BUSINESS PROCESS IMPROVEMENT APPLIED TO WRITTEN TEMPORARY DUTY TRAVEL ORDERS WITHIN THE UNITED STATES AIR FORCE

THESIS

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Abstract

This study analyzed the process currently endemic to the activity of producing written TDY orders. Business Process Improvement (BPI) methodology using IDEF (ICAM [Integrated Computer Aided Manufacturing] Definition) and Activity Based Costing methods were used for this study. The objectives of the written TDY order activity were determined as identifying the traveler(s) and verifying authenticity of the travel requirement and subsequent entitlements. Processing the TDY information, generating the TDY order, and processing the TDY order showed activities that add no value or limited value for either the traveler or the government. The activity costs incurred to produce a written TDY order average to approximately $35.63. A literature review revealed large civilian enterprises do not typically preauthorize travel in writing. This limited the ability of the study to benchmark the current process against civilian industry. The BPI methodology was not completed due to a five-month timeframe allotted for this study. However, preliminary data demonstrates improvements can be obtained by applying a BPI methodology. Specifically, activities identified for possible elimination could save $11.68 of the $35.63 activity cost to produce one written TDY order.

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I. Introduction

Overview

The Defense Finance and Accounting Service (DFAS) has undertaken a sweeping initiative to automate temporary duty (TDY) travel orders production and processing for all continental United States (CONUS) Department of Defense (DoD) agencies. This initiative is a direct result of Defense Management Review Decision (DMRD) 918, as approved by the Under Secretary of Defense (West, 1992:3).

This chapter will provide operational definitions and describe the general issue that motivated examination of the process(es) involved in generating or producing written TDY orders from a business process improvement perspective. A brief statement of the scope of this research is followed by the specific research problem and the investigative questions to explore the specific problem. Finally, the significance of the research and a short preview of following chapters is provided.

Operational Definitions

Many of the terms used throughout this research are being used with new or revised meanings within the context of business reengineering and process improvement. For this reason, the following definitions are provided from DoD 8020.1-M (DoD 8020.1-M [Draft], 1992:58). Other research-specific definitions are integrated into the report.

1. *Functional Area*: A major, broad area of responsibility within an enterprise. Example: Information Management (IM) is a functional area within the US Air Force (USAF).

2. *Activity*: A major business element or operation within a functional area. Example: Cumulatively, TDY orders policy, preparation and production form an activity within the IM functional area.

3. *Process*: A subset of the enterprise activity. Example: Preparation of the written TDY order is a process within the general TDY orders activity.

4. *Tasks/Steps*: Individual actions and/or decision points within each process, which taken in aggregate comprise that process. Example: Gathering traveler information, typing the DD Form 1610, obtaining a fund authorization/citation, and reproducing the completed DD Form 1610 are some of the tasks within the written TDY order preparation process.

General Issue

The current DFAS initiative to automate DoD's TDY order system is the most recent attempt at process improvement in production and publication of TDY orders. Various government agencies have attempted to improve the TDY orders process since 1925 (Fried and Watson, 1983:6),

and some USAF agencies, such as Air Force Intelligence Command, still question the processes involved in producing written TDY orders (Couto, 1992). A brief history of TDY order "policy" and some of these attempts at process improvement should help explain the rationale behind current TDY practices and policies.

Background. Historically, government-wide TDY travel policies and practices have been based on Public Law 37, United States Code (U.S.C.) 404. More precisely, the requirement for written TDY orders is based on the US Comptroller General's interpretation of "orders" contained in that law. The Comptroller General has historically interpreted the term "order" to mean all TDY orders must be written instead of verbal (Hopson, 1988). Although the exact date of this initial interpretation and legal opinion is uncertain, chronology would indicate it was before 1925 - the year of the first documented challenge to this interpretation. In implementing the Comptroller General's interpretation of law within the Air Force, Air Force Regulation (AFR) 10-7 mandates use of DD Form 1610 as the form written TDY orders would take (AFR 10-7, 1986:23).

At various times in the past, the Departments of Agriculture, State and Transportation tried unsuccessfully to improve and/or change this process by eliminating or circumventing the requirement for written TDY orders (Fried and Watson, 1983:6-9). In 1988 and 1990, the Air Training

Command (ATC) Director of Information Management requested this requirement be re-examined, citing a survey conducted throughout the Major Command (MAJCOM). This survey determined that during fiscal year (FY) 1987, ATC spent over $600,000 on simply preparing to travel: generation of the required written TDY order, DD Form 1610 (Hallsworth, 1988). The results of this survey subsequently became part of a package from ATC to the Air Staff requesting reconsideration of the requirement to produce written TDY orders.

Present. DMRD 918 mandates streamlining information management functions and automated processes under single executive agencies within DoD. The Department's Director of Corporate Information Management (CIM) now has direct oversight for this project. The CIM Director has continually voiced disdain for automating functions without first closely examining the process, or processes (Corbin, 1992:42). Additionally, recent business reengineering studies show "attempts to automate procedures without first examining the processes involved rarely reduce expenses and provide little or no increase in productivity" (Hammer, 1990:110).

Scope of Research

Now questions concerning process analysis, design, and improvement are being asked by the Air Force Materiel

Command Director of Corporate Information (AFMC/CI). Hence the Director agreed to sponsor research into business process improvement as it applies to written TDY orders on behalf of HQ AFMC. Additionally, since AFR 10-7 identifies the highest-level USAF Information Management function as the office of primary responsibility (OPR) for TDY orders, the Office of the Director of Information Management, Secretary of the Air Force (SAF/AAI), also has a vested interest in this research (AFR 10-7, 1986:1).

Specific Problem

The purpose of this research is to analyze the process currently endemic to the activity of producing written TDY orders to either validate the current process or provide an alternative process.

Investigative Questions

Several questions must be answered to accomplish this purpose:

1. What are the objectives of the written TDY order activity?

2. Are there processes within the TDY orders activity that add no value to this activity, for either the traveler or the government?

3. Are there processes within the TDY order activity that add limited value to the activity?

4. What are the activity costs incurred in producing written TDY orders?

5. How do large public and private enterprises handle travel preauthorization to accomplish the previously identified objectives?

Significance of Research

The conclusions reached by this research could have impact throughout all federal agencies, since all are bound by the same past rulings of the Comptroller General, which dictate the requirement for written TDY orders.

Preview

The next chapter provides a detailed literature review on business reengineering and the past, present, and future of TDY orders. Chapter III provides the research methodology, while chapter IV provides an analysis of the data gathered. Chapter V offers conclusions based on the research, and provides avenues for further related research in this area.

II. Literature Review

Introduction

This research will analyze the process(es) entailed in producing written TDY orders. Since this issue centers around interpretation of Public Law for implementation within DoD, the outcome of this research could have an impact not only within the USAF, but throughout DoD and possibly across all government agencies.

During this literature review and initial investigative research, no previous TDY orders process analysis was discovered. Thus, it is difficult to determine to what extent any total quality management (TQM) or business process reengineering philosophy has been employed or to determine the thought processes employed in analyzing this activity prior to automating. However, analysis within the scope of business process reengineering is critical under DoD's CIM philosophy.

Overview

This review initially provides a description of the normally accepted process of preparing written TDY travel orders; more specifically, generating the required DD Form 1610. The literature review then examines the following areas: the legal basis for this requirement, the historical evolution of the DD Form 1610 generation

process, past attempts to change this requirement, current initiatives in this area, and how the current drive for business process reengineering within the DoD dictates a thorough and systematic analysis of the process of producing TDY travel orders. Since the area of business reengineering is relatively new within the DoD, several of its concepts, theories and ideas will be discussed. A review of business reengineering theory and application to business processes, with emphasis on improving the TDY order process, will be performed. Finally, an analysis of related civilian business practices will be presented.

Generally Accepted Process

While neither DoD Directives nor USAF Regulations specify exact mandatory TDY order processing methods, most USAF units have developed or adopted roughly the same processing methods, since this method follows a logical path to completion of the form. The following scenario is a hypothesized composite, based on TDY orders production and processing at several bases within different MAJCOMs. Additionally, some of this material was gathered from Air Force Materiel Command's (AFMC) Supplement to AFR 10-7. Note that this MAJCOM supplement to the USAF directive is used as a representative reference at this point, and henceforth referred to as AFMC Sup 1 to AFR 10-7.

Unit-level Processing. Upon being informed of a pending TDY by his/her supervisor, the prospective DoD traveler, whether military or civilian, must initiate generation of the DD Form 1610, "Request and Authorization for TDY Travel of DoD Personnel" (AFR 10-7, 1986:35). The first 11 blocks for unit-level information entry can be filled in by a unit information management specialist, secretary, administrative clerk, or by the traveler. Then the form normally goes to the Unit Resource Advisor who determines the most advantageous mode of transportation, per diem and travel costs, and verifies that sufficient funds are available. The form then proceeds to the original requesting official for signature, simply verifying that he/she really did request the travel, and then to the approving authority, which is established by grade/position within the unit (AFMC Sup 1 to AFR 10-7, 1992:1).

Base-level Processing. After all of the above actions have been completed, the DD Form 1610 goes from the unit to Base Financial Management (FM) for inclusion of an accounting citation, often referred to as a "fund cite". From FM the form goes to Base Information Management (IM) for authentication, dating, and inclusion of a travel order number for tracking and auditing purposes. At this location, the form is also reproduced in a quantity

sufficient to meet the traveler's needs (AFMC Sup 1 to AFR 10-7, 1992:1).

And Back. The DD Form 1610 is then returned to the originating unit, where the administrative section retains a copy and presents the remaining copies to the traveler. The traveler uses these TDY orders to obtain transportation and accommodations at his/her destination. Copies of the form must be submitted with a final settlement voucher upon completion of the TDY.

Legal Basis for Requirement

Contrary to popular belief within the USAF, the true basis for requiring written travel orders, and thus generation of DD Form 1610, does not come from any AF regulation, although AFR 10-7 is the USAF administrative supplement to the Joint Travel Regulations (JTR) regarding preparation and issuance of travel orders. The legal basis for requiring written travel orders is not derived from the combined Joint Federal Travel Regulations (JFTR) (Fried and Watson, 1983:2).

As Hopson relates in his 1988 legal opinion on the subject of written TDY orders, the basis for requiring "orders" is Public Law 37 United States Code (U.S.C.) 404, "Travel and Transportation Allowances: General". This law was implemented DoD-wide through the Federal Travel

Regulations, which apply to civilian employees of all government agencies; and the Joint Travel Regulations (JTR), which apply to members of the uniformed services and civilian employees of DoD (Hopson, 1988).

The FTR simply indicates that orders are necessary, while the JTR and JFTR go a step farther in implementing the law by specifying that written orders are required. As Fried and Watson discovered during research they conducted in response to high-level tasking on this subject, when this difference between the actual law and the implementing directives has been challenged the results were thus: "The United States Comptroller General, who makes final decisions in disputes over interpretation of public law as it relates to pay and entitlement, has declared that the use of the word 'orders' in 37 U.S.C. 404 refers to written orders." However, the law merely states, "... a member of a uniformed service is entitled to travel and transportation allowances for travel performed or to be performed under orders, ..." (Fried and Watson, 1983:1).

History of the DD Form 1610

The Written Order. The DD Form 1610 was originally determined to be the means of ensuring written TDY orders were generated and issued in accordance with Public Law 37 U.S.C. 404. The form and its mandatory use were prescribed in the JTR, which implemented the public law DoD-wide.

The basic data required, format, and processing of the DD Form 1610 has undergone only minor changes since its inception long ago. It is difficult to determine exactly when the first DD Form 1610 was issued and what it looked like but, judging by various renditions of this form from 1967 through the present, little has changed within the context of the form itself.

The Generation Process: Manual. In the beginning, the generation and coordination process for the DD Form 1610 was manual. Someone from the traveler's unit: 1) gathered all required information; 2) typed the data in the appropriate blocks on the form; and, 3) either sent it out in base distribution or hand-carried it to other base agencies for coordination and processing (FM and IM), depending on time constraints.

If lead time allowed, the completed form could be sent from place to place using the base distribution system. If not, which was often the case, someone had to devote as much as a day or more to taking this form from place to place. This manual process was cumbersome and left much room for improvement and innovation.

At this juncture a subtle but important distinction between the terms "improvement" and "innovation" must be drawn. According to Webster's New World Dictionary, improvement simply means "an improving or being improved; especially betterment" (Simon and Schuster, Inc., 1988:679)

while innovation indicates "something newly introduced; new method, custom, device, etc.; change in the way of doing things" (Simon and Schuster, Inc., 1988:697). Regarding the TDY orders generation process, improvement rather than innovation was normally the option.

The Generation Process: Automated. Beginning in the early 1980s, various attempts were initiated to automate the TDY orders generation process. Personnel Concept III (PC III) with its Automated Travel Orders (AUTOS) module was one of the first notable steps in this direction. This effort was intended to provide the user with electronic coordination and publishing of the required DD Form 1610. PC III experienced problems that delayed full deployment of this system, most notably the AUTOS module (Moore, 1989:82-85; Norcia and Brockman, 1990:Atch 2). Now the AUTOS module is practically a dead issue (Weaver, 1993).

In 1987 Headquarters Air Force Systems Command (HQ AFSC) initiated a TDY orders automation initiative entitled Travel Orders Tracking System (TOTS). Because PC III was already funded and advertised travel order generation capability, TOTS was canceled in 1988 (Nibbelin, 1988). Due to continuing delays connected with PC III, HQ AFSC initiated development of another automated TDY orders system, bringing on line its networked Travel Orders Generation System in 1990 (Norcia and Brockman,

1990:Atch 2). While this system delivered automated orders generation capability, it had several drawbacks.

Drawbacks. The first major drawback of HQ AFSC's initial thrust into automated travel orders generation was the initial estimated contract cost: $250,000. HQ AFSC/IM opted to modify a Travel Order Generation System (TOGS) coding scheme that already existed at Kirtland AFB, hoping to save time and money. This was not as easy as originally thought, and cost over 200 hours for code modification before initial implementation. These modifications involved a GS-12, an E-8, and several contractor personnel. Thus, the project still entailed significant amounts of time and money (Weaver, 1993).

The second drawback was that TOGS was designed as a "stovepipe" system, meaning that this system was not designed with the intent of allowing organizations outside HQ AFSC to use it. So, this system was designed to service only approximately 2,000 people (Weaver, 1993).

Experienced information managers throughout the USAF, such as the HQ Air Force Intelligence Command Director of Information Management, saw this as a worthwhile endeavor, but also believed these various automation efforts were addressing a symptom while ignoring the real problem (Couto, 1992).

Past Attempts to Eliminate Written Orders

First Documented Efforts. Attempts to eliminate the various problems apparent in the requirement to produce written TDY orders range from subtle to direct and have been going on for quite some time. During construction of the Panama Canal, an internal circular advised that travel orders could be either written or oral. Upon discovering this in 1925, the Comptroller General quickly ruled this subtle attempt to circumvent the requirement for written TDY orders was illegal (Fried and Watson, 1983:6).

"On 25 Jul 61, the Acting Assistant Secretary of State for Administration requested the Comptroller General's approval of a proposal to eliminate the requirement for written travel orders ..." (Fried and Watson, 1983:6). This appears to be the first direct attempt to eliminate the problem by going through established, official procedures: submitting a written request. This initiative was limited to trips costing less than $100, but was denied by the Comptroller General.

Recent History. In August 1983 the Air Force Director of Administration, (AF/DA -- title was subsequently changed USAF-wide to Director of Information Management) was tasked by the Commander of AFSC's Electronic Systems Division at Hanscom AFB, Massachusetts, to research the possibility of removing the requirement for written orders in connection

with TDY. This resulted in a 10-page Headquarters Air Force staff study, which ultimately reiterated earlier Comptroller General decisions concerning the requirement for written TDY orders. This response did, however, point out that the Air Force was not the first governmental agency to attempt to challenge this requirement in the 1980s. Both the Departments of Agriculture and Transportation attempted to use "orderless systems", only to be told by the Office of Management and Budget that this practice was illegal (Fried and Watson, 1983:1).

