew Meals	User views the meals available for the crew and can add, change, or delete crew requests for meals.	Yes	No	Yes	No
Mishandled Baggage	User processes reports of lost or misdirected baggage.	Yes	No	Yes	No
Create Case and Update Case File	A mishandled baggage report is entered or updated in the system.	Yes	No	Yes	No
Audit Trail	The user can view and/or change information about mishandled baggage.	Yes	No	Yes	No
Rush Baggage Manifest	Mishandled baggage that has been located and will be sent to the passenger(s).	Yes	No	Yes	No
Flight Status	User can display information about flights based on APOE and Mission ID.	Yes	Yes	Yes	No
Aircraft Fleet Service	User tracks all Fleet Service Activities.	Yes	No	Yes	No
Gate Control	These functions allow the user to make inquiries about available or in-use gates, and make gate assignment changes.	Yes	No	Yes	No
FIDS (Flight Information Display System)	These functions allow the user to make changes to the FIDS. The FIDS presents information on arrivals, departures, local information in a locally designed Power Point Slide Presentation, and available seating for flights originating or transiting the aerial port.	Yes	No	Yes	No
Audit Trail	User can query all transactions of a passenger identifying changes to a specific user.	Yes	No	Yes	No
Passenger Reports	These functions allow the user to display or print numerous reports that contain information about passengers using the aerial port.	Yes	No	Yes	No
PRC Responsiveness	This function produces a report from/about the Passenger Reservation Center (PRC).	Yes	No	Yes	No

Function Name	Function	AF	CMOS	GATES	Oracle
Common Dropdowns	This function provides information or definitions to help the user complete passenger processing function.	Yes	Yes	Yes	No
Diskette Input	This function allows the user to share data, on diskette, with a location that uses the Remote Global Air Transportation and Execution System as well as other systems.	Yes	Yes	Yes	No

	CMOS & GATES	Oracle & CMOS	Oracle & GATES	Oracle & AF
# of Functions Similar	**8**	**0**	**0**	**0**
Total # of Functions	**42**	**9**	**41**	**42**
Percentage Similar	**19.05%**	**0.00%**	**0.00%**	**0.00%**

7. Resource Management

Function Name	Function	AF	CMOS	GATES	Oracle
Air Terminal Personnel	Data on the personnel assigned to the air terminal is maintained in this section.	Yes	Yes	Yes	Yes
Add, Modify, Delete, Inquire Air Terminal Personnel and Training	These functions allow changes in personnel and personnel status, inquiries about personnel status, and changes/status inquiries about special training and equipment qualifications	Yes	Yes	Yes	Yes
Add, Modify, Delete, Inquire Personnel Mobility or TDY Status	These functions allow changes and status inquires about the mobility qualifications and/or TDY status of assigned personnel.	Yes	Yes	Yes	Yes
Add, Modify, Delete, Inquire Air Terminal Equipment and Air Terminal Equipment TDY	Information on equipment at the air terminal in maintained in this section. These functions allow changes and status inquiries about the various equipment at the air terminal and equipment at a TDY location.	Yes	No	Yes	Yes
Add, Modify, Delete, Inquire Air Terminal Equipment Maintenance	These functions allow changes and status inquires about the maintenance on equipment assigned to the air terminal.	Yes	No	Yes	Yes
Equipment/Supply	Information about the equipment/supply inventory at each air terminal.	Yes	Yes	Yes	Yes
Add, Modify, Delete, Inquire Equipment Inventory/Supply	These functions allow changes and status inquires about the system-wide equipment inventory.	Yes	No	Yes	Yes

Function Name	Function	AF	CMOS	GATES	Oracle
Work Center Log Book	These functions allow users to display or print information maintained in the Work Center Log Book. Additionally, these functions allow users to review or change manpower data, wing training and exercise information, and generate the Monthly Station Traffic Handling Report.	Yes	No	Yes	Yes
Station Traffic Handling and Add, Mod, Station Traffic Handling	Station real-time and exercise workloads and individual work center workloads are maintained. Users can add or modify real-time station traffic information, or inquire about station traffic.	Yes	No	Yes	Yes
Station Traffic Exercise	Users can access information on workloads as a result of an exercise.	Yes	No	Yes	Yes
Work Center Station Traffic	Users can access workloads at individual work centers at the aerial port.	Yes	Yes	Yes	Yes
Reports	The user can generate reports on all data and activity during a specific period.	Yes	Yes	Yes	Yes

	CMOS & GATES	Oracle & CMOS	Oracle & GATES	Oracle & AF
# of Functions Similar	**6**	**6**	**12**	**12**
Total # of Functions	**12**	**6**	**12**	**12**
Percentage Similar	**50.00%**	**100.00%**	**100.00%**	**100.00%**

8. Decision Support:

Function Name	Function	AF	CMOS	GATES	Oracle
Movement Forecasting	These functions provide forecasts of future transportation requirements.	Yes	No	Yes	Yes
Short Term Movement Forecast	User can add, change, delete, or make an inquiry about short term transportation requirements, by functional area, and plan or schedule accordingly.	Yes	No	Yes	Yes
Long Term Movement Forecast	User can add, change, delete, or make an inquiry about long term transportation requirements, by functional area, and plan or schedule accordingly.	Yes	No	Yes	Yes
Commercial Cargo Movement	These functions provide information about cargo movement by commercial carriers.	Yes	Yes	Yes	Yes
Modify, Change Transport Location	The user can make changes to or inquire about cargo movements by commercial carriers.	Yes	Yes	Yes	Yes
Channel Management	These functions provide information about transportation channels.	Yes	Yes	Yes	Yes
Add, Modify, Delete, Inquire Channel	Users can change or inquire about transportation channels.	Yes	Yes	Yes	Yes
Add, Modify, Delete, Inquire Channel	Users can change or inquire about transportation channels.	Yes	Yes	Yes	Yes

Function Name	Function	AF	CMOS	GATES	Oracle
Tariff Data	These functions provide information about tariffs accessed on cargo movements. (Commercial Cost with carriers).	Yes	No	Yes	Yes
Add, Change, Delete, Inquire Tariff Information	Users can make changes or inquire about tariffs.	Yes	No	Yes	Yes
Commercial Air Cost	Cost information on commercial air shipments.	Yes	Yes	Yes	Yes
Add, Change, Delete, Inquire CLIN	These functions allow users to make changes or inquiries about Contract Line Item Numbers (CLIN) when scheduling a commercial air cargo movement.	Yes	Yes	Yes	Yes
Commercial Organization	These functions provide information about organizations who handle cargo movements.	Yes	Yes	Yes	Yes
Add, Change, Delete, Inquire Commercial Organization	User can make changes or inquire about commercial organizations that are contracted to move cargo.	Yes	Yes	Yes	Yes
Add, Change, Delete, Inquire Commercial Contract	These functions allow the user to make changes or inquire about contracts with commercial organizations.	Yes	Yes	Yes	Yes
Common Dropdowns	Available to the user while working with any of the functions in the system.	Yes	Yes	Yes	Yes
Address Type, Phone Type, ATL-PAC Code, IATA (International Air Transport Association) Category	Placed here instead of with Movement Forecasting (1.2) since these functions are Common Dropdowns available to all functions in the system.	Yes	No	Yes	No
Reports	These functions allow the user to generate reports about current, future, and past cargo movements.	Yes	Yes	Yes	Yes

	CMOS & GATES	Oracle & CMOS	Oracle & GATES	Oracle & AF
# of Functions Similar	**11**	**11**	**16**	**16**
Total # of Functions	**17**	**11**	**17**	**17**
Percentage Similar	**64.71%**	**100.00%**	**94.12%**	**94.12%**

9. System Communication:

Function Name	Function	AF	CMOS	GATES	Oracle
Defense Data Network (DDN)	Will provide a general purpose DDN Status program that runs independently and checks to see if the DDN communications capability is up or down.	Yes	Yes	No	No
System Communications	The outgoing capabilities process data and messages/data that are being sent from the local site to agencies or entities that are external to the local site and other sites.	Yes	Yes	Yes	Yes

Function Name	Function	AF	CMOS	GATES	Oracle
Library Functions	Provides functions to support the repetitive processing requirements for formatters and distributors. They include, but are not limited to, functions which log into the database, report errors, do copies, write strings and integers to the same file, perform database inserts and updates.	Yes	Yes	Yes	Yes
Interactive Communications Interface (ICI)	The ICI adapter will retrieve incoming data from the ICI handler, format the data into the Data Log format, and then place the data into the Incoming Data Log.	Yes	Yes	No	Yes
Express Shipment Processor	Will provide an express carrier module process to perform rating and routing of express shipments. Carrier software will reside on the server to perform this function. A separate module will be available for each carrier's participation in the Express Carrier Program.	Yes	Yes	No	Yes
NAME	***COMMUNICATION***				
Standard Base Supply System	2-Way	Yes	Yes	No	Yes
Integrated Logistics System	2-Way	Yes	Yes	No	Yes
Airlift Clearance Authority	2-Way	Yes	Yes	Yes	Yes
Airlift Clearance Authority	1-Way	Yes	Yes	Yes	Yes
Water Port Systems	2-Way	Yes	Yes	No	Yes
Combat Ammunitions System Base Level	1-Way	Yes	Yes	No	Yes
Department of Army Movements Management	2-Way	Yes	Yes	No	Yes
Logistics Module	2-Way	Yes	Yes	No	Yes
Computer Aided Load Manifesting	2-Way	Yes	Yes	No	Yes
CONUS Freight Management	2-Way	Yes	Yes	No	Yes
Manpower Personnel Module	1-Way	Yes	Yes	No	Yes
Advanced Traceability and Control System	1-Way	Yes	Yes	No	Yes
Express Carrier System	1-Way	Yes	Yes	No	Yes
Global Transportation Network	1-Way	Yes	Yes	Yes	Yes
Power Track	1-Way	Yes	Yes	No	Yes
Automated Manifesting System	1-Way	Yes	Yes	No	Yes
Business Process Server	2-Way	Yes	Yes	No	Yes
Army Airlift Clearance Authority (AACA)	1-Way	Yes	No	Yes	Yes
Automated Air Load Planning System (AALPS)	2-Way	Yes	No	Yes	Yes