Finally, in 1988 and 1990, the Air Training Command DA (ATC/DA in 1988, and ATC/IM in 1990 -- same position and responsibilities) initiated staff studies which strongly recommended elimination of the requirement for written TDY orders. He cited two arguments relating to cost control (Hallsworth, 1988):

> 1. Col Hallsworth (ATC/IM, and former Deputy AF/IM) conducted a survey of ATC's fiscal year 1987 (FY87) costs associated with generating required DD Forms 1610. He informed the Air Staff that his Command had spent over $600,000 during FY87, not on travel, but simply on "preparing to travel", which is simply preparing the required DD Form 1610.
>
> 2. Civilian corporations, having continually tried to maximize travel dollars, never used this sort of mechanism in connection with their business travel.

Colonel Hallsworth's recommendation was turned down, and again the primary rationale was that this requirement was mandated by the JFTR and upheld by the Comptroller General (Nations, 1988:1).

Current Initiatives in the TDY Arena

Process Improvement. Emphasis still appears strong in the area of process improvement, as increasingly more automation is brought to bear. During the integration of HQ AFSC and Headquarters Air Force Logistics Command (HQ AFLC) to form HQ AFMC, migration of the previously mentioned TOGS to the new headquarters at Wright-Patterson AFB, Ohio, was approved by all parties concerned (AFSC Communications-Computer Systems Plan, 1991:38-40). This would have ensured HQ AFMC a rapid means of producing DD Forms 1610, since the entire system would have been automated and based on a proven model. With large numbers of HQ AFMC personnel continuously performing TDY, the $250,000 required to rewrite the system's code for a new host computer would most likely have been justified in the long run.

Approximately three months before the scheduled merger of the two headquarters, DFAS announced it had already initiated action to develop and deploy a similar system, standardized throughout DoD. DFAS was beginning to field test its Defense Travel Pay System (DTPS), which would electronically link the travel request processor with the designated approval authority, the local FM community, and a central remote processing and accounting site (DTPS DFAS-Columbus Conference Material, 15-17 Sep 92:i). This DoD

CIM initiative, coupled with the cost required to migrate TOGS from the VAX-based environment at Andrews AFB to an OSI-compliant version for a new host at Wright-Patterson AFB, meant that TOGS had been "overcome by events", and HQ AFMC elected to wait for the DFAS system to be implemented (Shediack, 1993). But everyone did not opt to wait.

Headquarters Strategic Air Command (SAC: now joint US Strategic Command), opted to develop its own TDY orders automation initiative. This was the culmination of a year-long Process Action Team (PAT) study, and the SAC IM staff felt they could wait no longer to automate this process (Dzur, 1992). But once again, the symptom was being addressed through process automation, not process improvement.

Process Innovation. Process innovation often mandates the need for a dramatic change. Automating the TDY orders process, however, is simply automating the existing process, not innovating it. This type of innovation comes to the surface through business process reengineering.

Business Process Reengineering

Theory. The theory of business process reengineering in its essence is simple and straightforward--do not just automate existing procedures, address fundamental

deficiencies in business processes. Then, and only then, look at automation as a tool, not a means, to innovate and further improve processes (Hammer, 1990:104). Proper implementation of this theory will avoid using technology simply for technology's sake. Automating current business procedures will not occur without first examining those business processes.

Initially, business process reengineering parallels TQM philosophy and examines processes for unnecessary or redundant steps, or in TQM language, non-value and limited value added steps. However, business process reengineering goes beyond eliminating the non-value and limited value added tasks and redefines a business process. This redefinition includes discarding the assembly-line, sequential mentality of most business processes and instilling parallel process thinking where many people have access to information at the same time (Corbin, 1992:42).

Business process reengineering theory evolved as a result of automation attempts over the last 20 years that provided little or no increase in productivity or services. This is attributed to business processes being largely improvised as businesses grew rather than designed. Businesses have now "institutionalized" their processes and stifled attempts to innovate these processes. When businesses do look at automation improvements by

incorporating information systems (IS), they usually automate existing procedures. Ultimately, the automated process is no better than the original process itself, only faster (Hammer, 1990:110).

In addition to examining increased productivity and services, the cost of automating business procedures compared to the value the automation brings the company should be explored. This relationship between the amount of money a business spends on IS and the success of that business was defined by Paul Strassmann in his book, The Business Value of Computers. Surprisingly, Strassmann found no relationship between success and money spent on IS. Instead, Strassmann found an inverse relationship between expenditures on information technology and success. In other words, successful companies spent less on IS on average than low-performance companies. Strassmann attributes this finding to automating existing procedures without examining processes, or in his words, "...automating unnecessary work" (Strassmann, 1991:144). Businesses can no longer afford to continue this wasteful practice and must instead use business process reengineering theory to innovate processes to increase productivity and profitability.

General Application. An initial step in applying business process reengineering is senior management must

communicate its expectations for IS roles in supporting the enterprise. In doing so, senior management can define IS roles and avoid costly mistakes with IS that do not support enterprise goals or needs (Davenport, Hammer, and Metsisto, 1989:131).

Another initial step in applying business process reengineering is to discard the organizational structures based on fragmented tasks and integrate processes into parallel structures (Corbin, 1992:41). Two methods of accomplishing parallel structures or parallel processing are recognized. The first method of parallel processing is to have separate units perform the same function. The second method has separate units performing different functions that eventually come together (Hammer, 1990:110). Whichever method of parallel processing is used, businesses can no longer afford to define their organizations by "assembly-line" processes. Rather, they need to redefine processes and organizations to compress tasks and output.

An example of the compression and first form of parallel processing is a change implemented by Mutual Benefit Life. In the past, this insurance company routed applications through a myriad of departments and people in order to process a single application. Now, applications are assigned to a single department of "case managers" who process applications individually. These case managers input the applicants' information into computer databases

and receive necessary output processing direction. Instead of days or weeks to process an application, such companies can usually process applications within one day, even hours (Hammer, 1990:106).

The combination of defining IS roles and restructuring processes into parallel structures will lead to a drastic change from the old way of doing business (Hammer, 1990: 112). The above example illustrates how restructuring the insurance process led to creating a worksection of "case-workers" rather than the old worksections that dealt with different aspects of the same application such as credit-checking, underwriting, etc. However, the benefits resulting from such effective drastic changes are not achieved without resistance.

Any change in an organization will be met with resistance and business process reengineering change only serves to emphasize this reality (Corbin, 1992:41). Business process reengineering is not a subtle change that reduces the amount of resistance, but rather a drastic change that requires senior management to anticipate such resistance and maintain commitment to press forward for the good of the business and all concerned.

Application To TDY Orders. Communication of IS roles in supporting the DoD enterprise are incorporated in the DoD CIM initiatives mandated by the Director of Defense Information. The Defense Information Systems Agency (DISA)

has developed three strategic goals to accomplish the CIM mandate: improving the efficiency of business practices; software development and maintenance practices; and the computer and communications infrastructure (Corbin, 1992:52). In doing so, DISA has taken the initial step of senior management communicating and defining IS roles for the DoD and USAF.

The other initial step required to business reengineer the TDY order process is to discard the organizational structures based on fragmented tasks and integrate processes into parallel structures. To accomplish this, "assembly-line" mentality needs to be discarded and TDY order processes need to be compressed and non-value and limited value added tasks eliminated.

Discarding the current mentality of TDY orders processing and redefining tasks necessary to accomplish TDY orders will likely lead to a drastic change from the old way of doing business. With such a change, resistance should be anticipated. Changes to TDY orders along business process reengineering practices must be backed up with commitment by senior leadership.

Implementation Within the DoD. Implementing business process reengineering within the DoD is accomplished through business process improvement using standard IDEF (ICAM [Integrated Computer Aided Manufacturing] Definition) and Activity Based Costing (ABC) methods (DoD 8020.1-M

[Draft], 1992:58). These methods will be discussed in detail in the following chapter. However, an important part of these methods is to benchmark the DoD process against the best public and private sector achievements (DoD 8020.1-M [Draft], 1992:62).

Related Civilian Business Practices

The literature concerning travel cost control in the private sector is primarily devoted to structuring travel policies and reporting procedures. A 1991 American Express survey examined business travel costs to identify successful methods the surveyed companies used to control these costs. In addition to outlining methods to control travel costs, the survey emphasized the importance of travel costs to businesses. Travel policies and reporting procedures were designated a top concern for 60 percent of CEOs and senior financial officers (Arteaga, 1991:18).

Attempts to use automation to contain travel expenses were also researched by the American Express survey and detailed by Roger Ballou in an article appearing in Financial Executive, November/December 1991, page 56. Effective automation efforts detailed in this article appear in Table 1 (next page). Interestingly, these efforts did not include generating a document resembling a written authorization or order to travel. Rather, civilian business has concentrated on the efforts listed in the table.

Table 1

AUTOMATION STEPS THAT PROVE MOST EFFECTIVE IN CONTAINING TRAVEL AND ENTERTAINMENT EXPENSES

Automation Effort	Percent Of Companies Surveyed Who Have Tried The Automation Effort	Percent Of Those Who Have Tried The Automation Effort And Found It Effective
Expense Report Processing	12%	69%
Tracking Policy Compliance	5%	63%
Reconciliation of Direct Vendor Bills	13%	74%
Tracking Cash Advances	19%	86%
Traveler Reimbursements	13%	82%
Reconciliation of Corporate Card Charges to Expense Reports	11%	69%
Expense Report Creation	6%	64%

(Ballou, 1991:56)

As shown in Table 1, civilian businesses that use automated methods to control travel expenses have generally found these attempts effective. However, as demonstrated by the areas of concentration listed in Table 1, civilian business travel automation is proceeding along a different route than current DoD and USAF intentions.

Advice for companies striving to control travel expenses is summed up by Jay Finegan. Mr Finegan outlines three simple steps for controlling travel expenses (Finegan, 1991:57). First, and most important, implement a formal travel policy. DoD and USAF have extensive formal policies in the form of travel regulations. Second,

consolidate all travel arrangements with one supplier. DoD and USAF have largely accomplished this by using the Scheduled Airline Travel Office (SATO) for USAF travel and equivalent agencies in the sister services. Last, design a simple expense reporting system that reflects the way your company operates. DoD and USAF regulations for travel reporting reflect the "company's" operational attitudes; however, few would interpret these regulations or processes as being simple.

Noticeably absent from the literature on civilian business travel management is any reference to a policy or need to prepare a document resembling TDY orders. The absence of a document similar to written TDY orders limits the ability to benchmark the DoD process against the best public and private sector achievements using the IDEF methodology.

Summary

Written TDY orders are a long standing tradition within DoD. Technological initiatives attempt to improve the generally accepted DD Form 1610 preparation process but only automate the existing process. While Public Law 37 U.S.C. 404 requires orders to perform TDY, it is the United States Comptroller General who made the decision that orders must be written rather than verbal. The DD Form 1610 originated as a means of ensuring written TDY orders

were accomplished. Attempts to eliminate the written orders requirement date back to 1925. This earliest attempt, as well as all subsequent attempts, have been denied by the United States Comptroller General. Current initiatives to automate and hence "improve" the preparation process have been costly with limited availability to small pockets of activities such as the HQ AFSC TOGS initiative. As an alternative to automation improvements, business process reengineering theory provides a basis to innovate processes. Applied to TDY orders preparation, business process reengineering mandates the process be examined for non-value and limited value added tasks and redefined for the better. Additionally, an examination of civilian business practices and related initiatives revealed no requirement for a document resembling a written order.

III. Methodology

Introduction

This chapter discusses the methodology used to analyze the process, or processes, currently endemic to the activity of producing written TDY orders. First, the investigative questions will be restated. Second, the methodology, including discussions on background, application and team design is presented. Next, the data collection plan is presented followed by a discussion of the data analysis plan. Finally, the time constraint for conducting this research and a summary will conclude this chapter.

Investigative Questions

Several questions must be answered to accomplish the purpose of this research:

1. What are the objectives of the written TDY order activity?

2. Which processes within the TDY orders activity add no value to this activity (for either traveler or government)?

3. Which processes within the TDY orders activity add limited value to the activity?

4. What are the activity costs to produce written TDY orders?

5. How do large, well-established civilian corporations accomplish the same objective(s) as governmental TDY orders?

Methodology

This research will be conducted using BPI methodology with IDEF and Activity Based Costing (ABC) methods. Standard DoD IDEF methods will be used to develop activity and data models using available software tools and to document process improvements (DoD 8020.1-M [Draft], 1992:58). Standard DoD ABC methods will be used to identify costs associated with the activity models (DoD 8020.1-M [Draft], 1992:62).

Another important aspect of DoD BPI methodology is to assemble a team of functional/technical experts to gather the necessary expertise to conduct this research. This team of experts develops a baseline model for current processes and approves/disapproves incremental and "final" process improvement models (DoD 8020.1-M [Draft], 1992:58-62).

Background. BPI methodology with IDEF methods has been used to facilitate many process improvements over recent years. As an example, this methodology was used to improve Electronic Warfare (EW) emergency support (Small, 1992). This project was led by a military service headquarters and involved nine different MAJCOMs representing different functional areas and organizations. The EW support process was quite complex. Further, the process had never been clearly defined, cooperative roles between the functional areas were unclear, and the process cycle time had life-

threatening consequences. To solve these problems, the project used IDEF methods to develop and coordinate an improved EW process that was subsequently tested and implemented world-wide.

The project consisted of ten functional/technical working groups, one from Headquarters and nine from the different MAJCOMs. These groups used IDEF methods to develop a baseline AS-IS model of the current process. This model described the current organizational structure without defining responsibilities. Once the current baseline was understood, an improved TO-BE model was developed that detailed responsibilities and provided a basis for planning, performance, and concept validation (Small, 1992).

This EW project used IDEF methods to resolve roles and mission issues. The project successfully clarified roles and responsibilities of the functional areas that led to reduced response time and increased quality of the process (Small, 1992).

Application. Applying BPI methodology to a process in general and producing written TDY orders specifically requires many steps to complete. An abbreviated summary of tasks performed during BPI methodology is provided in Table 2 (next page). The step numbers presented in the table are not dictated by the prescribing manual, DoD 8020.1-M [Draft], 1992 and DoD 8020.1-M [Draft], Change 1, 1993.

Rather, they represent the logical sequence of events prescribed by the manual and are presented for clarification.

Table 2

BPI METHODOLOGY SUMMARY	
STEP	TASKS PERFORMED
1	Assemble functional/technical expert team and gather initial data.
2	Establish baseline AS-IS activity model.
3	Validate baseline AS-IS model with functional/technical team.
4	Identify non-value added and limited value added processes.
5	Develop TO-BE activity model and supporting data model.
6	Validate TO-BE models with functional/technical team.
7	Perform Activity Based Costing and link costs to activity models.
8	Eliminate non-value added processes and related activity costs. Streamline limited value added processes and related activity costs.
9	Update baseline AS-IS activity model with each change. Validate changes with functional/technical team.
10	Continue until all non-value added processes are eliminated and streamlining limited value added processes no longer results in significant savings.
11	Streamline all remaining value added processes. Construct new AS-IS activity model.
12	Question existing business assumptions, rules, and procedures and design new TO-BE target model.
13	Develop time-phased implementation plan, measures of activity-based cost, and measures of quality, productivity and time-based performance. Validate with functional/technical team.
14	Prepare evaluation, planning and selection documents for improvement alternatives.
15	Prototype improvement alternatives (optional).
16	Prepare preliminary Functional Economic Analysis (FEA), Data Management Plan (DMP), and Technical Management Plan (TMP).
17	Evaluate proposals and prepare final FEA.
18	Approve proposed change. Manage implementation using FEA, DMP, and TMP.

(DoD 8020.1-M [Draft], 1992:58-66 and DoD 8020.1-M [Draft], Change 1, 1993:19)

The first step is to assemble a functional/technical expert team from the various disciplines that process written TDY orders (DoD 8020.1-M [Draft], 1992:58). This team will provide or identify the data required for this study including the objectives of the written TDY order activity. Disciplines included in this research are Information Management (IM) and Financial Management (FM). The information necessary for the IDEF modeling is collected by the researchers during meetings of the functional/technical team. Additionally, the team is encouraged to actively seek additional inputs from other experts personally known to them and to share that information with the other members of the team.

Second, the information collected from the functional/ technical team meetings is used to establish a baseline AS-IS activity model (DoD 8020.1-M [Draft], 1992:58). This model is used to document and define the current processes as they exist today.

Third, the baseline model is validated with the functional/technical experts. This ensures consistency and aids pending improvements and future validations (DoD 8020.1-M [Draft], 1992:61).

Fourth, the functional/technical team analyzes processes and identifies "non-value added" and "limited value added" processes (DoD 8020.1-M [Draft], 1992:60). Non-value added processes neither support the mission of

the functional activity (IM) nor the missions of the related functional activities (FM). Limited value processes contain non-value added tasks or steps. This step will identify the processes that add no value or limited value to the TDY orders activity.

Next, process improvement changes are defined by developing a TO-BE activity model and a supporting TO-BE data model (DoD 8020.1-M [Draft], 1992:60). These TO-BE models represent the existing processes minus the non-value and limited value added processes.

The next step is to validate the TO-BE models with the functional/technical experts (DoD 8020.1-M [Draft], 1992:60). This validation mirrors the rationale discussed previously.

Next, activity costs are linked to the activity models to support the process improvement TO-BE activity and data models and to benchmark the models against the best public and private sector achievements (DoD 8020.1-M [Draft], 1992:62). Linking activity costs to the activity models will derive the costs to produce written TDY orders. Benchmarking the models entails comparing the models to large, well-established civilian corporation methods to accomplish the same objective(s) as TDY orders.

Baseline activity costs are normally historical costs based on expense categories such as salaries.

Additionally, costs need to be detailed to a level consistent with the analyzed activity (D. Appleton, 1993: 5-7). This procedure, known as Activity Based Costing (ABC), coupled with the IDEF models compiles the information necessary to continue the methodology (D. Appleton, 1993:5-6).

Subsequent reviews of the models concentrate on eliminating non-value added processes previously identified and thus eliminate the related activity costs. Additional reviews simplify and streamline limited value added processes to eliminate their related activity costs (DoD 8020.1-M [Draft], 1992:63).

Throughout this review process, the baseline AS-IS model is updated with each process, data, or system change. Each change is continually validated with the functional/technical expert team. This process continues until two criteria are met. First, all non-value added processes are eliminated. Second, streamlining limited value added processes no longer results in significant savings. As with other improvements, these improvement efforts will again be validated with the functional/technical experts (DoD 8020.1-M [Draft], 1992:63).

Emphasis now shifts to streamlining value added processes. Functional processes are modeled; interrelationships, methods, costs, information systems,

and related data requirements are analyzed and documented (DoD 8020.1-M [Draft], 1992:63).

After this analysis, a new, rigorous AS-IS model is constructed to represent the streamlined process. Existing business assumptions, rules, and procedures are questioned to design a new TO-BE target model (DoD 8020.1-M [Draft], 1992:63).

A time-phased implementation plan, measures of activity-based cost and measures of quality, productivity, and time-based performance are then developed. As with all other improvements, these changes must be validated with the functional/technical expert team (DoD 8020.1-M [Draft], 1992:64-65).

Information from the implementation plan and activity and data models is then used to prepare evaluation, planning, and selection documents that detail process, data, and automated information system improvements alternatives (DoD 8020.1-M [Draft], 1992:65 and DoD 8020.1-M [Draft], Change 1, 1993:19).

These improvement alternatives may, or may not, be prototyped to test if implementing the new processes will be successful before an alternative is selected. This decision will be made by the Office of the Secretary of Defense (OSD) Principal Staff Assistant (DoD 8020.1-M [Draft], 1992:65).

The recommended proposals are evaluated by taking information from the implementation plan and TO-BE activity and data models to prepare a preliminary Functional Economic Analysis (FEA), Data Management Plan (DMP), and Technical Management Plan (TMP) and final FEA (DoD 8020.1-M [Draft], 1992:65).

The OSD Principal Staff Assistant approves the proposed change and the FEA, DMP, and TMP are used to manage the implementation process (DoD 8020.1-M [Draft], 1992:65).

Of special note, measures of the activity-based cost, quality, productivity, and time-phased implementation are crucial to this process improvement. These measures provide the information necessary for FEA development and facilitate the benchmarking process (DoD 8020.1-M [Draft], 1992:65-66).

Team Design

Drawing upon sponsor support (AFMC/CI) and due to the location and availability of functional experts, the functional/technical team will be primarily drawn from AFMC Headquarters personnel. Given the concurrent interest of SAF/AAI, other available experts within the USAF will supplement these personnel.

Data Collection Plan

Data will be collected from the functional/technical experts throughout the research period. First, data will be collected during the functional/technical team meetings prior to the development of the baseline models. Next, data will be collected to validate the baseline models. Subsequent data collections and validations will occur as the baseline models are revised by increments to reflect process improvements. Finally, the last data collection and validation will occur upon completion of the process improvements.

All data collection to validate models and revisions will be accomplished by polling the functional/technical experts via regularly scheduled meetings or electronic mail. Respondents will be asked to concur or nonconcur with the models and/or revisions and to provide whatever comments they think appropriate.

Data Analysis Plan

Data analysis will be conducted according to DoD IDEF Modeling guidelines. Validation of models and revisions will be complete when the functional/technical team achieves consensus. Consensus will be achieved when:

1) The majority of the functional/technical team concurs with the proposed models and/or revisions, and

2) Reasons for nonconcurring with the proposed models and/or revisions are found insufficient to dissuade the

majority of the functional/technical team from concurring with proposed changes.

Time Constraint

Completing the entire BPI methodology process would be ideal. However, a more realistic timeline will be pursued given the constraints of the academic thesis process. The functional/technical team meetings and corresponding data collection will take five months. At that point, results of the BPI process to date will be compiled and validated with the functional/technical experts and the remainder of the BPI process recommended for further study.

Summary

This chapter discussed the methodology used to analyze the process, or processes, currently endemic to the activity of producing written TDY orders. Standard DoD BPI methodology using IDEF and ABC methods was chosen to research this business process improvement. Subsequent data collection and data analysis were presented to establish procedures according to DoD BPI methodology. Finally, a five-month timeline for conducting this research was presented to allow for data compilation and presentation.

IV. Data Analysis

Introduction

This chapter presents the data compiled during the five month time period allotted for this research. Sections on the composition of the functional/technical expert team, the objectives of the written TDY order process as identified by the functional/technical team and the baseline AS-IS modeling will be presented first. Subsequent sections follow concerning Activity Based Costing (ABC), TO-BE modeling and IDEF0 modeling where AS-IS modeling and ABC data are linked. Finally, the data compiled specifically relating to the investigative questions will be addressed.

Functional/Technical Expert Team

The IDEF methods employed during the research required the knowledge and participation of a functional/technical expert team. The HQ AFMC Director of Corporate Information (CI), as the research sponsor, provided much insight into functional experts who would be well-qualified and available to assist the team effort.

The Director recommended the team be comprised of functional experts from both the Information Management and Financial Management disciplines within the headquarters.

These two functional areas have the greatest stakes in the TDY order process, and functional experts at this level of the organization have a thorough knowledge of this process from a regulatory and policy perspective. Additionally, the Director suggested that the functional/technical experts include someone whose daily duties included processing TDY orders for a large organization, thus providing a vertical diversity of views and someone with day-to-day responsibility for generating written TDY orders. Based on recommendations from HQ AFMC/CI, the functional/technical expert team consisted of two individuals from the TDY orders policy function within HQ AFMC, one person from HQ AFMC/FM, and one person from the TDY orders function at Aeronautical Systems Center on Wright-Patterson AFB OH. The team's expertise spanned over 60 years of TDY order experience and encompassed unit, group, base, and MAJCOM processing responsibilities. Both IM and FM communities were represented, providing cross-functional input. Finally, TDY order processing functional experts at Hanscom, Los Angeles and McClellan AFBs provided inputs based on their experiences.

Initial functional/technical team meetings identified the objectives of the written TDY order process and produced the baseline AS-IS model.

Objectives of the Written TDY Order Process

The functional/technical team determined that the objectives of the written TDY order process were to identify the traveler(s) and to verify authenticity of the travel requirement and subsequent entitlements. These objectives are accomplished through written TDY orders by: providing official documentation of the traveler(s), providing for accountability of traveler's time and government money, and verifying entitlements available to the traveler(s).

Baseline AS-IS Modeling

Baseline AS-IS modeling was accomplished on large, "easel-sized" paper to facilitate visibility, communication and participation among the team members. The baseline AS-IS model initially identified 13 activities in the written TDY order process shown in Figure 1 on the next page.

After several subsequent meetings to further define this process, the functional/technical team identified sub-activities for many of the individual steps. These sub-activities are outlined in Table 3 on the page following the baseline AS-IS model.

With the baseline AS-IS activity model completed, the current processes were documented and defined. The functional/technical team then validated the model and turned their attention to identifying value added and non-

value added activities and sub-activities, a primary function of Activity Based Costing (ABC).

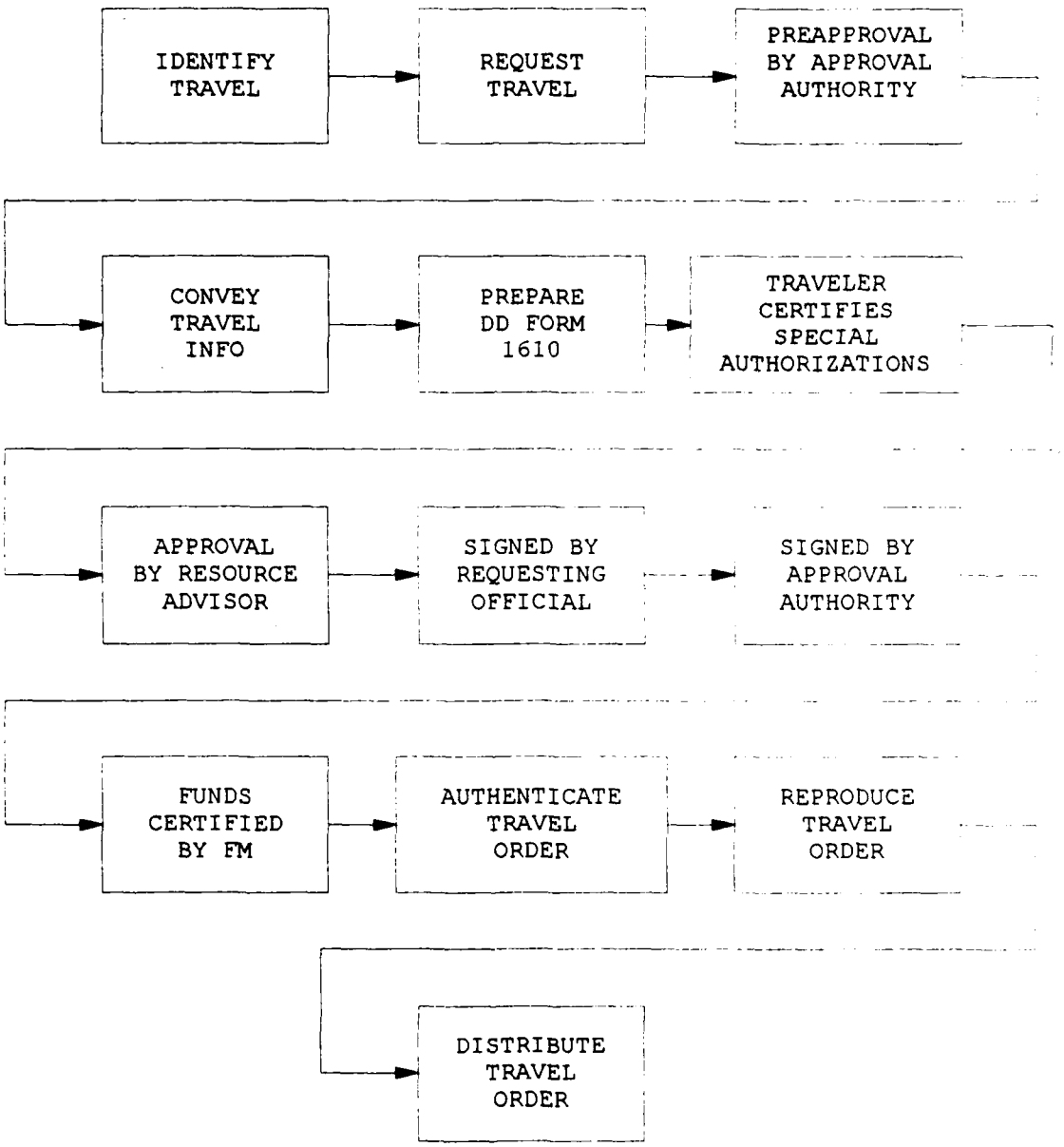


Figure 1. Baseline AS-IS Process Initially Identified By Functional/Technical Team

Table 3

INITIAL BASELINE AS-IS ACTIVITIES AND SUB-ACTIVITIES	
Activity	**Sub-Activities**
Identify Travel	None
Request Travel	Why Travel Needed When Travel Will Be Done Where Travel Will Be To Who Will Travel How Travel Will Be Done Inform Requesting Official
Preapproval by Approval Authority	Determine Fund Availability, Resource Advisor
Convey Travel Information	Two Methods 1. Determine Fund Availability, Resource Advisor Talk to Approval Authority 2. Prepare TDY Worksheet Sign Worksheet with Fund Availability, Resource Advisor Sign Worksheet, Approval Authority
Prepare DD Form 1610	None
Certify Special Authorizations, Traveler	None
Approval by Resource Advisor	None
Singed by Requesting Official	None
Signed by Approval Authority	None
Certify Funds, FM	Locally Funded or Other Funded If Order Incorrect, Correct or Return
Authenticate Travel Order	Log Entry Review Quality, Single or Multiple Traveler(s) If Order Incorrect, Correct or Return If Returned, Notify Generating Organization
Reproduce Travel Order	If Multiple Traveler, Sanitize Order First
Distribute Travel Order	None

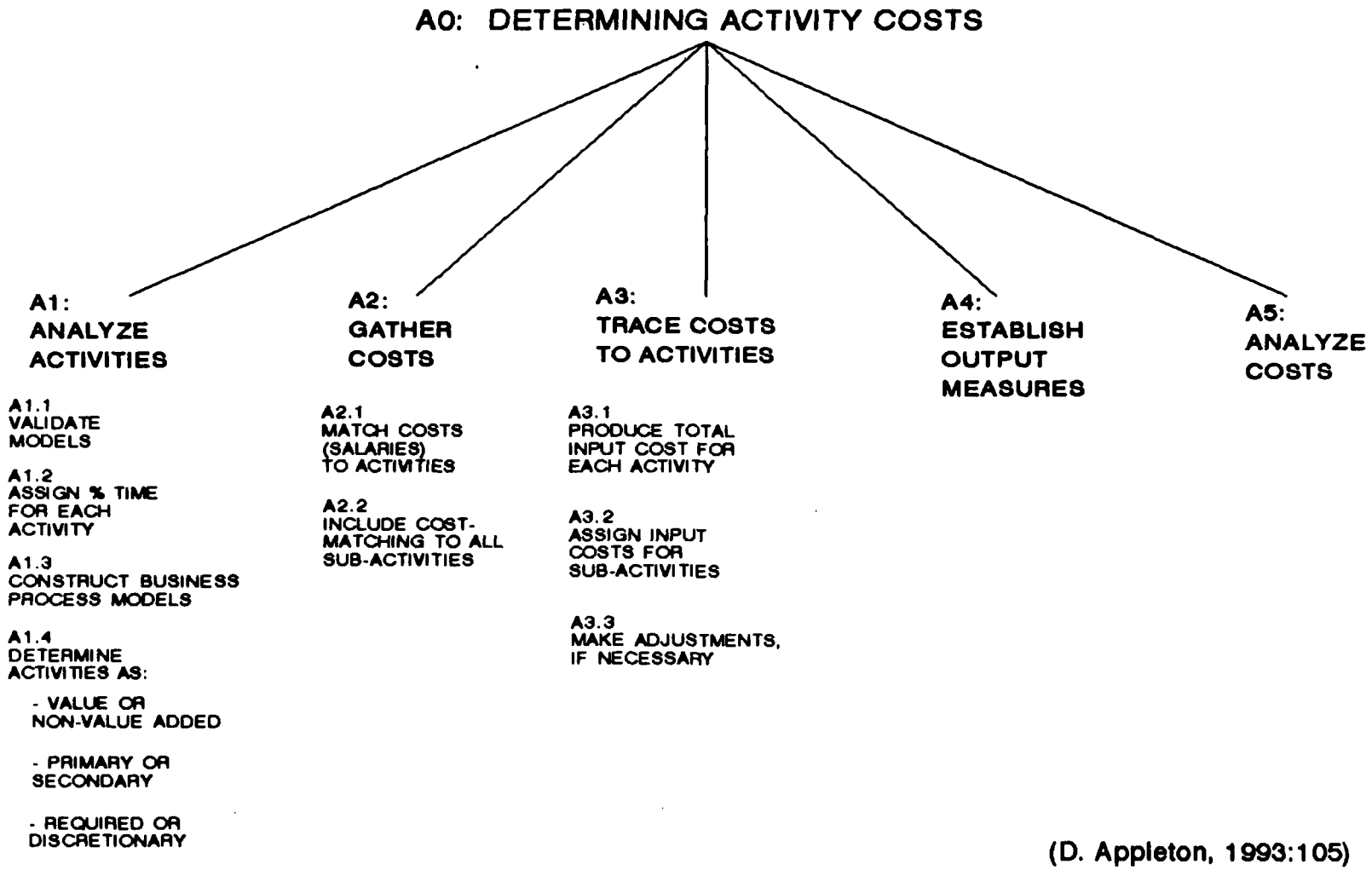
Activity Based Costing

Strict adherence to IDEF modeling methodology would appear to propose that each phase (AS-IS, TO-BE, ABC, etc.) of the analysis be approached separately; however, the

technical/functional expert team determined the best way to approach BPI and IDEF regarding the TDY order generation process was to attack each activity and related sub-activity(ies) *in toto*. In doing this, they elected to determine as much information as possible, and provide as much data as possible, about each activity and sub-activity before going on to the next one. The researchers saw no rationale for constraining the team by curtailing this approach, and thought it might add a "real world" perspective to this BPI endeavor.