Function Name	Function	AF	CMOS	GATES	Oracle
AMC Business Decision Model (ABDM)	1-Way	Yes	No	Yes	Yes
Airlift Service Industrial Fund Integrated Computer System (ASIFICS)	2-Way	Yes	No	Yes	Yes
Advanced Shipping Notice (ASN)	1-Way	Yes	No	Yes	Yes
Consolidated Air Mobility Planning System (CAMPS)	1-Way	Yes	No	Yes	Yes
Commercial Movement Interface (CMI)	1-Way	Yes	No	Yes	Yes
Distribution Standard System (DSS)	1-Way	Yes	Yes	Yes	Yes
Enhanced Transportation Automated Data System (ETADS)	2-Way	Yes	Yes	Yes	Yes
Financial and Air Clearance Transportation System (FACTS)	2-Way	Yes	Yes	Yes	Yes
Global Decision Support System (GDSS)	2-Way	Yes	No	Yes	Yes
Integrated Management Tool (IMT)	1-Way	Yes	No	Yes	Yes
International Traffic Management System (ITRAM)	1-Way	Yes	No	Yes	Yes
Logistics Intelligence File (LIF)	1-Way	Yes	No	Yes	Yes
Remote Consolidated Aerial Port Subsystem (RCAPS)	2-Way	Yes	No	Yes	Yes
Transportation Coordinator-Automated Command and Control Information System (TC-ACCIS)	1-Way	Yes	No	Yes	Yes
Transportation Coordinator's-Automated Information for Movement System II (TC-AIMS II)	1-Way	Yes	Yes	Yes	Yes
Table Management Distribution System (TMDS)	1-Way	Yes	No	Yes	Yes
		CMOS & GATES	**Oracle & CMOS**	**Oracle & GATES**	**Oracle & AF**
	# of Functions Similar	**9**	**25**	**23**	**39**
	Total # of Functions	**40**	**26**	**23**	**40**
	Percentage Similar	**22.50%**	**96.15%**	**100.00%**	**97.50%**

10. World Wide Web:

Function Name	Function	AF	CMOS	GATES	Oracle
Warning Message	It is assumed that a message states that the site is for official government business only.	Yes	Yes	Yes	Yes
Common Dropdown	User can query the database to get information needed for Space-A signup and to view the Flight Information Display System (FIDS).	Yes	No	Yes	No
Signup	User can sign up for a Space A flight.	Yes	Yes	Yes	No
Space A Backlog	User can view the list of Space A requests.	Yes	Yes	Yes	No
FIDS	Display the FIDS.	Yes	No	Yes	No
FIDS - Arrivals	Information on arriving/departing flights with Space A seating is displayed.	Yes	No	Yes	No
Pet Reservation	User can make a pet reservation on AMC passenger bookable missions, to include the commercial Patriot Express missions.	Yes	No	Yes	No
View Mission Availability	Allows users worldwide to view available bookable missions for all AMC channels.	Yes	No	Yes	No
Group Reservations	User can make group reservations.	Yes	No	Yes	No
Itinerary	Provided booked passengers information relating to passengers itinerary and reporting time.	Yes	No	Yes	No
Reservation Report		Yes	No	Yes	No
Passenger Ineligible Listing	Does not allow the processing of passengers denied travel by servicing HQ within GATES.	Yes	No	Yes	No
Passenger Reservations	User can make a passenger reservation on AMC passenger bookable missions, to include the commercial Patriot Express missions using the WWW.	Yes	No	Yes	No

	CMOS & GATES	Oracle & CMOS	Oracle & GATES	Oracle & AF
# of Functions Similar	**3**	**1**	**1**	**1**
Total # of Functions	**13**	**3**	**13**	**13**
Percentage Similar	**23.08%**	**33.33%**	**7.69%**	**7.69%**

11. Mission Status:

Function Name	Function	AF	CMOS	GATES	Oracle
Mission Monitor	Automated mission tracking through GDSS interface. Provides mission number, MDS, ETA, ETD, ATA, ATD, and complete station routing, etc.	Yes	No	Yes	Yes
SOE Library	Tracks all actions performed by various work centers to ensure on-time departure.	Yes	No	Yes	Yes
Mission Reports	These functions allow the user to display or print numerous reports that contain information about missions and mission folders.	Yes	No	Yes	Yes
Station Workload	Allows user to display/view any station workload in Mission Monitor.	Yes	No	Yes	Yes
MICAP	User can track MICAP information.	Yes	No	Yes	Yes
Create Divert Manifest	System generates a diverted manifest for passengers and cargo when a mission overflys, reroutes, etc. a manifested down line station.	Yes	No	Yes	No
Space Blocks	User can track higher headquarter space blocks	Yes	No	Yes	No

	CMOS & GATES	Oracle & CMOS	Oracle & GATES	Oracle & AF
# of Functions Similar	**0**	**0**	**5**	**5**
Total # of Functions	**7**	**0**	**7**	**7**
Percentage Similar	**0.00%**	**0.00%**	**71.43%**	**71.43%**

12. Summary of Results:

Functional Headings	CMOS & GATES	Oracle & CMOS	Oracle & GATES	Oracle & AF
System Administration				
# of Functions Similar	14	14	13	14
Total # of Functions	16	15	15	16
Percentage Similar	87.50%	93.33%	86.67%	87.50%
Surface Cargo Processing				
# of Functions Similar	24	41	26	43
Total # of Functions	45	43	26	45
Percentage Similar	53.33%	95.35%	100.00%	95.56%
Air Cargo Processing				
# of Functions Similar	40	42	45	47
Total # of Functions	48	42	46	48
Percentage Similar	83.33%	100.00%	97.83%	97.92%
Automated Identification Technology (AIT)				
# of Functions Similar	35	35	37	37
Total # of Functions	42	35	41	42
Percentage Similar	83.33%	100.00%	90.24%	88.10%
Deployment Management				
# of Functions Similar	2	2	0	2
Total # of Functions	8	8	2	8
Percentage Similar	25.00%	25.00%	0.00%	25.00%
Passenger Processing				
# of Functions Similar	8	0	0	0
Total # of Functions	42	9	41	42
Percentage Similar	19.05%	0.00%	0.00%	0.00%
Resource Management				
# of Functions Similar	6	6	12	12
Total # of Functions	12	6	12	12
Percentage Similar	50.00%	100.00%	100.00%	100.00%
Decision Support				
# of Functions Similar	11	11	16	16
Total # of Functions	17	11	17	17
Percentage Similar	64.71%	100.00%	94.12%	94.12%
System Communication				
# of Functions Similar	9	25	23	39
Total # of Functions	40	26	23	40
Percentage Similar	22.50%	96.15%	100.00%	97.50%
WWW-Based Functionality				
# of Functions Similar	3	1	1	1
Total # of Functions	13	3	13	13
Percentage Similar	23.08%	33.33%	7.69%	7.69%
Mission Status				
# of Functions Similar	0	0	5	5
Total # of Functions	7	0	7	7
Percentage Similar	0.00%	0.00%	71.43%	71.43%
	CMOS & GATES	**Oracle & CMOS**	**Oracle & GATES**	**Oracle & AF**
# of Functions Similar	**152**	**177**	**178**	**216**
Total # of Functions	**290**	**198**	**243**	**290**
Overall Percentage Similar	**52.41%**	**89.39%**	**73.25%**	**74.48%**

Appendix G: Gap Analysis of PeopleSoft and Air Force Systems

1. System Administration:

Function Name	Function	AF	CMOS	GATES	PeopleSoft
Database Creation	System will provide the capability to create and maintain services in normal operations mode.	Yes	Yes	Yes	Yes
Database Update	System will provide capability to modify the database structure while retaining any existing data.	Yes	Yes	Yes	Yes
Database Table Maintenance	System allows the user to add, change, delete, or inquire about data stored in database tables.	Yes	Yes	Yes	Yes
File System Maintenance	User can add, change, delete, or inquire about files in the system.	Yes	Yes	Yes	Yes
Site Specific Data	System will provide capabilities to manage each site independently.	Yes	Yes	Yes	Yes
Training Database MX	System provides database schema that will support user training.	Yes	Yes	Yes	Yes
Archives	System provides three levels of historical archiving.	Yes	Yes	Yes	Yes
Error Messages	Client and server standardized error messages will be displayed.	Yes	Yes	Yes	Yes
Query Capability	System provides the capability to connect to the database from system server.	Yes	Yes	Yes	Yes
Help Menu	System provides help function which will allow the user to obtain info describing an operation of products.	Yes	Yes	Yes	Yes
Reports and Inquires	System provides reports of functional and system related activity.	Yes	Yes	Yes	Yes
Reports	System provides reports of info collected by the system.	Yes	Yes	Yes	Yes
Message Generation	System provides a function for the user to create, edit, save, and print standard Air Force messages.	Yes	Yes	Yes	Yes
MAJCOM Query	System provides the capability to allow each USAF MAJCOM to retrieve real-time transportation data.	Yes	Yes	Yes	Yes
Legacy Systems	System allows user to add, change, delete, or inquire about the history of legacy systems that have been incorporated.	Yes	No	Yes	Yes
Express Carrier Modules	System interfaces with all participating express carriers, and will provide a capability to transmit Electronic Data.	Yes	Yes	No	Yes