Activity Based Costing Background. When the functional/technical team was originally presented the task of determining value or non-value added activities in the baseline AS-IS model, several questions arose. These questions were answered by providing ABC information and education to the team.

The team was presented with an "easel-sized" version of Figure 2 (next page), Activity Based Costing - Education and informed of their tasks to complete ABC activities A1 through A3: analyze activities (A1), gather costs (A2), and trace costs to activities (A3). A1 and A2 are typically performed concurrently, while A3 requires the data accumulated in A1 and A2 (D. Appleton, 1993:105).



(D. Appleton, 1993:105)

Figure 2. Activity Based Costing - Education

As the team analyzed and provided data on each activity, they determined the following (explained later and shown in Figures 4-12 and Tables 4-5):

1. Activity (or sub-activity) description
2. Time to complete activity
3. Likely range of civilian grades involved
4. Likely range of military grades involved
5. Whether the activity was required or discretionary
6. Whether the activity was primary or secondary
7. Whether the activity was value or non-value added

By employing this approach, the team provided sufficient data and information for each activity (or sub-activity) to determine the initial AS-IS and TO-BE models and to accomplish gathering the data required for ABC.

Assumptions.

Generalizing the Data to Other Populations. All information gathered, other than hourly pay rate data, is admittedly AFMC-specific since all members of the functional/technical expert team work within this MAJCOM, and all field inputs came from AFMC bases. Whenever information was furnished to derive how an activity or sub-activity actually worked, the team always used the caveat "... at least that's the way we do it in this Command."

As long as this is considered, the data analysis and conclusions reached should be useful throughout the USAF and to some extent, throughout DoD. Other federal agencies

may have significantly different data due to an exclusive use of civilian employees within the TDY order generation process.

The overall process figures reflected in this research are believed to be conservative. This belief is based on the fact the all "activity-to-activity transit times" have not been included in the process modeling. These transit times are defined as the product time-in-queue between leaving one activity and entering the next. The functional/technical expert team addressed encapsulated activities, but did not address the time and resources entailed in transferring the output of one activity into the input for another activity (such as, time and pay involved to transport a *DD Form* 1610 from the approval authority to FM for review and authentication).

Because of the above, and the fact that all data gathered were estimates, approximations, and/or weighted averages, it is understood the figures contained in this research are not absolutely precise; however ABC is used as a management tool and does not require precise costs (D. Appleton, 1993:106).

Assigning or determining pay grades. As an integral part of ABC, the team was tasked to determine the appropriate grade-level (military and civilian) for each activity addressed. The team was extremely hesitant to

narrow the scope of possibilities down to a single civilian and a single military grade performing each activity.

To help alleviate this uneasiness and keep this aspect of the research credible, the researchers determined to use a weighted average method in determining the most probable grade in each category, military and civilian for each activity. The formula selected is traditionally used to compute weighted time averages when using Program Evaluation and Review Techniques (PERT). This formula is (Turban and Meredith, 1991:491):

$$t_e = (t_o + 4t_m + t_p) / 6$$

where

t = time

e = estimated, or weighted average

o = optimistic estimate (shortest possible time)

m = most likely estimate (chosen most often by the experts)

p = pessimistic estimate (longest time)

The following adaptation was proposed by the researchers and accepted by the functional/technical expert team:

$$g_e = (g_l + 4g_m + g_h) / 6$$

where

g = grade/rank

e = estimated, or weighted average

l = lowest estimate (lowest grade likely)

m = most likely estimate (chosen most often by the experts)

h = highest estimate (highest grade likely)

When applied to the grade/rank data provided, this formula required no rounding.

Converting pay grades to dollars. Civilian and military pay charts were provided by the functional/ technical expert team member from FM, and were current as of 1 January 1993 (AFR 177-101, 1993:337; Office of Personnel Management GS Hourly Pay Rate Table, 1993). Each chart contained a section of wages/salaries broken down to an hourly rate. This is the section which was applicable to activity times provided by the research team.

Military rates were simply provided by grade, with no subdivision for years in service. Civilian grades, on the other hand, were divided by "step categories" (civilian within-grade salary increases), and this meant that an average civilian step had to be determined in order to properly apply the weighted-average formula described above. This dilemma was put to the team for reconciliation.

The team determined that the average civilian step within a particular pay grade was Step 5. The rationale given was that there simply aren't many Step 1s (entry-level step) around: they either get frustrated with government service or their job and leave, or they get promoted to the next step. Additionally, the team felt

that there are not enough Steps 9 and 10 around to be concerned about, particularly in the IM and FM fields, as these fields usually serve as "stepping stones" to other jobs. Thus, before someone reaches Step 9 or 10, they normally have left these jobs/fields laterally (same pay grade, but different job and/or field), have been promoted within these fields and started at a lower step in the new higher grade, or have become frustrated over lack of future promotion opportunities and departed federal service.

By employing the team's rationale, the step options were narrowed to steps 2-8, inclusive. Of these step options, the team unanimously felt the average step within any pay grade being considered in this research was Step 5.

As the team identified grades with activities and sub-activities, the term "lieutenant" was often identified as performing a certain activity. This was later clarified by the team to mean first lieutenant, the rationale being that second lieutenants were normally busy learning their roles and responsibilities and were not directly involved in the TDY process from a functional or traveler standpoint (at least at most AFMC bases).

Civilian versus military percentages. The team could not determine the appropriate percentages of military and civilian personnel involved in all aspects of the TDY order process. In the judgment of the team members (based on their experiences), and from input provided by several

of the bases within AFMC, there was no way of deriving an accurate ratio of civilian to military personnel employed in each activity, or within the process as a whole.

Feeling this was an important factor to resolve in order to accurately reflect true activity costs, the team agreed to employ the civilian/military mix identified by Generals McDonald and Yates (former AFLC and AFSC Commanders, respectively, immediately prior to these commands merging into AFMC) as the target for AFMC: 70 percent civilian and 30 percent military (Dumas and Nauseef, 1991).

Information reflecting these computations is summarized in Table 4, next page.

ABC Data. Data collected from the functional/technical team included information needed to analyze activities and gather costs (see Figure 2, activities A1 and A2). This information was again captured on large, "easel-sized" paper to facilitate visibility, communication and participation among the team members. Additionally, the functional/ technical team decided to delay linking identified costs to activities (see Figure 2, activity A3) until the activities were modeled using IDEF0 software.

Analyzing activities began with validating the baseline AS-IS model. The functional/technical team then looked at each activity to determine the amount of time spent on that activity and to determine if the activity is value or non-

Table 4

ACTIVITY COSTS PER MINUTE

ACTIVITIES	CIVILIAN L/L	CIVILIAN M/L	CIVILIAN H/L	CIVILIAN PERT	MILITARY L/L	MILITARY M/L	MILITARY H/L	MILITARY PERT	CIV/MIL RATIO MIX=70/30	RATE PER MINUTE
IDENTIFY TRAVEL	$15.09	$18.26	$26.02	$19.03	$24.79	$34.02	$56.13	$36.17	$24.17	$0.40
REQUEST TRAVEL	$15.09	$18.26	$26.02	$19.03	$24.79	$34.02	$56.13	$36.17	$24.17	$0.40
GATHER SPECIFICS	$8.90	$18.26	$18.26	$16.70	$22.72	$34.02	$34.02	$32.14	$21.33	$0.36
INFORM REQUESTING OFFICIAL	$15.09	$18.26	$26.02	$19.03	$24.79	$34.02	$56.13	$36.17	$24.17	$0.40
PRE-APPROVAL BY APPROVAL AUTHORITY		$26.02		$26.02		$56.13		$56.13	$35.05	$0.58
RESOURCE ADVISOR (RA) DETERMINE FUNDS	$15.09	$18.26	$21.86	$18.34	$22.72	$34.02	$34.02	$32.14	$22.48	$0.37
CONVEY TRAVEL INFORMATION	$15.09	$18.26	$26.02	$19.03	$24.79	$34.02	$56.13	$36.17	$24.17	$0.40
RA SIGN	$15.09	$18.26	$21.86	$18.34	$22.72	$34.02	$34.02	$32.14	$22.48	$0.37
APPROVAL AUTHORITY SIGN		$26.02		$26.02		$56.13		$56.13	$35.05	$0.58
PREPARE 1610	$8.90	$9.96	$18.26	$11.17	$14.18	$17.20	$34.02	$19.50	$13.67	$0.23
TRAVELER CERTIFY SPECIAL AUTHORIZATIONS	$15.09	$18.26	$26.02	$19.03	$24.79	$34.02	$56.13	$36.17	$24.17	$0.40
RA APPROVE	$15.09	$18.26	$21.86	$18.34	$22.72	$34.02	$34.02	$32.14	$22.48	$0.37
SIGNED BY REQUESTING OFFICIAL	$15.09	$18.26	$26.02	$19.03	$24.79	$34.02	$56.13	$36.17	$24.17	$0.40
SIGNED BY APPROVAL AUTHORITY		$26.02		$26.02		$56.13		$56.13	$35.05	$0.58
FUNDS CERTIFIED BY FM	$8.90	$9.96	$12.34	$10.18	$11.81	$14.18	$17.20	$14.29	$11.41	$0.19
AUTHENTICATE TRAVEL ORDER	$8.90	$9.96	$9.96	$9.78	$14.18	$14.18	$19.81	$15.12	$11.36	$0.19

L/L = LOWEST LIKELY HOURLY PAY RATE.
M/L = MOST LIKELY HOURLY PAY RATE.
H/L = HIGHEST LIKELY PAY RATE.

value added, primary or secondary, and required or discretionary.

The amount of time spent on an activity was determined from the experience of the functional/technical team or actual time and motion studies available to the team. Determining activities as value or non-value added, primary or secondary, and required or discretionary were made using the following operational definitions.

ABC Operational Definitions. In the process of performing activity based costing and linking activity costs, several definitions need to be established: (D. Appleton, 1993:156-164)

Discretionary activity: In activity based costing, discretionary activities are those that are not absolutely required for the production of a certain output.

Non-value added activity: Any activity for which the customer of the product or service is not willing to pay. Normally, an activity that repairs mistakes, compensates for lack of quality, duplicates another activity, or produces waste is considered non-value added. (Compare to value added activity and secondary activity.)

Primary activity: In activity based costing analysis, an activity that cannot be eliminated from the process without impairing the cost, quality, or timeliness of a desired output. A primary activity is functionally equivalent to a value added activity. Contrasted to a secondary activity.

Required activity: An activity that is either primary or secondary but cannot be eliminated because of law, regulation, or policy. (May nevertheless be non-value added.)

Secondary activity: An activity that is not primary, but directly supports a primary activity. Examples may be assigning work, communicating with employees, etc. (Compare to primary activity, value added activity and non-value added activity.)

Value added activity: Work performed in connection with the production of a desired product or service, for which a customer is explicitly or implicitly willing to pay. (Compare to non-value added activity and secondary activity.)

ABC Summary. Data captured for analyzing activities and gathering costs are represented in Figures 4 through 12 on the following pages. With this data gathered, the functional/technical team had prepared the way for both the initial TO-BE model and linking costs to activities using IDEF0 software.

TO-BE Modeling

When all the above data and information was provided for activities throughout the entire process, the research team had to make a decision: Should an attempt be made to provide surface coverage of baseline AS-IS modeling, ABC and TO-BE modeling steps or phases of BPI, or should the team concentrate on linking the ABC data to the AS-IS model to provide the sponsor a more in-depth picture of the current process?

Considering the current state of flux surrounding TDY orders relative to DTPS, the researchers felt the better choice was to provide a product to the sponsor that accurately portrays the current process in the AS-IS model and provides reliable estimations regarding cost of the current process as reflected in the ABC results. Thus, while the data to determine the initial TO-BE model had