	GATES & CMOS	PeopleSoft & CMOS	PeopleSoft & GATES	PeopleSoft & AF
# of Functions Similar	**14**	**15**	**15**	**16**
Total # of Functions	**16**	**15**	**15**	**16**
Percentage Similar	**87.50%**	**100.00%**	**100.00%**	**100.00%**

2. Surface Cargo Processing:

Function Name	Function	AF	CMOS	GATES	PeopleSoft
Airlift Clearance Authority (ACA)	System provides programs to ensure the accuracy and validity of ACA data.	Yes	Yes	Yes	Yes
ATCMD	Hosts will maintain ATCMD data IAW MILSTAMP for shipments.	Yes	Yes	Yes	Yes
ACA Process	System will send ATCMDs to the ACA electronically.	Yes	Yes	No	Yes
Cleared Shipments	System provides cleared shipments through the ACA electronically.	Yes	Yes	No	Yes
ATCMD History	System provides the capability to review ATCMD history for shipment processed in the system.	Yes	Yes	Yes	Yes
Shipment Record	Systems provide the capability to preview the shipment record for shipment.	Yes	Yes	Yes	Yes
Shipment MX	System provides the capability to create shipment records.	Yes	Yes	Yes	Yes
DD Form 1149	System provides the capability to process manual shipments by providing a means to accept and print form data.	Yes	Yes	No	Yes
Partial Shipment	System provides the capability to create partial shipments	Yes	Yes	Yes	Yes
Split Shipments	System provides the capability to split TCNs into multiple shipments.	Yes	Yes	Yes	Yes
Trailer Data	System provides the capability to enter additional data into the system.	Yes	Yes	Yes	Yes
Increment Cargo	System provides the capability to automatically match increment TCNs to stock numbers within the database.	Yes	Yes	No	Yes
Carrier Schedule Record	System provides the capability to enter and display cargo data.	Yes	Yes	No	Yes
Shipment Processing	Provides capability to display all shipments requiring proces4sing by each functional area.	Yes	Yes	Yes	Yes
Frustrate Shipment	Provides the capability to enter and clear frustrate codes and remarks.	Yes	Yes	Yes	Yes
Small Parcel Shipment (FedEx and UPS) non-I2P	Provides capability to process small parcel shipments.	Yes	Yes	No	No
In-check Cargo	In-check function matches received cargo records to actual cargo received.	Yes	Yes	Yes	Yes
In-check via HHT	In-check TCN data into to database.	Yes	Yes	Yes	Yes
Reference Tables	Creates and maintains reference data tables for storing basic shipment data.	Yes	Yes	Yes	Yes
Hazardous Cargo	Capability to enter necessary data and print Shipper's Declaration.	Yes	Yes	No	No
DODAAC Data	Provides capability to create, edit, and delete TCMD data.	Yes	Yes	Yes	Yes
UMMIPS Data	Monitors shipment processing times for compliance standards.	Yes	Yes	Yes	Yes
Deployment TCMD	Provides the capability to create, edit, and delete TCMD data.	Yes	Yes	Yes	Yes
Report Shipment Data	Reports data to support cargo movements.	Yes	Yes	Yes	Yes
Land bridge	User can inquire about or change information on land bridge cargo.	Yes	No	Yes	Yes
Human Remains Message	User can make inquiries about, change information, or display information about human remains shipments.	Yes	No	Yes	Yes

Function Name	Function	AF	CMOS	GATES	PeopleSoft
Mass Incheck	Function allows the user to check in an entire pallet or pallets of cargo at once.	Yes	Yes	Yes	Yes
Military Shipment Label	User can make changes or inquire and print military shipment labels.	Yes	Yes	Yes	Yes
View and Update Bay Location	User can display cargo location or change information on cargo location.	Yes	Yes	Yes	Yes
Pallet Processing	Functions allow the user to display and change information about palletized shipments.	Yes	Yes	Yes	Yes
Shipping Documents (*GATES can print the TCMD and MSL*)	System provides the capability to create, edit, and print the following forms: DD Form 1149, DD Form 1384 (TCMD), DD Form 1348-1A, DD Form 1387 (Shipping Label), bar coded Express Carrier Label, DD Form 1387-2 Special Handling Data Certification Form, Shipper's Declaration for Dangerous Goods, and DD Form 1907.	Yes	Yes	No	Yes
Consolidation (*GATES can reconsolidate a shipment that was previously split*)	Assigns and removes air and surface shipments from a consolidation, assign lead TCN, close a consolidation.	Yes	Yes	No	Yes
Consolidation (*GATES can reconsolidate a shipment that was previously split*)	Assigns and removes air and surface shipments from a consolidation, assign lead TCN, close a consolidation.	Yes	Yes	No	Yes
Containerization	Assigns and remove air and surface shipments from either vans or unitized containers.	Yes	Yes	No	Yes
Export Traffic Releases	Processes Route Orders and ETRs function prepares route order requests, electronically or manually; transmits route order requests to MTMC; and receives electronic responses from shipments requiring routing authority.	Yes	Yes	No	Yes
Routing Data	Provides the capability to maintain freight classification data and routing instruction note info to support the outbound cargo process.	Yes	Yes	No	Yes
Conus Freight Management	Provides the capability to originate, update, and transmit shipment request to CONUS Freight Management (CFM). User can view shipment status, view shipment response, and view or delete message sent by CFM.	Yes	Yes	No	Yes
DAMMS Routing Request	Provides capability to enter routing and movement support request to the Army Movement Management System Redesign and to view the request response.	Yes	Yes	No	Yes

Function Name	Function	AF	CMOS	GATES	PeopleSoft
Shipment Clearance Request	Provides the capability to flag a TCN or Chalk for transmission to the Consolidation and Containerization Point, to the Airlift Clearance Authority, and the Water Clearance Authority	Yes	Yes	No	Yes
Surface Freight Outbound	The Surface Freight Outbound function tracks and documents outbound processes to include movement document production and traffic distribution.	Yes	Yes	Yes	Yes
Tonnage Distribution Report	Provides the capability to view, edit remarks, print commercial carrier tonnage distribution information, reset Tonnage Distribution Register weights, and establish the Tonnage Distribution Register relationship of states and regions.	Yes	Yes	No	Yes
Surface Movement Documents	Provides the capability to assign TCNs to and remove TCNs from surface movement documents, selects a commercial carrier, and print surface movement documents	Yes	Yes	Yes	Yes
GBL Production and Correction (*GATES sends this info to CMOS for BL creation*)	Provides the capability to enter GBL data, merge this data with TCN data, and release and print GBL. Also provides the capability to correct data on a previously released GBL by creating, editing, and printing a GBL Correction Notice.	Yes	Yes	No	Yes
CBL Production	Provides the capability to enter CBL data, merge this data with TCN data, and release and print a CBL. The CBL allows for the assignment of TCNs to conveyances.	Yes	Yes	No	Yes
Military Truck Manifest	Provides the capability to create, edit, and print a Military Truck Manifest. Provides the capability to create a truck manifest diskette compatible within the military airlift system.	Yes	Yes	Yes	Yes
European and Pacific Movement Docs and Japanese and Korean Bills of Lading	Provides the capability to create, edit, and print the British Freight Consignment Note, the Freight Warrant, the US Bill of Lading Commercial Freight Warrant and Japanese and Korean Bills of Ladings.	Yes	Yes	No	No

	GATES & CMOS	PeopleSoft & CMOS	PeopleSoft & GATES	PeopleSoft & AF
# of Functions Similar	**24**	**41**	**26**	**43**
Total # of Functions	**45**	**43**	**26**	**45**
Percentage Similar	**53.33%**	**95.35%**	**100.00%**	**95.56%**

3. Air Cargo Processing

Function Name	Function	AF	CMOS	GATES	PeopleSoft
Missions	These functions allow the user to make changes to numerous elements and actions involved in mission management and cargo handling.	Yes	Yes	Yes	Yes
Inquire Mission Information	Functions allow user to make changes and inquire for information about missions.	Yes	Yes	Yes	Yes
Receive Mission Information	User can display information about a mission.	Yes	Yes	Yes	Yes
Transport Location Capability	User can make changes to a transportation location's capabilities and display information about a location.	Yes	Yes	Yes	Yes
Airlift Schedule Change Notification	User can display changes to the airlift schedule. The functions allow the user to inquire about mission segments, inbound and outbound missions, mission aborts, and schedule of events: add, delete, or change mission segments, swap aircraft for missions.	Yes	Yes	Yes	No
Rehandle Functions	These functions display workloads due to rehandling of passenger information and aircraft servicing.	Yes	No	Yes	Yes
Airlift Load Message	User can make changes to data on loads and display information concerning the load.	Yes	No	Yes	Yes
Human Remains Message	User can make inquiries about, change information, or display information about human remains shipments.	Yes	No	Yes	Yes
Air Freight Outbound	Controls and tracks the movement of cargo using air freight modes.	Yes	Yes	Yes	Yes
Pallet Build-up via Hand Held Terminals (HHT)	Provides the capability to create new air pallet identifications access previously created Pallet Ids and attach loose on-hand cargo.	Yes	Yes	Yes	Yes
Pallet Build-up and Pallet Build-up Data	Assembles individual TCNs into a pallet and provides the capability to create, query, update, and edit air Pallet Build-up.	Yes	Yes	Yes	Yes
Placard Printing	Prints pallet identifier data (with bar code, if required) on AF Form 2775.	Yes	Yes	Yes	Yes
Air Manifest and Air Manifest Data	Produces air manifests and other associated shipment documents, link TCNs and built up pallets to manifest numbers, prints the air manifest, produces diskettes to accompany the cargo, and prints a pallet inventory list for each pallet on the manifest. Creates manifests, assign TCNs and pallets to newly created or existing manifests, and release completed manifests, and create diskettes.	Yes	Yes	Yes	Yes
Air Manifest Printing	Provides the capability to print an air manifest containing certification statements.	Yes	Yes	Yes	Yes
AALPS	AALPS provides the capability to download selected TCNs, pallet, and chalk data to a data diskette for load planning.	Yes	No	Yes	Yes

Function Name	Function	AF	CMOS	GATES	PeopleSoft
Computer Assisted Load Planning	Provides the capability to download selected TCNs, pallet, and chalk data to a CALM data diskette for load planning.	Yes	Yes	No	Yes
Air Manifest Discrepancies	Provides the capabilities to identify manifested TCNS not physically sent with the shipment. Provides a means to abort missions with an actual flight departure data and within a specific number of days from mission departure.	Yes	Yes	Yes	Yes
Process Inbound Cargo	This function contains all action necessary to process inbound cargo including the ability to establish advanced inbound records, the ability to receive inbound freight and documentation from delivering carriers, the ability to verify quantity and condition of subject freight, the ability to distribute the cargo.	Yes	Yes	Yes	Yes
Establish Advance Inbound Record	Establish Advance Inbound Records function receives advanced shipment data via the communications interfaces from originating activities, depots, and other interfacing systems. The system determines the intransit status of cargo and provides for both a REPSHIP capability and discrepancy reporting.	Yes	Yes	Yes	Yes
Backlog/Manifest Printing and Processing	Provides the capability to print the inbound backlog/manifest to include addressing and cargo characteristics. This capability includes both air and surface inbound cargo shipments. Also provides the capability to display the Surface Due in Backlog/manifest (by movement document number or by assigned TCN). Provides the capability to enter trailer card data required for TCMD transactions and the DD Form 1371, Consignee's Receipt for Delivery at Stop off Unloading Point.	Yes	Yes	Yes	Yes
Inbound Cargo Diskette	Provides the capability to process data from a truck manifest diskette into the database. Truck manifest diskette data with be TCMD formatted for transportation by military owned or controlled vehicles.	Yes	Yes	Yes	Yes
Rep Ship Data	Provides the capability to display unreceived REPSHIPs and the means to enter a tracer date for overdue REPSHIPs. System will provide both manual (via messages) and electronic capabilities. Provides the means for the system user to select which cargo transaction requires a REPSHIP and print the document.	Yes	Yes	No	Yes
Receive and Distribute Surface/Air Freight	Uses an HHT or client workstation to incheck shipments and to record received shipment data and Over, Short, or Damaged Information	Yes	Yes	Yes	Yes

Function Name	Function	AF	CMOS	GATES	PeopleSoft
Incheck via HHT	Provides the capability to incheck air or inbound cargo using HHT.	Yes	Yes	Yes	Yes
Incheck via Workstation	Provides the capability for rapid data entry and manual incheck of inbound surface cargo. Provides for the inchecking of an entire movement document or an individual TCN, as well as the capability to indicate cargo has been received by the customer.	Yes	Yes	Yes	Yes
Distribute Cargo	Provides the capability to indicate cargo has been turned over to a customer and to process intransit TCNs and pallets. Inbound TCNs that are intransit to the current site will be transferred to the outbound database for processing and onward movement.	Yes	Yes	Yes	Yes
SF361 Processing	Provides the capability to track Over, Short, or Damaged discrepancies and to update and print SF 361 forms. User may create an SF 361 without entering a movement document, or for a TCN that is not assigned to a movement document.	Yes	Yes	Yes	Yes
Convert to Piece Control and Convert to Shipment Control	Shipment can be accounted for either by individual pieces or as an entire shipment.	Yes	Yes	Yes	Yes
Truck Routes	User can add, change, delete, or inquire about truck routes.	Yes	Yes	Yes	Yes
Air Manifest on Hold	User can display manifests for cargo that is in a hold status.	Yes	Yes	Yes	Yes
Surface Conveyance	These functions allow the user to manage and control surface shipments.	Yes	Yes	Yes	Yes
MAI Channel Information	User can add, change, delete, or inquire about information for specific transportation channels.	Yes	Yes	Yes	Yes
TDR and ROD	User can add, change, delete, or inquire about a Transportation Discrepancy Report (TDR) or a Report of Discrepancy (ROD).	Yes	Yes	Yes	Yes
Overdue Inbound GBL TCNs	User can inquire about and display information, by Transportation Control Number (TCN), on overdue shipments.	Yes	Yes	Yes	Yes
Over/Short Shipment Processing	These functions allow the user to display, add, change, delete, or inquire about incorrect shipment quantities, and to report these discrepancies.	Yes	Yes	Yes	Yes
Audit Trail	User can query all transactions of a TCN identifying changes to a specific user.	Yes	No	Yes	Yes
Ad Hoc Cargo Queries	User can make specific inquiries about cargo the transportation unit is handling.	Yes	Yes	Yes	Yes
Reports	These functions generate reports about numerous operations, functions, and processes involved in the management of an aerial port.	Yes	No	Yes	Yes

Function Name	Function	AF	CMOS	GATES	PeopleSoft
Scheduled Reports	These functions add, change, delete, or inquire about scheduled reports the system can generate.	Yes	Yes	Yes	Yes
Cargo Management	Functions provide data on cargo awaiting transport.	Yes	Yes	Yes	Yes
Manifest Information and Surface Manifest Information	Function provide information on air and surface cargo manifests.	Yes	Yes	Yes	Yes
Pallet Information	Users can display or change information about palletized cargo.	Yes	Yes	Yes	Yes
TCMD Information	User can display or change information on a Transportation Control Movement Document.	Yes	Yes	Yes	Yes
Trailer Information	User can create manifest trailers or attachments for manifests on cargo that requires special handling or processing.	Yes	Yes	Yes	Yes
Cancel Manifest or Load Suspended Manifest	These two functions allow the user cancel a cargo manifest, or display a suspended manifest.	Yes	Yes	Yes	Yes
Manifest Register Assign	User can add or change information about manifests and their numbers in the register.	Yes	Yes	Yes	Yes
Common Dropdowns	These functions are available to provide help when using any of the functions in the module.	Yes	Yes	Yes	Yes
Help	Help files for any function	Yes	Yes	Yes	Yes

	GATES & CMOS	PeopleSoft & CMOS	PeopleSoft & GATES	PeopleSoft & AF
# of Functions Similar	**40**	**41**	**45**	**47**
Total # of Functions	**48**	**42**	**46**	**48**
Percentage Similar	**83.33%**	**97.62%**	**97.83%**	**97.92%**

4. Automatic Identification Technology (AIT):

Function Name	Function	AF	CMOS	GATES	PeopleSoft
Pallet Processing	Functions allow user to manage and process palletized cargo. User can being building a pallet, suspend or resume the process, and display data on suspended pallet builds.	Yes	Yes	Yes	No
Join Session	This function is used to allow more than one person to build a pallet.	Yes	No	Yes	No
Build in Progress Pallets	This inquiry will identify pallets that are not completely built.	Yes	Yes	Yes	No