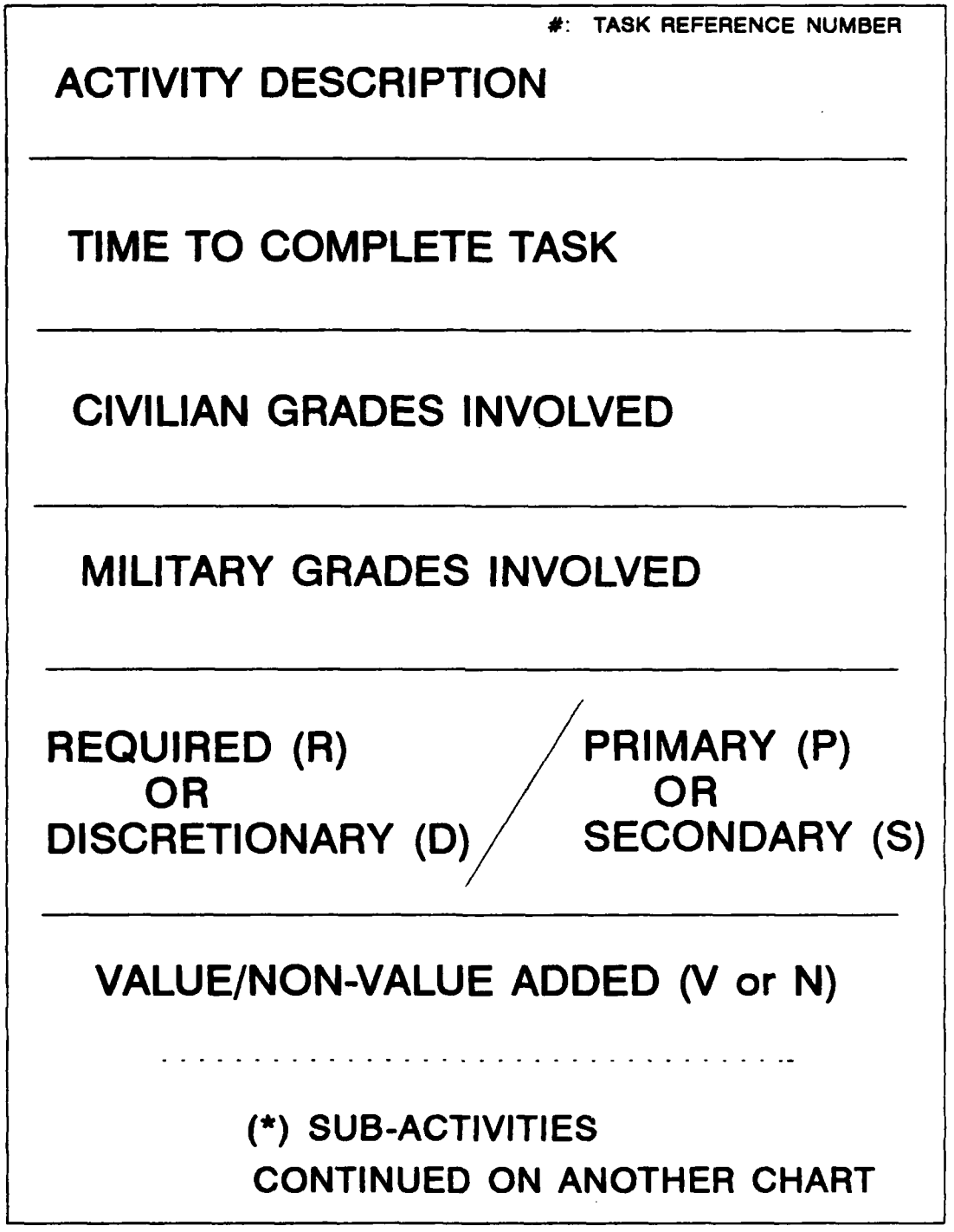
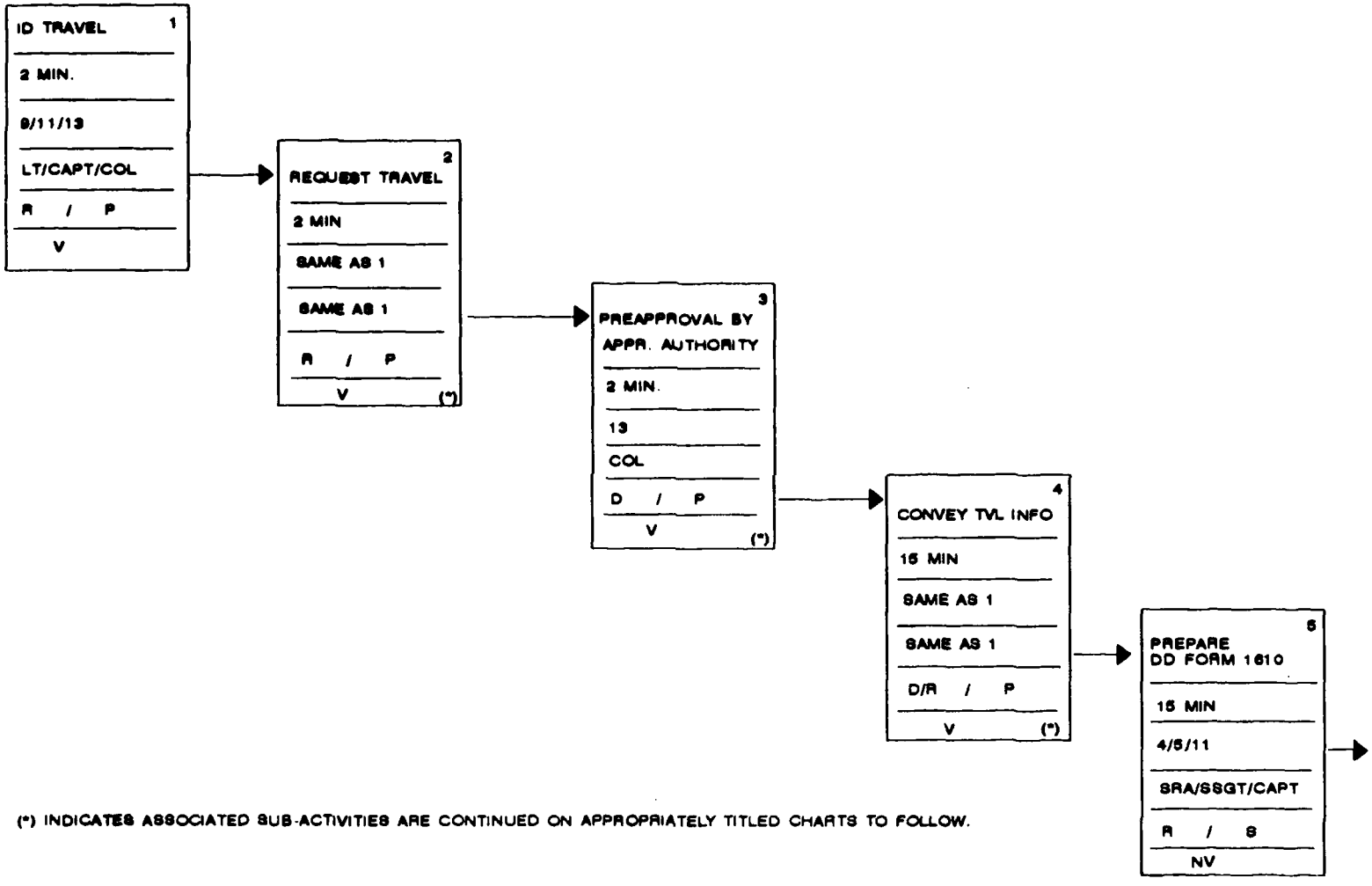


Figure 3. Format for Activity Blocks



(*) INDICATES ASSOCIATED SUB-ACTIVITIES ARE CONTINUED ON APPROPRIATELY TITLED CHARTS TO FOLLOW.

Figure 4. Activity Blocks 1-5

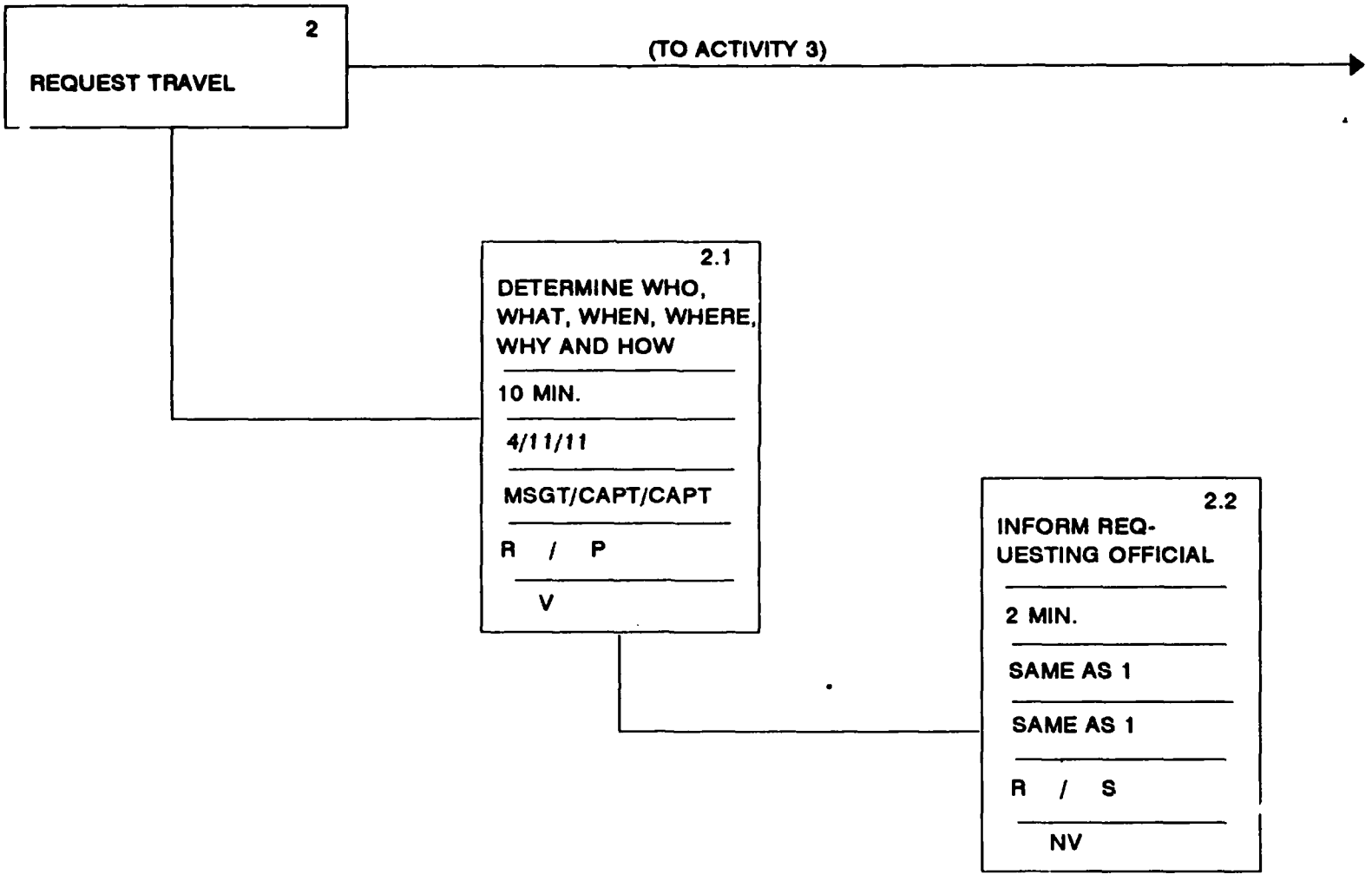
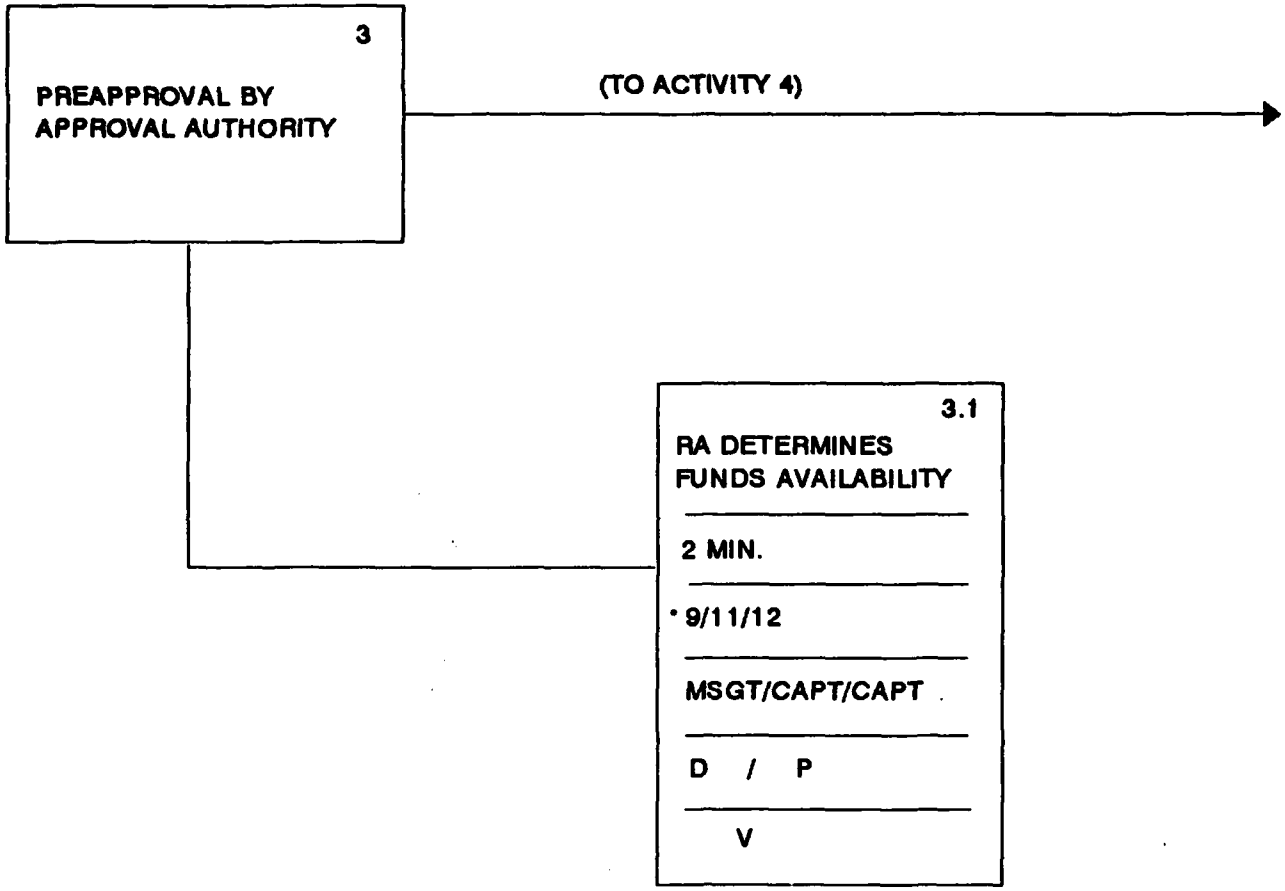


Figure 5. Sub-Activity Blocks for Activity 2



NOTE: EITHER 3.1 OR 4.1 APPLIES, DEPENDING ON COORDINATION METHOD.