Function Name	Function	AF	CMOS	GATES	PeopleSoft
Frustrate/Unfrustrate Pallets	These functions allow a user to place a pallet in frustrated status, or remove the pallet from frustrated status.	Yes	Yes	Yes	No
Consolidate Shipment	User can combine two or more shipments, with individual Transportation Control and Movement Document (TCMDs), into one shipment, on a single TCMD. GATES definition is, a previously split TCN can be consolidated. Two or more shipments with the first 14 characters of the TCN different cannot be consolidated in GATES.	Yes	Yes	Yes	No
Split Shipment	User can break down a shipment, on one TCMD, into two or more shipments and create a TCMD for each separate shipment.	Yes	Yes	Yes	No
Edit TCMD	User can change data on a TCMD.	Yes	Yes	Yes	No
Cap and Edit Pallet	User can cap finished pallet, and edit the documentation to reflect the contents of a pallet.	Yes	Yes	Yes	No
Pallet Placard and Pallet Summary	User can create a placard for a pallet, or display a list of pallets and their contents.	Yes	Yes	Yes	No
Transportation Control Numbers (TCN)	User can inquire about TCN for shipments.	Yes	Yes	Yes	No
Bump Cargo	User can bump cargo by pallet or TCN, and inquire about bumped cargo.	Yes	Yes	Yes	No
Bay/Grid Inventory	Functions provide information about cargo locations. User can create new inventories, join existing inventories, or suspend or resume creation of an inventory.	Yes	No	Yes	No
Air Inbound	User can process inbound shipments.	Yes	Yes	Yes	No
Pallet Incheck	Functions allow user to process air inbound pallets.	Yes	Yes	Yes	No
Pallet Incheck - SC	The user can process multi-piece shipments at once instead of scanning each piece. The Piece Number defaults to SC (Shipment Control).	Yes	Yes	Yes	No
MSL	User can print Military Shipping Label (MSL) for inbound air cargo.	Yes	Yes	Yes	No
Loose Incheck	User can check in loose cargo.	Yes	Yes	Yes	No
Intransit Incheck	User can check in cargo that is transiting the aerial port.	Yes	Yes	Yes	No
Truck Incheck	Functions allow user to check in cargo that arrives by truck.	Yes	Yes	Yes	No
New Truck - No Hit	Truck ID is not in the database. User must create a new truck record. This is for a No-hit TCN, when no ATCMD is submitted. The user must enter all ATCMD data.	Yes	Yes	Yes	No
Land bridge and Loose Cargo Incheck	User can check in land bridge-shipped cargo and a loose-cargo shipment.	Yes	No	Yes	No
Close Truck	User indicates that the truck is empty.	Yes	Yes	Yes	No

Function Name	Function	AF	CMOS	GATES	PeopleSoft
Unchecked TCNs	If the truck is not empty when Close Truck function is used, the system will display a list of TCNs that have not been in checked as yet.	Yes	Yes	Yes	No
Pallet Breakdown and Pallet Buildup	User can breakdown a pallet or buildup a pallet using these functions.	Yes	Yes	Yes	No
Load Surface Conveyance	User can load a truck, and plan the movement of the cargo.	Yes	Yes	Yes	No
Truck Load	This function allows the user to process cargo for a surface shipment.	Yes	Yes	Yes	No
Available Cargo Criteria	The user selects the cargo for a truck shipment by bay location, routes, consignees, or can select "All Pallets".	Yes	Yes	Yes	No
Available Routes	User can display the list of truck routes	Yes	Yes	Yes	No
Assignable Consignees	User can display the list of consignees who can be used for the cargo shipment.	Yes	Yes	Yes	No
Load Cargo and Delete Cargo	User prepares the load for the truck and can delete cargo from the truck load.	Yes	Yes	Yes	No
Cargo Summary	Function will display a summary list of cargo loaded on the truck.	Yes	Yes	Yes	No
Add Stop and Delete Stop	User can add or delete a stop from the planned route depending on cargo load.	Yes	Yes	Yes	No
Surface Manifest	User can display a manifest for a surface shipment.	Yes	Yes	Yes	No
New Conveyance	The user can select or enter an existing surface conveyance number, or generate a new surface conveyance number to be saved in the database.	Yes	Yes	Yes	No
Delete Conveyance	The user can delete an existing number from the database.	Yes	Yes	Yes	No
Truck Load Depart	When the truck is loaded and the trip is planned, the user enters the date/time that the truck leaves the aerial port.	Yes	No	Yes	No
Passenger Processing	Functions allow the user to process passengers for air transport.	Yes	No	Yes	No
Read Baggage Tag	The baggage tag is scanned into the system	Yes	No	No	No
Read Boarding Pass	The passenger's boarding pass is scanned into the system.	Yes	No	Yes	No
Edit/Create Trailers	User can create trailers (additional information) to identify types of cargo that require special handling or processing.	Yes	Yes	Yes	No
Edit TCMD Record	User can query the database to view a record, edit a record, or create a new TCMD record.	Yes	Yes	Yes	No
System/Device Functions	User can select printers available for the system to use.	Yes	Yes	Yes	No

	GATES & CMOS	PeopleSoft & CMOS	PeopleSoft & GATES	PeopleSoft & AF
# of Functions Similar	**35**	**0**	**0**	**0**
Total # of Functions	**42**	**35**	**41**	**42**
Percentage Similar	**83.33%**	**0.00%**	**0.00%**	**0.00%**

5. Deployment Management:

Function Name	Function	AF	CMOS	GATES	PeopleSoft
Deployment Management	Contains the actions necessary to monitor and direct transportation deployment activity. Interfaces between the various systems that provide cargo and passenger records based on planned taskings.	Yes	Yes	Yes	No
Deployment Passenger Backlog	Provides the capability to interface MANPER formatted or DeMS formatted passenger data.	Yes	Yes	No	No
Exercise and Deployment Executions	Prepares, executes, and interfaces data for a deployment, deployment exercise, or training session. Provides the capability to work in deployment, exercise and/or training simultaneously. Process routine peacetime TCNs without interrupting deployments.	Yes	Yes	Yes	No
Exercise and Deployment Preparation	Provides the capability to select a deployment plan mode; remove unneeded data from the database prior to beginning a deployment, deployment exercise, or training session; as well as, initiate and terminate a deployment, deployment exercise, or training session.	Yes	Yes	No	No
READY Augmentee Data	Provides the capability to enter, display, edit, and print deployment augmentee information. Users will have the capability to manage augmentee training and assign deployment duties.	Yes	Yes	No	Yes
Deployment Data	Provides the capability to display all data unloads from LOGMOD, and MANPER, since the beginning of the latest deployment or deployment exercise. Provides the capability to display chalk cargo and passenger information and to interface this data with the LOGMOD system.	Yes	Yes	No	No
Airlift Data	Provides the capability to create a Request for Additional Airlift (DD Form 1249) and to transmit the requirements to the site co-located with their MAJCOM. Provides the capability to display and print an Airlift Inspection Checklist.	Yes	Yes	No	No
Post Exercise Deployment Execution Analysis	This function contains the processes necessary to terminate a deployment, deployment exercise, or training session and to analyze the deployment or deployment exercise results. Provides the capability to create a report of CALM related data for specified increment TCNs	Yes	Yes	No	No

	GATES & CMOS	PeopleSoft & CMOS	PeopleSoft & GATES	PeopleSoft & AF
# of Functions Similar	**2**	**1**	**0**	**1**
Total # of Functions	**8**	**8**	**2**	**8**
Percentage Similar	**25.00%**	**12.50%**	**0.00%**	**12.50%**

6. Passenger Processing:

Function Name	Function	AF	CMOS	GATES	PeopleSoft
Pet Reservation	User can make a pet reservation on AMC passenger bookable missions, to include the commercial Patriot Express Missions	Yes	No	Yes	No
Passenger Reservation	User can make a passenger reservation on AMC passenger bookable missions, to include the commercial Patriot Express Missions.	Yes	No	Yes	No
View Mission Availability	Allows users worldwide to view available bookable missions for all AMC channels.	Yes	No	Yes	No
Group Reservations	User can make group reservations.	Yes	No	Yes	No
Itinerary	Provided booked passengers information relating to passengers itinerary and reporting time.	Yes	No	Yes	No
Reservation Report	Provides a reservation report.	Yes	No	Yes	No
Passenger Ineligible Listing	Does not allow the processing of passengers denied travel by servicing HQ with GATES.	Yes	No	Yes	No
Port Booking	Provides aerial port booking capability after flight locks out at HQ level.	Yes	No	Yes	No
Passenger and Baggage Incheck	Provides the capability to create, display, edit, and print a passenger manifest for both deployment (air and surface) passengers and non deployment passengers. After passenger manifests are released, they are transmitted to the enroute and final destination. This will apply for both air and surface types.	Yes	No	Yes	No
Inbound Passenger Processing	Provides the capability to update inbound passenger arrival date and time at enroute stop or the final destination. Provides a means to maintain inbound manifest passenger data.	Yes	Yes	Yes	No
Convoy and Fleet Status	Provides the capability to enter, display, edit, and delete convoy schedule and track data. Provides the capability to enter and update fleet service status data.	Yes	Yes	No	No
Passenger Check-in	The user can accomplish all actions necessary to board passengers and their luggage for a flight.	Yes	Yes	Yes	No
Passenger List	User can query the passenger reservation database.	Yes	Yes	Yes	No
Modify Reservation	User can make any necessary changes to a passenger's reservation.	Yes	Yes	Yes	No
Process Baggage	Passenger's carry-on and checked baggage is processed for the flight.	Yes	Yes	Yes	No
Seat Map	This function provides a view of available seating on the aircraft.	Yes	No	Yes	No
Process Seat Assignments	User can display seat assignments, and add, change, or delete passenger's choices.	Yes	No	Yes	No
Process Meal Requests	User can display meal requests, and add, change, or delete passenger's choices.	Yes	No	Yes	No
Charges and Charges - Amount Tendered and Change Due	Functions compute passenger's charges. Passenger pays the charges and receives change due.	Yes	No	Yes	No

Function Name	Function	AF	CMOS	GATES	PeopleSoft
Issue Boarding Pass	User issues a boarding pass from a PC workstation.	Yes	No	Yes	No
Issue Boarding Pass (AIT)	A boarding pass is prepared and issued using the Automated Identification Technology (AIT) hand held terminal.	Yes	No	Yes	No
Space A	User displays Space Available seats on the flight and assigns seats to passengers traveling in Space Available status.	Yes	No	Yes	No
Space R	Users view Space Required seating on the flight and makes Space Required seat assignments.	Yes	No	Yes	No
Bag Tag and Bag Tag (AIT)	Bag tags are prepared and issued using a workstation or hand held terminal.	Yes	No	Yes	No
Billing Confirmation	User enters data into the system so a bill can be prepared and sent to the agency or organization that will pay for the flight.	Yes	No	Yes	No
DoD ID Card Reader	The passenger's ID card is electronically read.	Yes	No	Yes	No
Transportation Working Capital Fund (TWCF) Passenger List	User can query the passenger list, and make changes to the list.	Yes	No	Yes	No
TWCF Passenger Manifest	User can view or print the TWCF passenger manifest.	Yes	No	Yes	No
Crew Meals	User views the meals available for the crew and can add, change, or delete crew requests for meals.	Yes	No	Yes	No
Mishandled Baggage	User processes reports of lost or misdirected baggage.	Yes	No	Yes	No
Create Case and Update Case File	A mishandled baggage report is entered or updated in the system.	Yes	No	Yes	No
Audit Trail	The user can view and/or change information about mishandled baggage.	Yes	No	Yes	No
Rush Baggage Manifest	Mishandled baggage that has been located and will be sent to the passenger(s).	Yes	No	Yes	No
Flight Status	User can display information about flights based on APOE and Mission ID.	Yes	Yes	Yes	No
Aircraft Fleet Service	User tracks all Fleet Service Activities.	Yes	No	Yes	No
Gate Control	These functions allow the user to make inquiries about available or in-use gates, and make gate assignment changes.	Yes	No	Yes	No
FIDS (Flight Information Display System)	These functions allow the user to make changes to the FIDS. The FIDS presents information on arrivals, departures, local information in a locally designed Power Point Slide Presentation, and available seating for flights originating or transiting the aerial port.	Yes	No	Yes	No
Audit Trail	User can query all transactions of a passenger identifying changes to a specific user.	Yes	No	Yes	No

Function Name	Function	AF	CMOS	GATES	PeopleSoft
Passenger Reports	These functions allow the user to display or print numerous reports that contain information about passengers using the aerial port.	Yes	No	Yes	No
PRC Responsiveness	This function produces a report from/about the Passenger Reservation Center (PRC).	Yes	No	Yes	No
Common Dropdowns	This function provides information or definitions to help the user complete passenger processing function.	Yes	Yes	Yes	No
Diskette Input	This function allows the user to share data, on diskette, with a location that uses the Remote Global Air Transportation and Execution System as well as other systems.	Yes	Yes	Yes	No

	GATES & CMOS	PeopleSoft & CMOS	PeopleSoft & GATES	PeopleSoft & AF
# of Functions Similar	**8**	**0**	**0**	**0**
Total # of Functions	**42**	**9**	**41**	**42**
Percentage Similar	**19.05%**	**0.00%**	**0.00%**	**0.00%**

7. Resource Management

Function Name	Function	AF	CMOS	GATES	PeopleSoft
Air Terminal Personnel	Data on the personnel assigned to the air terminal is maintained in this section.	Yes	Yes	Yes	Yes
Add, Modify, Delete, Inquire Air Terminal Personnel and Training	These functions allow changes in personnel and personnel status, inquiries about personnel status, and changes/status inquiries about special training and equipment qualifications	Yes	Yes	Yes	Yes
Add, Modify, Delete, Inquire Personnel Mobility or TDY Status	These functions allow changes and status inquires about the mobility qualifications and/or TDY status of assigned personnel.	Yes	Yes	Yes	Yes
Add, Modify, Delete, Inquire Air Terminal Equipment and Air Terminal Equipment TDY	Information on equipment at the air terminal in maintained in this section. These functions allow changes and status inquiries about the various equipment at the air terminal and equipment at a TDY location.	Yes	No	Yes	Yes
Add, Modify, Delete, Inquire Air Terminal Equipment Maintenance	These functions allow changes and status inquires about the maintenance on equipment assigned to the air terminal.	Yes	No	Yes	Yes
Equipment/Supply	Information about the equipment/supply inventory at each air terminal.	Yes	Yes	Yes	Yes
Add, Modify, Delete, Inquire Equipment Inventory/Supply	These functions allow changes and status inquires about the system-wide equipment inventory.	Yes	No	Yes	Yes
Work Center Log Book	These functions allow users to display or print information maintained in the Work Center Log Book. Additionally, these functions allow users to review or change manpower data, wing training and exercise information, and generate the Monthly Station Traffic Handling Report.	Yes	No	Yes	Yes
Station Traffic Handling and Add, Mod, Station Traffic Handling	Station real-time and exercise workloads and individual work center workloads are maintained. Users can add or modify real-time station traffic information, or inquire about station traffic.	Yes	No	Yes	Yes
Station Traffic Exercise	Users can access information on workloads as a result of an exercise.	Yes	No	Yes	Yes
Work Center Station Traffic	Users can access workloads at individual work centers at the aerial port.	Yes	Yes	Yes	Yes
Reports	The user can generate reports on all data and activity during a specific period.	Yes	Yes	Yes	Yes

	GATES & CMOS	PeopleSoft & CMOS	PeopleSoft & GATES	PeopleSoft & AF
# of Functions Similar	**6**	**6**	**12**	**12**
Total # of Functions	**12**	**6**	**12**	**12**
Percentage Similar	**50.00%**	**100.00%**	**100.00%**	**100.00%**

8. Decision Support:

Function Name	Function	AF	CMOS	GATES	PeopleSoft
Movement Forecasting	These functions provide forecasts of future transportation requirements.	Yes	No	Yes	Yes
Short Term Movement Forecast	User can add, change, delete, or make an inquiry about short term transportation requirements, by functional area, and plan or schedule accordingly.	Yes	No	Yes	Yes
Long Term Movement Forecast	User can add, change, delete, or make an inquiry about long term transportation requirements, by functional area, and plan or schedule accordingly.	Yes	No	Yes	Yes
Commercial Cargo Movement	These functions provide information about cargo movement by commercial carriers.	Yes	Yes	Yes	Yes
Modify, Change Transport Location	The user can make changes to or inquire about cargo movements by commercial carriers.	Yes	Yes	Yes	Yes
Channel Management	These functions provide information about transportation channels.	Yes	Yes	Yes	Yes
Add, Modify, Delete, Inquire Channel	Users can change or inquire about transportation channels.	Yes	Yes	Yes	Yes
Tariff Data	These functions provide information about tariffs accessed on cargo movements. (Commercial Cost with carriers).	Yes	No	Yes	Yes
Add, Change, Delete, Inquire Tariff Information	Users can make changes or inquire about tariffs.	Yes	No	Yes	Yes
Commercial Air Cost	Cost information on commercial air shipments.	Yes	Yes	Yes	Yes
Add, Change, Delete, Inquire CLIN	These functions allow users to make changes or inquiries about Contract Line Item Numbers (CLIN) when scheduling a commercial air cargo movement.	Yes	Yes	Yes	Yes
Commercial Organization	These functions provide information about organizations who handle cargo movements.	Yes	Yes	Yes	Yes
Add, Change, Delete, Inquire Commercial Organization	User can make changes or inquire about commercial organizations that are contracted to move cargo.	Yes	Yes	Yes	Yes
Add, Change, Delete, Inquire Commercial Contract	These functions allow the user to make changes or inquire about contracts with commercial organizations.	Yes	Yes	Yes	Yes
Common Dropdowns	Available to the user while working with any of the functions in the system.	Yes	Yes	Yes	Yes
Address Type, Phone Type, ATL-PAC Code, IATA (International Air Transport Association) Category	Placed here instead of with Movement Forecasting (1.2) since these functions are Common Dropdowns available to all functions in the system.	Yes	No	Yes	Yes
Reports	These functions allow the user to generate reports about current, future, and past cargo movements.	Yes	Yes	Yes	Yes

	GATES & CMOS	PeopleSoft & CMOS	PeopleSoft & GATES	PeopleSoft & AF
# of Functions Similar	**11**	**11**	**17**	**17**
Total # of Functions	**17**	**11**	**17**	**17**
Percentage Similar	**64.71%**	**100.00%**	**100.00%**	**100.00%**