Figure 6. Sub-Activity Block for Activity 3

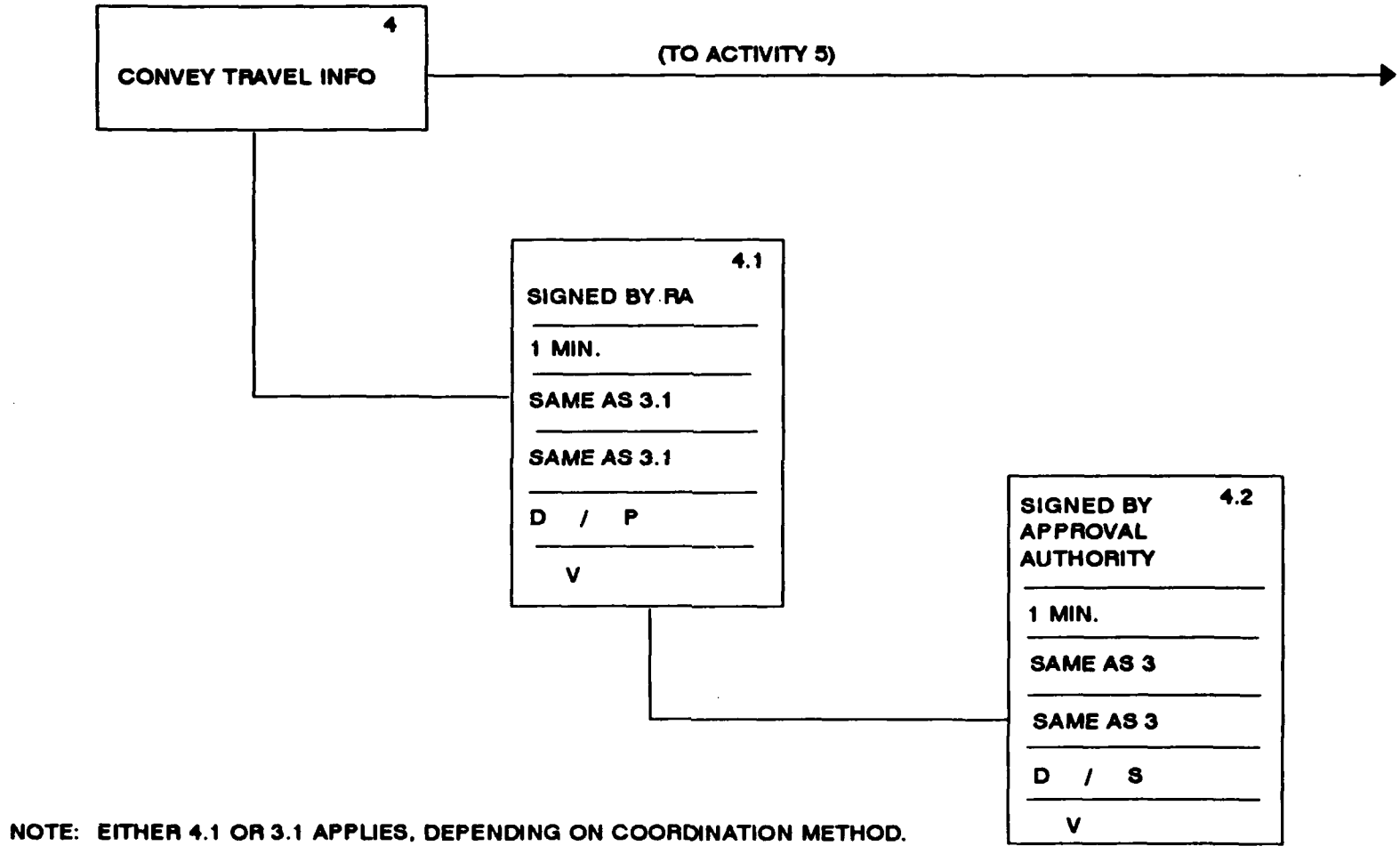
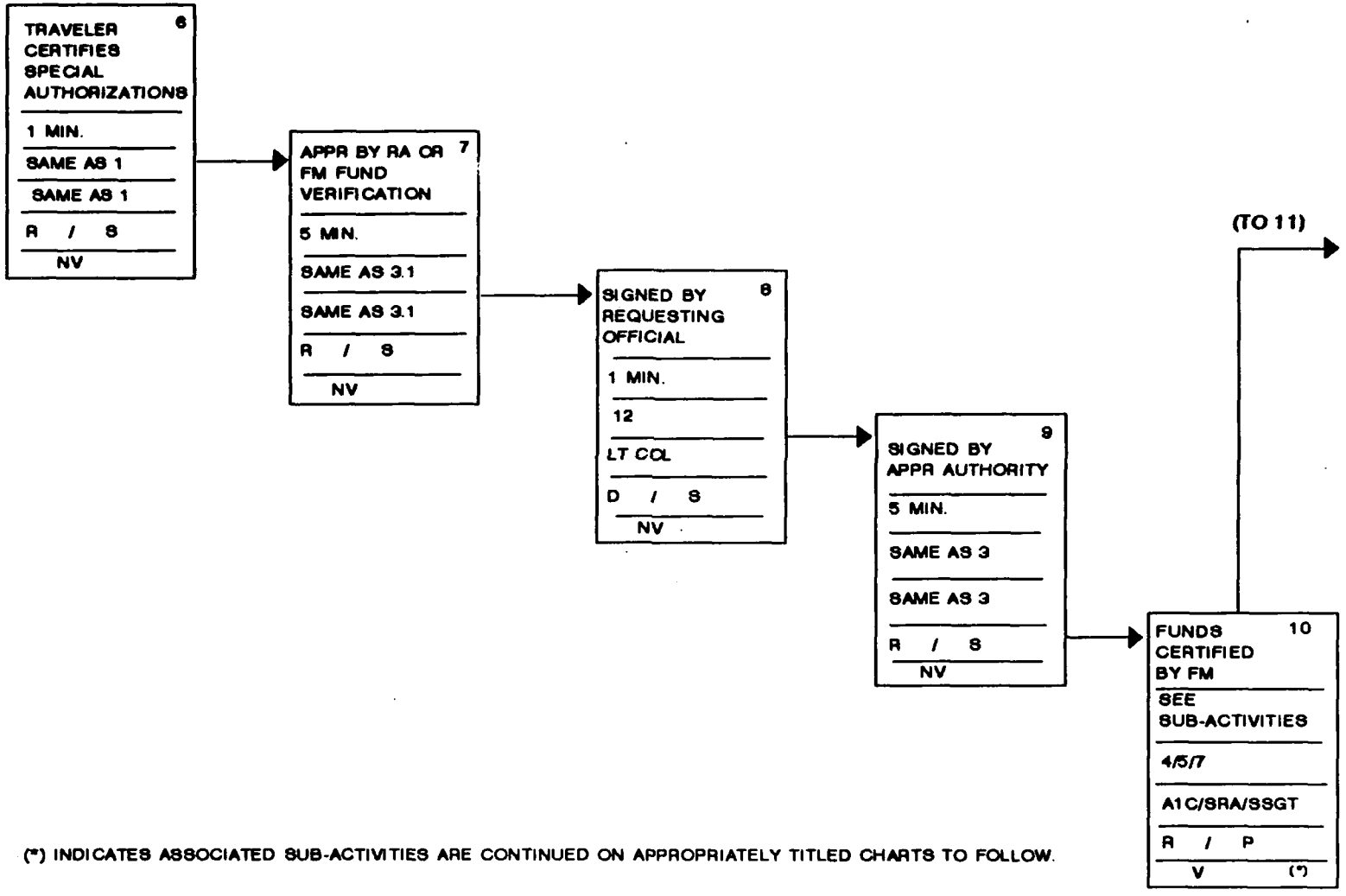


Figure 7. Sub-Activity Blocks for Activity 4



(*) INDICATES ASSOCIATED SUB-ACTIVITIES ARE CONTINUED ON APPROPRIATELY TITLED CHARTS TO FOLLOW.

Figure 8. Activity Blocks 6-10

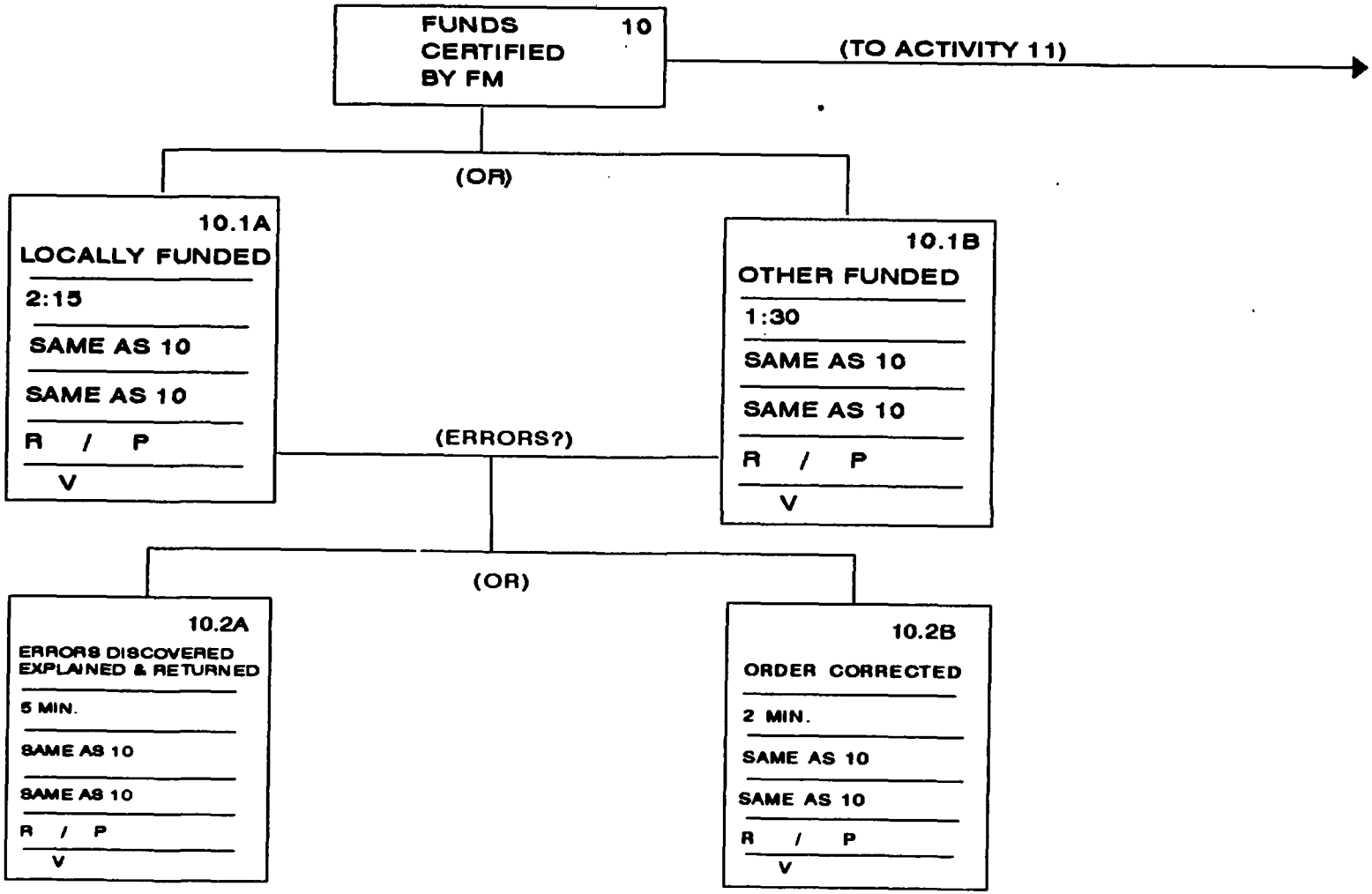
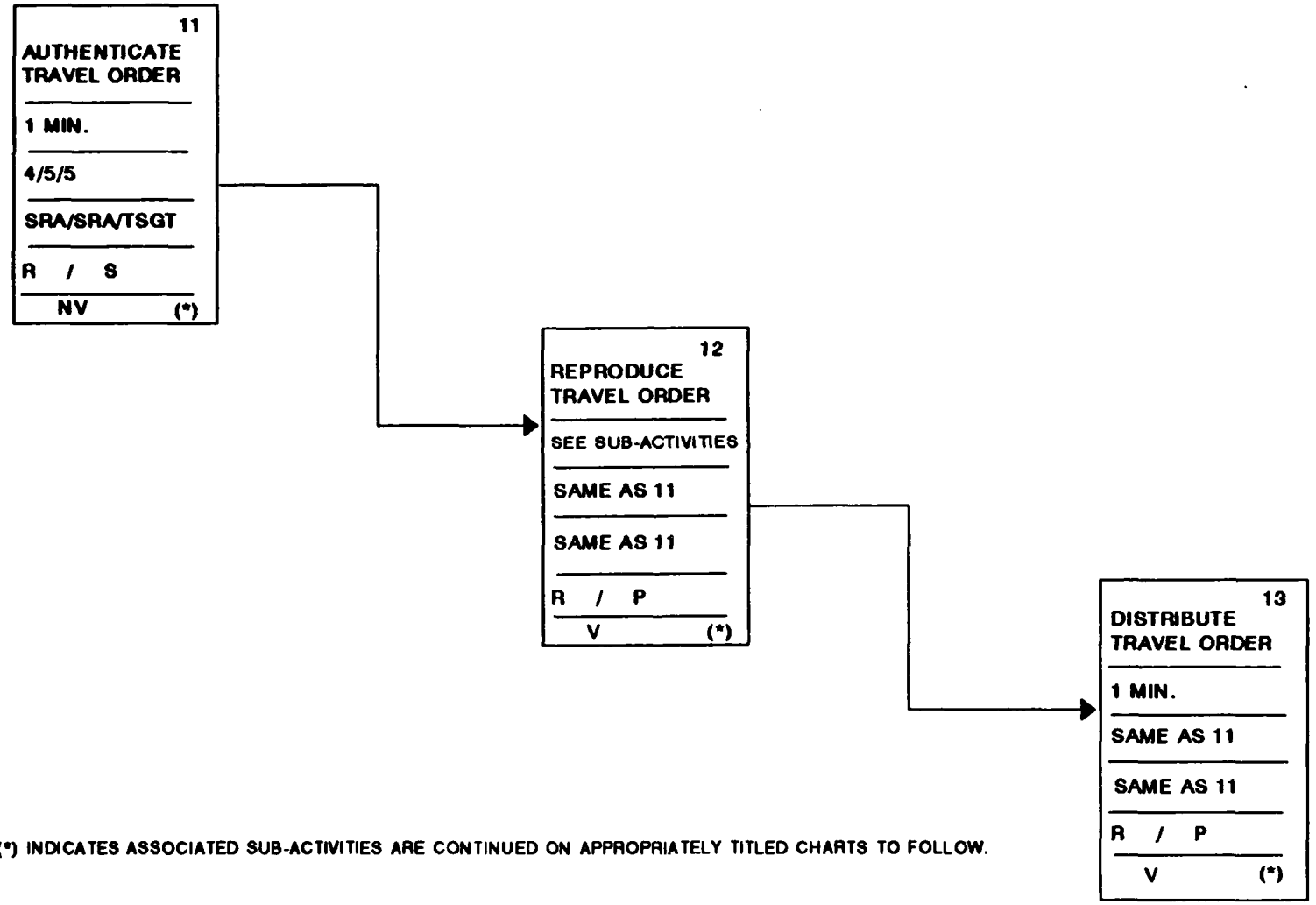


Figure 9. Sub-Activity Blocks for Activity 10



(*) INDICATES ASSOCIATED SUB-ACTIVITIES ARE CONTINUED ON APPROPRIATELY TITLED CHARTS TO FOLLOW.