9. System Communication:

Function Name	Function	AF	CMOS	GATES	PeopleSoft
System Communications	The outgoing capabilities process data and messages/data that are being sent from the local site to agencies or entities that are external to the local site and other sites.	Yes	Yes	Yes	Yes
Library Functions	Provides functions to support the repetitive processing requirements for formatters and distributors. They include, but are not limited to, functions which log into the database, report errors, do copies, write strings and integers to the same file, perform database inserts and updates.	Yes	Yes	Yes	Yes
Interactive Communications Interface (ICI)	The ICI adapter will retrieve incoming data from the ICI handler, format the data into the Data Log format, and then place the data into the Incoming Data Log.	Yes	Yes	No	Yes
Defense Data Network (DDN)	Will provide a general purpose DDN Status program that runs independently and checks to see if the DDN communications capability is up or down.	Yes	Yes	No	Yes
Express Shipment Processor	Will provide an express carrier module process to perform rating and routing of express shipments. Carrier software will reside on the server to perform this function. A separate module will be available for each carrier's participation in the Express Carrier Program.	Yes	Yes	No	No
NAME	***COMMUNICATION***				
Standard Base Supply System	2-Way	Yes	Yes	No	Yes
Integrated Logistics System	2-Way	Yes	Yes	No	Yes
Airlift Clearance Authority	2-Way	Yes	Yes	Yes	Yes
Airlift Clearance Authority	1-Way	Yes	Yes	Yes	Yes
Water Port Systems	2-Way	Yes	Yes	No	Yes
Combat Ammunitions System Base Level	1-Way	Yes	Yes	No	Yes
Department of Army Movements Management	2-Way	Yes	Yes	No	Yes
Logistics Module	2-Way	Yes	Yes	No	Yes
Computer Aided Load Manifesting	2-Way	Yes	Yes	No	Yes

Function Name	Function	AF	CMOS	GATES	PeopleSoft
CONUS Freight Management	2-Way	Yes	Yes	No	Yes
Manpower Personnel Module	1-Way	Yes	Yes	No	Yes
Advanced Traceability and Control System	1-Way	Yes	Yes	No	Yes
Express Carrier System	1-Way	Yes	Yes	No	Yes
Global Transportation Network	1-Way	Yes	Yes	Yes	Yes
Power Track	1-Way	Yes	Yes	No	Yes
Automated Manifesting System	1-Way	Yes	Yes	No	Yes
Business Process Server	2-Way	Yes	Yes	No	Yes
Army Airlift Clearance Authority (AACA)	1-Way	Yes	No	Yes	Yes
Automated Air Load Planning System (AALPS)	2-Way	Yes	No	Yes	Yes
AMC Business Decision Model (ABDM)	1-Way	Yes	No	Yes	Yes
Airlift Service Industrial Fund Integrated Computer System (ASIFICS)	2-Way	Yes	No	Yes	Yes
Advanced Shipping Notice (ASN)	1-Way	Yes	No	Yes	Yes
Consolidated Air Mobility Planning System (CAMPS)	1-Way	Yes	No	Yes	Yes
Commercial Movement Interface (CMI)	1-Way	Yes	No	Yes	Yes
Distribution Standard System (DSS)	1-Way	Yes	Yes	Yes	Yes
Enhanced Transportation Automated Data System (ETADS)	2-Way	Yes	Yes	Yes	Yes
Financial and Air Clearance Transportation System (FACTS)	2-Way	Yes	Yes	Yes	Yes
Global Decision Support System (GDSS)	2-Way	Yes	No	Yes	Yes

Function Name	Function	AF	CMOS	GATES	PeopleSoft
Integrated Management Tool (IMT)	1-Way	Yes	No	Yes	Yes
International Traffic Management System (ITRAM)	1-Way	Yes	No	Yes	Yes
Logistics Intelligence File (LIF)	1-Way	Yes	No	Yes	Yes
Remote Consolidated Aerial Port Subsystem (RCAPS)	2-Way	Yes	No	Yes	Yes
Transportation Coordinator-Automated Command and Control Information System (TC-ACCIS)	1-Way	Yes	No	Yes	Yes
Transportation Coordinator's-Automated Information for Movement System II (TC-AIMS II)	1-Way	Yes	Yes	Yes	Yes
Table Management Distribution System (TMDS)	1-Way	Yes	No	Yes	Yes

	GATES & CMOS	PeopleSoft & CMOS	PeopleSoft & GATES	PeopleSoft & AF
# of Functions Similar	**9**	**25**	**23**	**39**
Total # of Functions	**40**	**26**	**23**	**40**
Percentage Similar	**22.50%**	**96.15%**	**100.00%**	**97.50%**

10. World Wide Web:

Function Name	Function	AF	CMOS	GATES	PeopleSoft
Warning Message	It is assumed that a message states that the site is for official government business only.	Yes	Yes	Yes	Yes
Common Dropdown	User can query the database to get information needed for Space-A signup and to view the Flight Information Display System (FIDS).	Yes	No	Yes	Yes
Signup	User can sign up for a Space A flight.	Yes	Yes	Yes	No
Space A Backlog	User can view the list of Space A requests.	Yes	Yes	Yes	No

Function Name	Function	AF	CMOS	GATES	PeopleSoft
FIDS	Display the FIDS.	Yes	No	Yes	No
FIDS - Arrivals	Information on arriving/departing flights with Space A seating is displayed.	Yes	No	Yes	No
Pet Reservation	User can make a pet reservation on AMC passenger bookable missions, to include the commercial Patriot Express missions.	Yes	No	Yes	No
View Mission Availability	Allows users worldwide to view available bookable missions for all AMC channels.	Yes	No	Yes	Yes
Group Reservations	User can make group reservations.	Yes	No	Yes	No
Itinerary	Provided booked passengers information relating to passengers itinerary and reporting time.	Yes	No	Yes	No
Reservation Report		Yes	No	Yes	No
Passenger Ineligible Listing	Does not allow the processing of passengers denied travel by servicing HQ within GATES.	Yes	No	Yes	No
Passenger Reservations	User can make a passenger reservation on AMC passenger bookable missions, to include the commercial Patriot Express missions using the WWW.	Yes	No	Yes	No

	GATES & CMOS	PeopleSoft & CMOS	PeopleSoft & GATES	PeopleSoft & AF
# of Functions Similar	**3**	**1**	**3**	**3**
Total # of Functions	**13**	**3**	**13**	**13**
Percentage Similar	**23.08%**	**33.33%**	**23.08%**	**23.08%**

11. Mission Status:

Function Name	Function	AF	CMOS	GATES	PeopleSoft
Mission Monitor	Automated mission tracking through GDSS interface. Provides mission number, MDS, ETA, ETD, ATA, ATD, and complete station routing, etc.	Yes	No	Yes	Yes
SOE Library	Tracks all actions performed by various work centers to ensure on-time departure.	Yes	No	Yes	Yes
Mission Reports	These functions allow the user to display or print numerous reports that contain information about missions and mission folders.	Yes	No	Yes	Yes
Station Workload	Allows user to display/view any station workload in Mission Monitor.	Yes	No	Yes	Yes
MICAP	User can track MICAP information.	Yes	No	Yes	Yes
Create Divert Manifest	System generates a diverted manifest for passengers and cargo when a mission overflys, reroutes, etc. a manifested down line station.	Yes	No	Yes	Yes

Function Name	Function	AF	CMOS	GATES	PeopleSoft
Space Blocks	User can track higher headquarter space blocks	Yes	No	Yes	No

	GATES & CMOS	PeopleSoft & CMOS	PeopleSoft & GATES	PeopleSoft & AF
# of Functions Similar	**0**	**0**	**6**	**6**
Total # of Functions	**7**	**0**	**7**	**7**
Percentage Similar	**0.00%**	**0.00%**	**85.71%**	**85.71%**

12. Summary of Results:

Functional Headings	GATES & CMOS	PeopleSoft & CMOS	PeopleSoft & GATES	PeopleSoft & AF
System Administration				
# of Functions Similar	14	15	15	16
Total # of Functions	16	15	15	16
Percentage Similar	87.50%	100.00%	100.00%	100.00%
Surface Cargo Processing				
# of Functions Similar	24	41	26	43
Total # of Functions	45	43	26	45
Percentage Similar	53.33%	95.35%	100.00%	95.56%
Air Cargo Processing				
# of Functions Similar	40	41	45	47
Total # of Functions	48	42	46	48
Percentage Similar	83.33%	97.62%	97.83%	97.92%
Automated Identification Technology (AIT)				
# of Functions Similar	35	0	0	0
Total # of Functions	42	35	41	42
Percentage Similar	83.33%	0.00%	0.00%	0.00%
Deployment Management				
# of Functions Similar	2	1	0	1
Total # of Functions	8	8	2	8
Percentage Similar	25.00%	12.50%	0.00%	12.50%
Passenger Processing				
# of Functions Similar	8	0	0	0
Total # of Functions	42	9	41	42
Percentage Similar	19.05%	0.00%	0.00%	0.00%
Resource Management				
# of Functions Similar	6	6	12	12
Total # of Functions	12	6	12	12
Percentage Similar	50.00%	100.00%	100.00%	100.00%
Decision Support				
# of Functions Similar	11	11	17	17
Total # of Functions	17	11	17	17
Percentage Similar	64.71%	100.00%	100.00%	100.00%
System Communication				
# of Functions Similar	9	25	23	39
Total # of Functions	40	26	23	40
Percentage Similar	22.50%	96.15%	100.00%	97.50%
WWW-Based Functionality				
# of Functions Similar	3	1	3	3
Total # of Functions	13	3	13	13
Percentage Similar	23.08%	33.33%	23.08%	23.08%
Mission Status				
# of Functions Similar	0	0	6	6
Total # of Functions	7	0	7	7
Percentage Similar	0.00%	0.00%	85.71%	85.71%
	GATES & CMOS	**PeopleSoft & CMOS**	**PeopleSoft & GATES**	**PeopleSoft & AF**
# of Functions Similar	**152**	**141**	**147**	**184**
Total # of Functions	**290**	**198**	**243**	**290**
Overall Percentage Similar	**52.41%**	**71.21%**	**60.49%**	**63.45%**