Figure 10. Activity Blocks 11-13

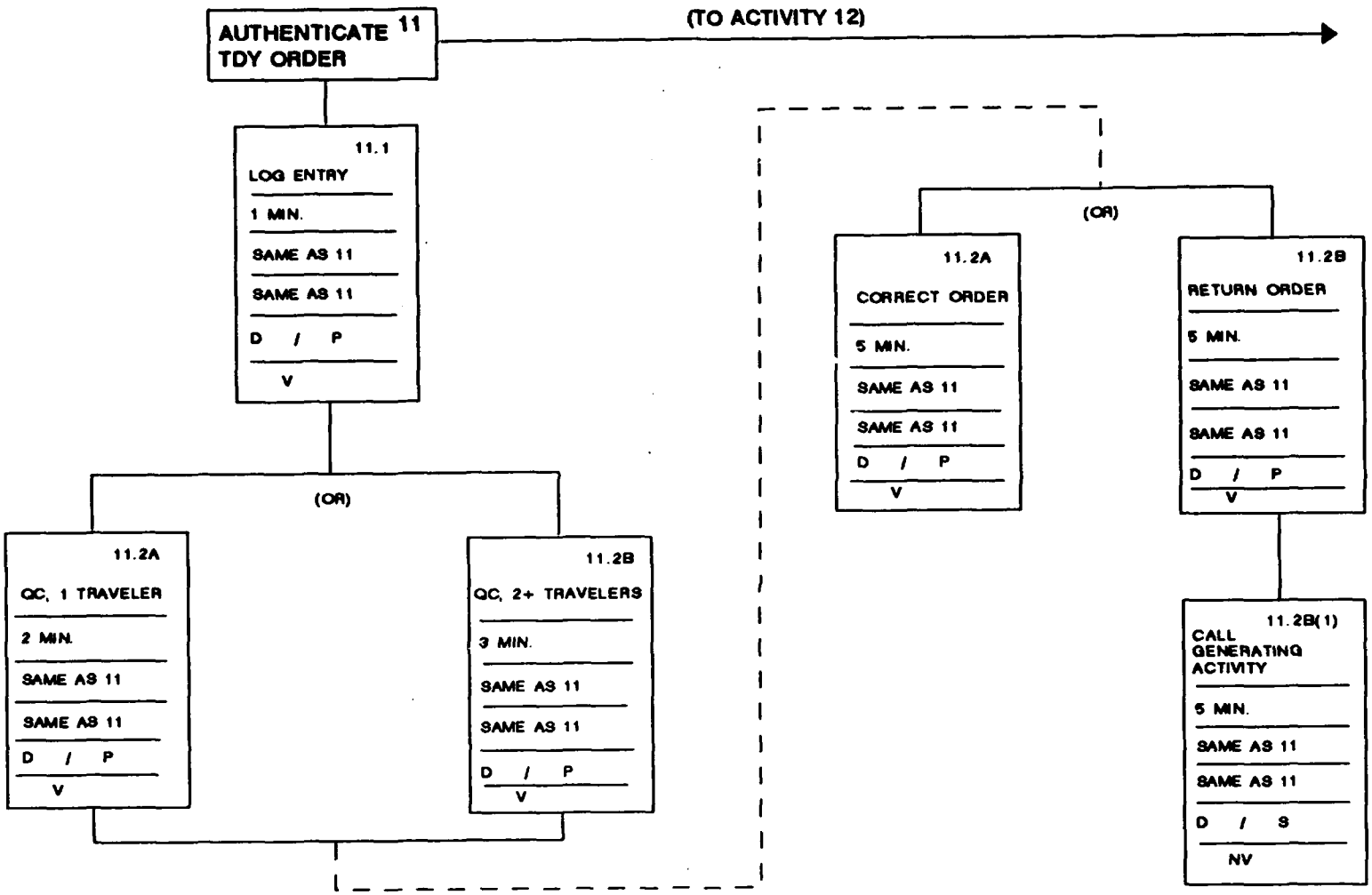


Figure 11. Sub-Activity Blocks for Activity 11

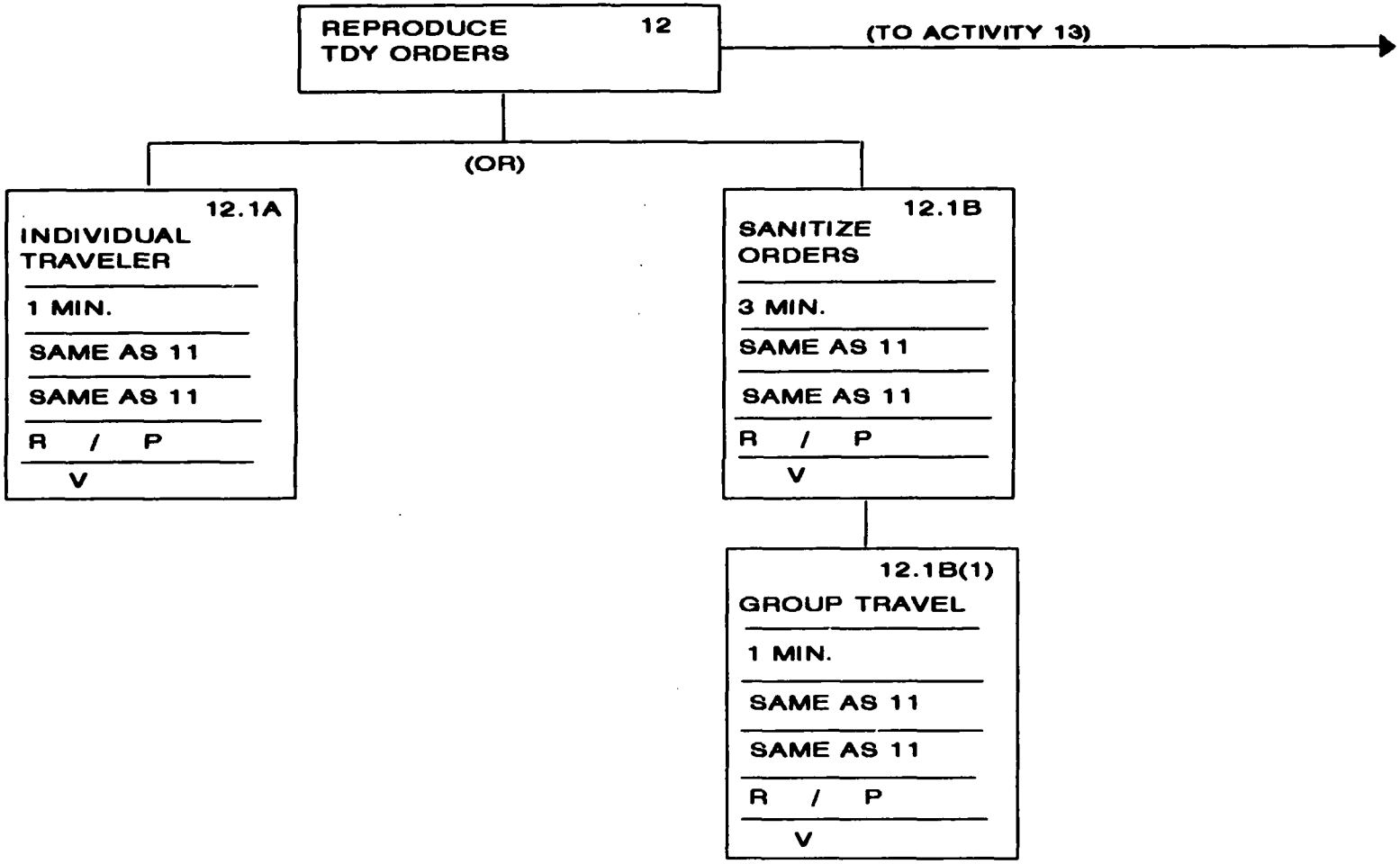


Figure 12. Sub-Activity Blocks for Activity 12

been gathered and recorded, time constraints did not afford the opportunity to finish this portion of the BPI methodology. Instead, the activity costs identified during ABC were linked to the baseline AS-IS model using IDEF0 modeling.

IDEF0 Modeling

IDEF0 is a technique to model activities developed by the USAF and used throughout the public and private sectors. An IDEF0 model serves as a communication tool about how an activity is performed. Additionally, this model allows ABC data to be matched to activities and sub-activities (D. Appleton, 1993:62-63).

Additional ABC Data. During the IDEF0 modeling process, the functional/technical team identified four further refinements. First, since several activities were performed by the same person, such as "Identify Travel" and "Request Travel" are both accomplished by the traveler, costs (salaries) could be consolidated and identified by which individual(s) are involved with each activity. Second, since certain activities involve more than one individual, some costs had been overlooked. For example, the activity "Inform Requesting Official" is accomplished by the traveler talking to the requesting official, hence, both individuals' costs much be considered for this activity. Third, the frequency of activities must be

determined. For example the activity "Convey Information" is accomplished by one of two processes, either face-to-face meetings or by using a TDY Worksheet. The functional/technical team must determine the percentage of time the face-to-face meetings were used as opposed to the TDY Worksheet. Fourth, since the IDEF0 software automatically totals all sub-activity inputs, only the lowest level activities require the time duration, frequency, and individual(s) costs to be input into the model.

The first refinement was accomplished by identifying all the individuals involved anywhere in the entire process. Additionally, since activities were measured in minutes, the appropriate rate per minute data was matched to each individual. The results are shown in Table 5 below.

Table 5

INDIVIDUALS MATCHED TO RATE PER MINUTE COSTS

Individual Costs Involved With Activity	Civilian Grade Range	Military Grade Range	Rate Per Minute
Traveler Labor	GS 9-13	Lt-Col	$0.40
Resource Advisor Labor	GS 9-12	MSgt-Capt	0.37
Requesting Official Labor	GS 12	Lt Col	0.49
Approval Authority Labor	GS 13	Col	0.58
Secretarial Labor	GS 4-11	SrA-Capt	0.23
FM Labor	GS 4-7	A1C-SSgt	0.19
IM Labor	GS 4-5	SrA-TSgt	0.19

Refinements two through four were accomplished by matching time duration, frequency of activity, and individuals involved to each lowest level activity. Durations and frequencies were determined from the experience of the functional/technical team and actual time and motion studies (Porter, 1993) and work data available to the team. The results are shown in Table 6 on the following pages.

A few explanations are in order for this data. First, as previously mentioned, the activities listed are only the lowest level activities. The IDEF0 software automatically combines this data into the parent activity(ies) and processes the information to calculate the total average Written TDY Order duration and cost per each individual order.

Next, some of the frequencies require explanation. For example, the activity "Convey Information" is accomplished by one of two parallel processes. The first involves a face-to-face process that includes the activities "Determine Fund Availability" and "Talk to Approval Authority". The second is accomplished by a TDY Worksheet process that includes the activities "Prepare TDY Worksheet", "Determine Funding Availability and Sign Worksheet", and "Sign Worksheet, Approval Authority". From the frequencies determined by the functional/technical team, the face-to-face method is used 70% of the time and

Table 6

ACTIVITY DURATION, FREQUENCY AND INDIVIDUALS INVOLVED

Activity	Duration In Mins	Frequency	Individual(s) Involved With Activity
Identify Travel	2	1.00	Traveler
Determine Why	4	1.00	Traveler
Determine When	2	1.00	Traveler
Determine Where	2	1.00	Traveler
Determine Who	2	1.00	Traveler
Determine How	2	1.00	Traveler
Inform Requesting Official	2	1.00	Traveler Requesting Official
Preapproval By Approval Authority	2	1.00	Traveler Approval Authority
Determine Fund Availability, Resource Advisor	2	.70	Resource Advisor
Talk to Approval Authority	15	.70	Traveler Approval Authority
Prepare TDY Worksheet	15	.30	Traveler
Determine Fund Availability, Resource Advisor	3	.30	Resource Advisor
Sign TDY Worksheet	1	.30	Approval Authority
Prepare DD Form 1610	15	1.00	Secretary
Certify Special Authorizations	1	1.00	Traveler
Approval by Resource Advisor	5	1.00	Resource Advisor
Signed by Requesting Official	1	1.00	Requesting Official
Signed by Approval Authority	5	1.00	Approval Authority
Fund Locally	2.25	.80 .056 .504	FM Traveler Secretary

Table 6 (continued)

ACTIVITY DURATION, FREQUENCY AND INDIVIDUALS INVOLVED

Activity	Duration In Mins	Frequency	Individual(s) Involved With Activity
Fund Other Than Locally	1.5	.20	FM
		.014	Traveler
		.126	Secretary
Correct Order	2	.05	FM
		.004	Traveler
		.031	Secretary
Return Order To Unit	5	.05	FM
		.004	Traveler
		.031	Secretary
Log Entry	1	1.00	IM
		.07	Traveler
		.63	Secretary
Review Quality, Single Traveler	2	.79	IM
		.055	Traveler
		.498	Secretary
Review Quality, Multiple Travelers	3	.21	IM
		.015	Traveler
		.132	Secretary
Correct Order	5	.086	IM
		.006	Traveler
		.054	Secretary
Determine Order Returned to Unit	5	.041	IM
		.029	Traveler
		.258	Secretary
Notify Unit	5	.041	IM
		.029	Traveler
		.258	Secretary
Reproduce DD Form 1610, Individual Traveler	1	.79	IM
		.055	Traveler
		.498	Secretary
Sanitize DD Form 1610, Multiple Travelers	1	.21	IM
		.015	Traveler
		.132	Secretary
Reproduce DD Form 1610, Multiple Travelers	3	.21	IM
		.015	Traveler
		.132	Secretary
Distribute Order	1	1.00	IM
		.07	Traveler
		.63	Secretary

the TDY Worksheet method is accomplished 30% of the time. As such, the frequencies shown in Table 5 are .70 and .30 respectively. Similar parallel processes and frequencies are present in the activities "Certify Funds", "Authenticate Travel Order" and "Reproduce Travel Order".

Also, all activities beginning with "Fund Locally" show some degree of frequency for Traveler and Secretary labor. The functional/technical team determined that 70% of DD Forms 1610 are hand-carried through this process. Of that 70%, a secretary hand-carries the DD Form 1610 90% of the time and the traveler hand-carries the order 10% of the time. This calculates to a rate of 63% and 7% respectively for secretary and traveler labor for each activity. However, for parallel processes, the 63% and 7% rates must be recalculated to match the frequency of the activity. For example, "Fund Locally" occurs 80% of the time and "Fund Other Than Locally" occurs 20% of the time. The secretary frequency for "Fund Locally" is calculated by multiplying 80% times 63% to obtain a frequency of 50.4% of the time secretary labor is involved with this activity. The related traveler frequency is calculated by multiplying 80% times 7% to obtain a frequency of 5.6% of the time traveler labor is involved with "Fund Locally". Fortunately, the IDEF0 software performs many of these calculations automatically. However, for demonstration

purposes, final calculation frequencies are shown in Table 6.

Reading IDEF0 Models. The paper will only give an extremely cursory explanation of reading IDEF0 models. Neither time nor space permit in-depth explanations. Rather, only a few rudiments will be presented to furnish the reader a modest amount of familiarity.

In IDEF0 models, all activities are enclosed in a box. The name of that activity appears prominently in the box. Also in the box is the node number shown as an A0, A1, A2, and so on. The node number will appear in the lower right hand corner of the activity box. In addition to the node number, either a cost or duration time for that activity (depending on the user's choice) will appear in the lower left corner (D. Appleton, 1993:65-66).

Also on a typical IDEF0 model page, arrows will be shown entering and leaving activities. These arrows represent ICOMs (Inputs, Controls, Outputs, and Mechanisms). An input always enters an activity from the left side and represents something the activity will act upon to produce an output. An output always leaves an activity from the right side and represents the result of the activity. A control always enters an activity from the top and represents a constraint on that activity. A mechanism always enters an activity from the bottom and

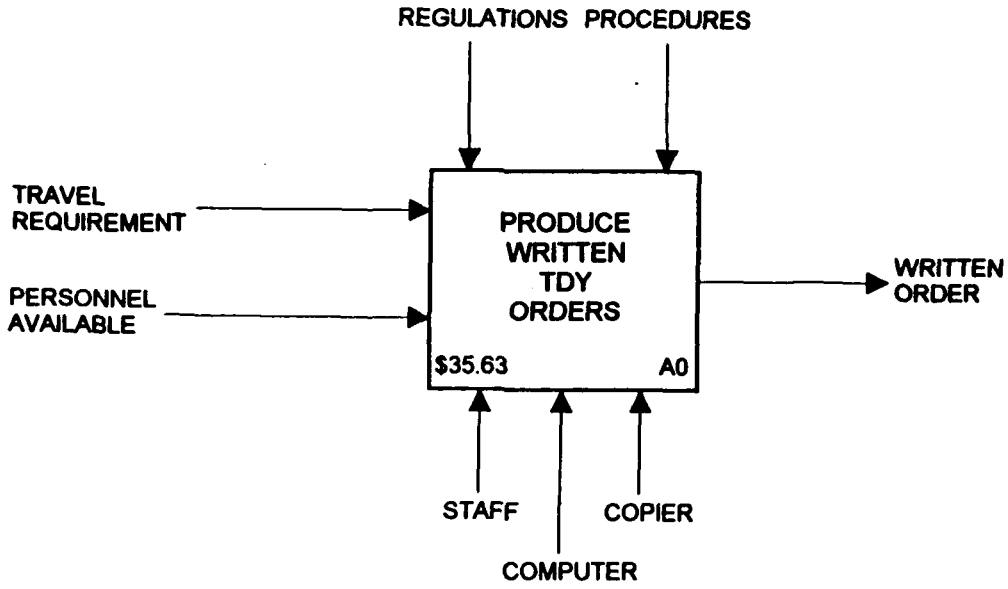
represents who or what performs that activity (D. Appleton, 1993:66-67).

The highest-level activity, in this case Produce Written TDY Orders, is shown on the A-0 or context diagram page. This page will show all the ICOMs influencing this high-level activity as well as the total cost or duration of the activity. The node number in the activity box for the context diagram is A0 (D. Appleton, 1993:69).

Lower-level activities are shown on separate pages and are known as decomposition diagrams. Activities can be traced to their parent and further decomposition diagrams by the node numbers. The decomposition diagrams for node A0 will be nodes A1, A2, A3, etc. The decomposition diagrams for node A1 will be node A11, A12, A13, etc. The decomposition diagrams for node A11 will be node A111, A112, A113, etc (D. Appleton, 1993:70-71).