Appendix H: Summary of Results for Commercial and CMOS

Functional Headings	SAP & CMOS	Oracle & CMOS	PeopleSoft & CMOS
System Administration			
# of Functions Similar	14	14	15
Total # of Functions	15	15	15
Percentage Similar	93.33%	93.33%	100.00%
Surface Cargo Processing			
# of Functions Similar	41	41	41
Total # of Functions	43	43	43
Percentage Similar	95.35%	95.35%	95.35%
Air Cargo Processing			
# of Functions Similar	41	42	41
Total # of Functions	42	42	42
Percentage Similar	97.62%	100.00%	97.62%
Automated Identification Technology (AIT)			
# of Functions Similar	34	35	0
Total # of Functions	35	35	35
Percentage Similar	97.14%	100.00%	0.00%
Deployment Management			
# of Functions Similar	8	2	1
Total # of Functions	8	8	8
Percentage Similar	100.00%	25.00%	12.50%
Passenger Processing			
# of Functions Similar	9	0	0
Total # of Functions	9	9	9
Percentage Similar	100.00%	0.00%	0.00%
Resource Management			
# of Functions Similar	6	6	6
Total # of Functions	6	6	6
Percentage Similar	100.00%	100.00%	100.00%
Decision Support			
# of Functions Similar	10	11	11
Total # of Functions	11	11	11
Percentage Similar	90.91%	100.00%	100.00%
System Communication			
# of Functions Similar	25	25	25
Total # of Functions	26	26	26
Percentage Similar	96.15%	96.15%	96.15%
WWW-Based Functionality			
# of Functions Similar	1	1	1
Total # of Functions	3	3	3
Percentage Similar	33.33%	33.33%	33.33%
Mission Status			
# of Functions Similar	0	0	0
Total # of Functions	0	0	0
Percentage Similar	0.00%	0.00%	0.00%
	SAP & CMOS	**Oracle & CMOS**	**PeopleSoft & CMOS**
# of Functions Similar	**189**	**177**	**141**
Total # of Functions	**198**	**198**	**198**
Overall Percentage Similar	**95.45%**	**89.39%**	**71.21%**

Appendix I: Summary of Results for Commercial and GATES

Functional Headings	SAP & GATES	Oracle & GATES	PeopleSoft & GATES
System Administration			
# of Functions Similar	13	13	15
Total # of Functions	15	15	15
Percentage Similar	86.67%	86.67%	100.00%
Surface Cargo Processing			
# of Functions Similar	26	26	26
Total # of Functions	26	26	26
Percentage Similar	100.00%	100.00%	100.00%
Air Cargo Processing			
# of Functions Similar	45	45	45
Total # of Functions	46	46	46
Percentage Similar	97.83%	97.83%	97.83%
Automated Identification Technology (AIT)			
# of Functions Similar	36	37	0
Total # of Functions	41	41	41
Percentage Similar	87.80%	90.24%	0.00%
Deployment Management			
# of Functions Similar	2	0	0
Total # of Functions	2	2	2
Percentage Similar	100.00%	0.00%	0.00%
Passenger Processing			
# of Functions Similar	36	0	0
Total # of Functions	41	41	41
Percentage Similar	87.80%	0.00%	0.00%
Resource Management			
# of Functions Similar	11	12	12
Total # of Functions	12	12	12
Percentage Similar	91.67%	100.00%	100.00%
Decision Support			
# of Functions Similar	15	16	17
Total # of Functions	17	17	17
Percentage Similar	88.24%	94.12%	100.00%
System Communication			
# of Functions Similar	23	23	23
Total # of Functions	23	23	23
Percentage Similar	100.00%	100.00%	100.00%
WWW-Based Functionality			
# of Functions Similar	7	1	3
Total # of Functions	13	13	13
Percentage Similar	53.85%	7.69%	23.08%
Mission Status			
# of Functions Similar	7	5	6
Total # of Functions	7	7	7
Percentage Similar	100.00%	71.43%	85.71%
	SAP & GATES	**Oracle & GATES**	**PeopleSoft & GATES**
# of Functions Similar	**221**	**178**	**147**
Total # of Functions	**243**	**243**	**243**
Overall Percentage Similar	**90.95%**	**73.25%**	**60.49%**

Appendix J: Summary of Results for Commercial and Air Force

Functional Headings	SAP & AF	Oracle & AF	PeopleSoft & AF
System Administration			
# of Functions Similar	14	14	16
Total # of Functions	16	16	16
Percentage Similar	87.50%	87.50%	100.00%
Surface Cargo Processing			
# of Functions Similar	43	43	43
Total # of Functions	45	45	45
Percentage Similar	95.56%	95.56%	95.56%
Air Cargo Processing			
# of Functions Similar	46	47	47
Total # of Functions	48	48	48
Percentage Similar	95.83%	97.92%	97.92%
Automated Identification Technology (AIT)			
# of Functions Similar	36	37	0
Total # of Functions	42	42	42
Percentage Similar	85.71%	88.10%	0.00%
Deployment Management			
# of Functions Similar	8	2	1
Total # of Functions	8	8	8
Percentage Similar	100.00%	25.00%	12.50%
Passenger Processing			
# of Functions Similar	37	0	0
Total # of Functions	42	42	42
Percentage Similar	88.10%	0.00%	0.00%
Resource Management			
# of Functions Similar	11	12	12
Total # of Functions	12	12	12
Percentage Similar	91.67%	100.00%	100.00%
Decision Support			
# of Functions Similar	15	16	17
Total # of Functions	17	17	17
Percentage Similar	88.24%	94.12%	100.00%
System Communication			
# of Functions Similar	39	39	39
Total # of Functions	40	40	40
Percentage Similar	97.50%	97.50%	97.50%
WWW-Based Functionality			
# of Functions Similar	7	1	3
Total # of Functions	13	13	13
Percentage Similar	53.85%	7.69%	23.08%
Mission Status			
# of Functions Similar	7	5	6
Total # of Functions	7	7	7
Percentage Similar	100.00%	71.43%	85.71%
	SAP & AF	**Oracle & AF**	**PeopleSoft & AF**
# of Functions Similar	**263**	**216**	**184**
Total # of Functions	**290**	**290**	**290**
Overall Percentage Similar	**90.69%**	**74.48%**	**63.45%**

Appendix K: Overall Summary of Results for Commercial and Air Force Systems

	SAP & CMOS	Oracle & CMOS	PeopleSoft & CMOS
# of Functions Similar	189	177	141
Total # of Functions	198	198	198
Overall Percentage Similar	95.45%	89.39%	71.21%

	SAP & GATES	Oracle & GATES	PeopleSoft & GATES
# of Functions Similar	221	178	147
Total # of Functions	243	243	243
Overall Percentage Similar	90.95%	73.25%	60.49%

	SAP & AF	Oracle & AF	PeopleSoft & AF
# of Functions Similar	263	216	184
Total # of Functions	290	290	290
Overall Percentage Similar	90.69%	74.48%	63.45%

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Vita

Captain Patrick S. Holland was born in Altoona, Pennsylvania. Upon graduating from Central High School in 1990, he enlisted in the United States Air Force as an air transportation specialist. He earned two degrees from the Community College of the Air Force: an Associate in Applied Science in Transportation and an Associate in Applied Science in Instructor of Technology and Military Science. Later, he attended Southern Illinois University, Carbondale at McGuire AFB, New Jersey. He graduated *Magna Cum Laude* with a Bachelor of Science in Workforce Education and Development. On 8 January, 1999, he was commissioned into the United States Air Force through Officer Training School.

During his first assignment, he served as Traffic Management Officer, Combat Readiness Flight Commander, and Vehicle Operations Flight Commander for the 341st Transportation Squadron at Malmstrom AFB, Montana. His exemplary leadership was instrumental in his flight earning Air Force Space Command's (AFSPC) Combat Readiness Unit of the Year and the squadron being named "Best Transportation Squadron in AFSPC" for 2001.

In August 2003, he entered the Graduate Logistics Management program at the Air Force Institute of Technology. Upon graduation, he will be assigned to the Transportation Directorate at Air Combat Command, Langley AFB, Virginia.

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14. ABSTRACT

The Air Force currently relies on two transportation information management systems for managing cargo and passenger movements throughout the Defense Transportation System. The two systems are Global Air Transportation Execution System (GATES) and Cargo Movement Operations System (CMOS). Although GATES and CMOS have evolved from legacy systems created during the 1980s, both systems are used to process cargo and passengers while providing the information needed to maintain in-transit visibility (ITV) and manage each movement.

The purpose of this research is to identify commercially available logistics software packages and determine whether they provide the same functionality as the two Air Force information systems currently employed. Using a case study methodology, the researcher collected information on logistics software provided by SAP, Oracle, and PeopleSoft. A gap analysis was then conducted to identify the percentage of similarity between the Air Force and commercial systems. The results of the research show SAP having the highest percentage of similarity with each of the Air Force systems followed by Oracle and then PeopleSoft.

15. SUBJECT TERMS

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