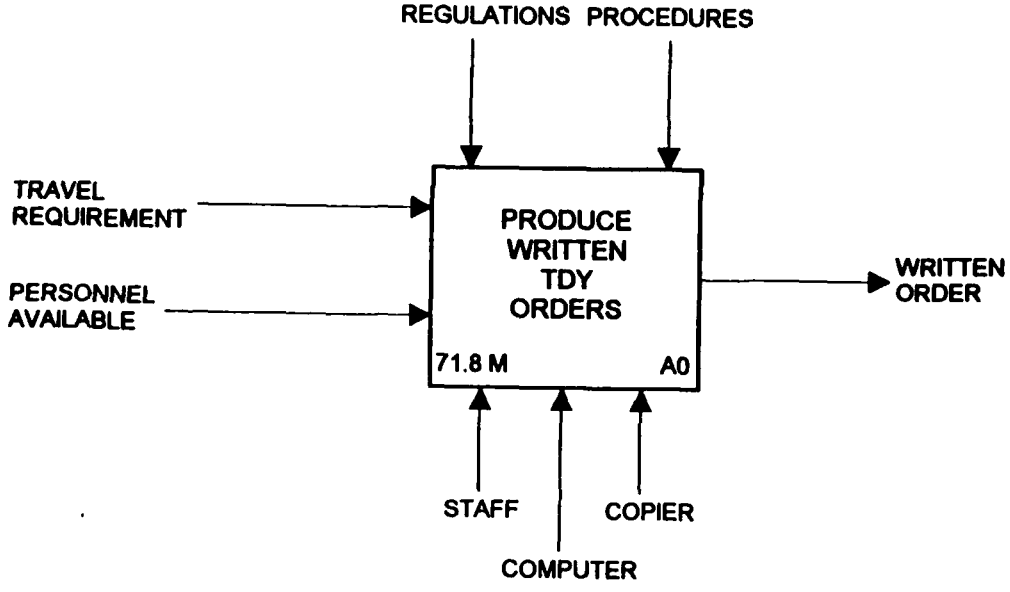
Again, this represents only a cursory explanation of IDEF0 models in an attempt to familiarize the reader.

IDEF0 Results. As shown on the A-0 context page for this research (Figure 13, next page), the average cost to produce a written TDY order is $35.63. The average duration to produce a written TDY order (Figure 14, following page) is 71.8 minutes. It is important for the reader to remember this duration time does not capture



VIEWPOINT: EXPERT FUNCTIONAL/TECHNICAL TEAM

Figure 13. A-0 Context Page for Cost To Produce Written TDY Orders



VIEWPOINT: EXPERT FUNCTIONAL/TECHNICAL TEAM

Figure 14. A-0 Context Page for Duration To Produce Written TDY Orders

transit times or queue times. Costs and durations for each sub-activity are shown in the complete IDEF0 models in their appendixes.

Investigative Questions

Investigative Question 1. What are the objectives of the written TDY order activity? The functional/technical team determined the objectives of the written TDY order process are to identify the traveler(s) and to verify authenticity of the travel requirement and subsequent entitlements. These objectives are accomplished through written TDY orders by: providing official documentation of the traveler(s), providing for accountability of traveler's time and government money, and verifying entitlements available to the traveler(s).

Investigative Question 2. Are there processes within the TDY orders activity that add no value (non-value added) to this activity, for either the traveler or the government? Activities identified by the functional/ technical team that add no value for either the traveler or the government, as identified in Figures 4 through 12, in order of occurrence are: "Inform Requesting Official"; "Prepare DD Form 1610"; "Certify Special Authorizations, Traveler"; "Approved by Resource Advisor"; "Signed by Requesting Official"; "Signed by Approval Authority"; and "Notify Generating Activity".

Investigative Question 3. Are there processes with the TDY orders activity that add limited value to the activity? By definition, activities that include non-value added sub-activities are of limited value. These non-value added activities are related to higher-level activities as shown in the complete IDEF0 model in Appendix A. These higher-level, limited value activities are: "Process TDY Information", "Generate DD Form 1610" and "Authenticate Travel Order".

Investigative Question 4. What are the activity costs incurred in producing written TDY orders? The total activity cost to produce one written TDY order averages to approximately $35.63.

Investigative Question 5. How do large public and private enterprises handle travel preauthorization to accomplish the previously identified objectives? As noted in the Literature Review, any reference to a policy or need to prepare a document resembling TDY orders is noticeably absent from the literature on civilian business travel management. Additionally, the functional/technical team, despite their combined expertise of over 60 years in related USAF TDY positions, had limited experience with similar private sector practices. These two factors limited the ability to benchmark the DoD process against the best public and private sector achievements.

Summary

This chapter presented the data compiled during the five month period allotted for this research. Of particular note, the data gathered from the functional/ technical expert team and other available sources indicate non-value added and limited value added activities currently exist in the AS-IS process for producing written TDY orders. While the entire Business Process Improvement (BPI) methodology was not completed, the costs and time associated with these non-value and limited value added activities can tentatively be identified for elimination or restructuring as necessary. Specific recommendations for additional process improvement alternatives can not be offered until the methodology is completed by further research.

V. Conclusions and Recommendations

Introduction

This chapter presents the conclusions and recommendations stemming from this research. The conclusion section outlines the ramifications of the research on the research problem and investigative questions. The recommendation section details suggestions for further research as well as addressing the Defense Travel Pay System (DTPS) and BPI methodology.

Conclusions

Research Problem. The purpose of this research was to analyze the process currently endemic to the activity of producing written TDY orders to either validate the current process or provide an alternative process. While the research time constraint did not allow developing TO-BE models using the BPI methodology, the research demonstrates the current process can be improved. Providing specific alternative processes can, again, not be provided until completion of the entire methodology. However, analyzing the initial IDEF0 model by linking the baseline AS-IS model and ABC data provides alternatives for eliminating non-value added and limited value added activities while accomplishing the same objectives identified for producing written TDY orders.

Investigative Questions. Paramount to the research problem are the objectives of the written TDY order process; namely to identify the traveler(s) and to verify authenticity of the travel requirement and subsequent entitlements. While these objectives are currently being met, identifying the non-value added and limited value added activities to accomplish the current process identifies possible improvements in all major phases of the current process: processing TDY information, generating the DD Form 1610, and processing the DD Form 1610. Notably, these improvements touch all functional areas in the current process, the generating organization, FM and IM. Initially, the activities identified for possible elimination could save $11.68 of the $35.63 average total activity cost to produce one written TDY order--a savings of 32.8%. Data collected from the functional/technical team indicate Wright-Patterson AFB generates approximately 40,000 written TDY orders per year. The potential savings for this installation could amount to over $467,000. However, to prevent another business process evolution versus a business process design, these identified improvements should not be implemented without completion of the entire BPI methodology.

Recommendations

Recommended Research. Continuing the BPI methodology should yield significant results. Identified non-value and limited-value activities should be eliminated to produce an initial TO-BE activity (IDEF0) model. This TO-BE model will reduce the current process by the costs and time associated with these non-value and limited-value added activities. Additionally, an accompanying initial TO-BE data model using IDEF1X modeling techniques needs to be accomplished. Further recommendations for additional process improvements can be obtained by eliminating all non-value added activities and restructuring all value added activities to yield the greatest cost savings. This will require organizing another, or more preferably, reconvening the original team to explore these recommendations and develop the accompanying IDEF0 and IDEF1X models. Further research to complete the BPI methodology stands to yield considerable savings within the written TDY orders process.

Another option for continuing this methodology could be to expand parameters for benchmarking similar public and private sector processes. This research only examined civilian practices. For example, examining similar practices within the Canadian Defense Forces that use one form for both authorizing TDY travel and processing voucher expenses may yield benefits (Nations, 1988).

Follow-on research to include the entire scope of the TDY process may be justified. While this research looked at only the process to produce a written TDY order, the functional/technical expert team did identify entities beyond the scope of this research that require information contained in the written TDY order. A study examining the interrelationships between these entities may use the results compiled from this research as a portion of that study. Entities identified by the functional/technical team as requiring information on the TDY order include but are not limited to: the traveler, the generating unit, the unit commander, the resource advisor, the unit and base personnel functions, Financial Management, Information Management, Traffic Management Office to include the Motor Pool, Military Air and commercial air traffic scheduling, commercial rental car vendors, and billeting or hotel reservation scheduling.

A final recommendation stemming from this research would entail a challenge to the Comptroller General interpretation of Public Law 37 United States Code 404, "Travel and Transportation Allowances: General" requiring an order to mean a written order. Additionally, the definition of "written order" to include electronically produced and stored orders may be pursued in light of current electronic auditing capabilities.

DTPS Initiative. This DFAS-initiated action to standardize TDY order processing throughout DoD is currently under field testing. DTPS will electronically link the travel request processor with the designated approval authority, the local FM community, and a central remote processing and accounting site (DFAS, Presentation to DTPS Representatives, 1992:i).

While DTPS is a remarkable improvement over the present system for processing TDY orders, the system is developed from a functional viewpoint, that of the FM community. Despite the automation advances proposed by DTPS, an unanswered question remains: Will DTPS perform to the standards of a process developed using BPI methodology or is this simply another example of automating existing procedures without first addressing fundamental deficiencies in the business processes?

BPI Methodology. Based on the use of BPI methodology in pursuit of business process reengineering within the relatively narrow scope of generating written TDY orders, CIM appears to have embraced a very viable methodology. BPI incorporates all areas and items necessary to establish and present a business case which may entail seemingly radical implications. Additionally, by convening a functional/technical expert team as dictated in this methodology, all parties are exposed to points of view of other stakeholders and, at times, each person is asked to

explain or defend his/her position. This educates the entire group on the current (AS-IS) process being discussed and ensures the normal process owner does not make changes in a vacuum.

Although this is a viable means of making dramatic process improvements, anyone considering employing this methodology should be aware of potential drawbacks of using BPI. The prime concern that quickly surfaces when using BPI is the cost-benefit ratio. Employing BPI on the TDY orders process proved to be very focused analysis, narrow in scope and crossing only two functional areas. Only four members comprised the functional/expert team, yet it took this team five months of one-hour weekly meetings (plus numerous additional hours outside the meeting times) simply to develop the AS-IS model.

A team comprised of many members crossing numerous functional lines would pose a very time-intensive and time-consuming task. Thus, a careful look at the overall cost, process time, and/or criticality of the process is essential prior to determining it to be a prime candidate for BPI. Dr H. J. Harrington, in his book Business Process Improvement, provides a good "laundry list" of reasons for

selecting a business process improvement approach. He states:

> Normally, one or more of the following symptoms will be reason for selecting a process for improvement.
> - External customer problems and/or complaints.
> - Internal customer problems and/or complaints.
> - High-cost processes.
> - Long cycle time processes.
> - There is a better-known way (benchmarking, etc.).
> - New technologies are available.
> - Management direction based on an individual manager's interest in applying the methodology or to improve an area not involved otherwise (Harrington, 1991:36).

Summary

The evolution of the business process to produce written TDY orders fulfills many objectives including the objectives identified in this research. To what degree the process efficiently fulfills these objectives is open for debate. This research does not intend to fuel this debate or to support an extreme view on either end of the spectrum. Rather it demonstrates the current process contains opportunities for numerous improvements that can be obtained by applying a BPI methodology.

Appendix A: IDEF0 Model for Cost

This IDEF0 model shows the costs associated with each activity to produce a written TDY order. Costs for each lowest-level activity are automatically combined to attain the activity costs for their parent. For more information on reading IDEF0 models, please refer to the section "Reading IDEF0 Models" in Chapter 4.

USED AT:	AUTHOR: McDOWELL/MORGAN	DATE: 06/01/93		WORKING	READER	DATE	CONTEXT:
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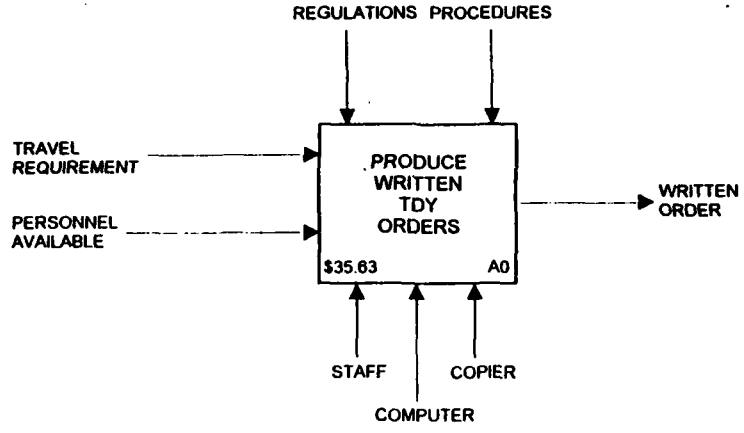
				PUBLICATION			



PURPOSE: DOCUMENT PROCESS

VIEWPOINT: EXPERT FUNCTIONAL/TECHNICAL TEAM

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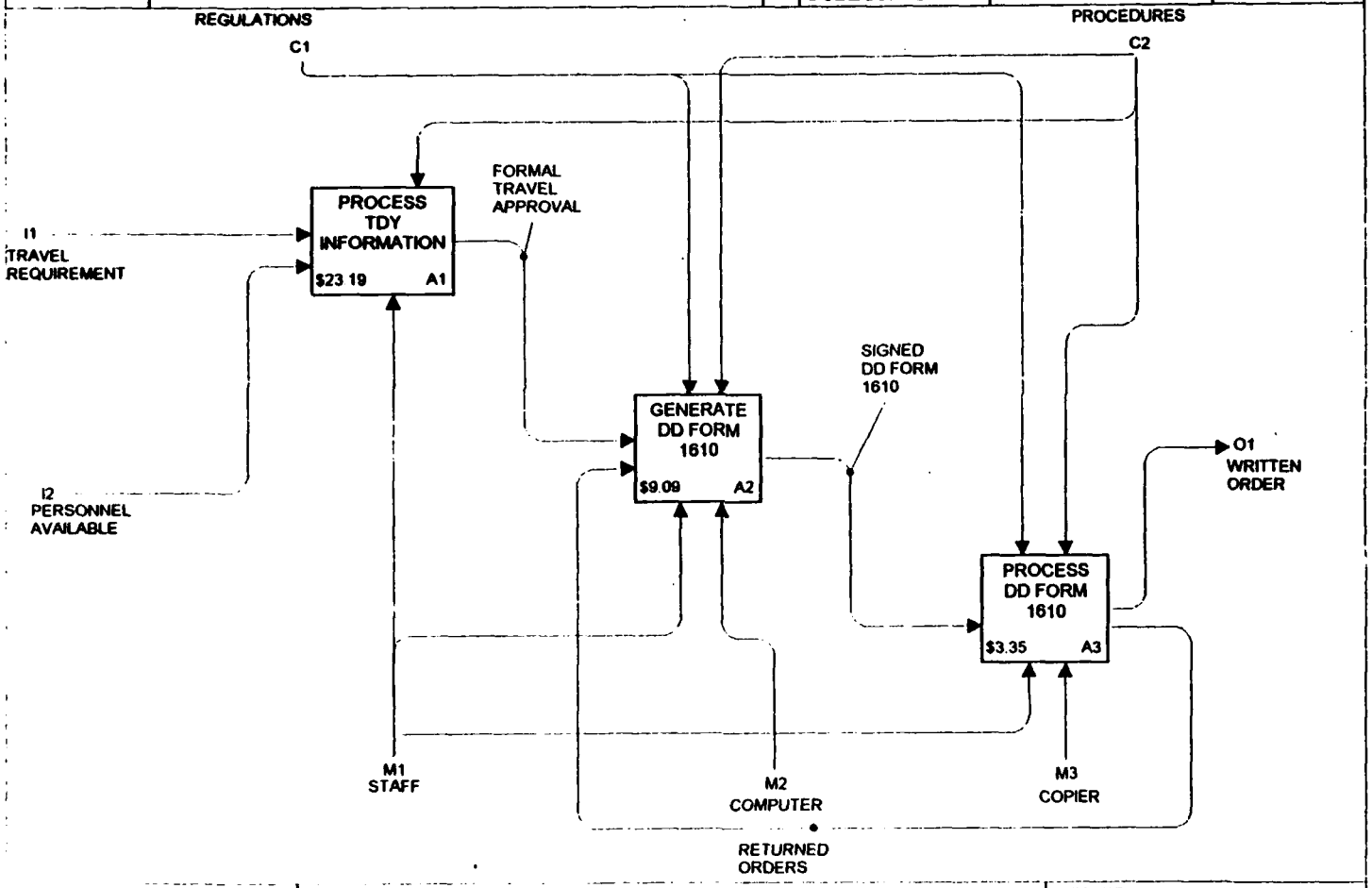
USED AT:	AUTHOR: MORGAN	DATE: 06/01/93		WORKING	READER	DATE	CONTEXT:
	PROJECT: TDY ORDERS	REV: 1.0		DRAFT			
	NOTES: 1 2 3 4 5 6 7 8 9 10			RECOMMENDED			
				PUBLICATION			



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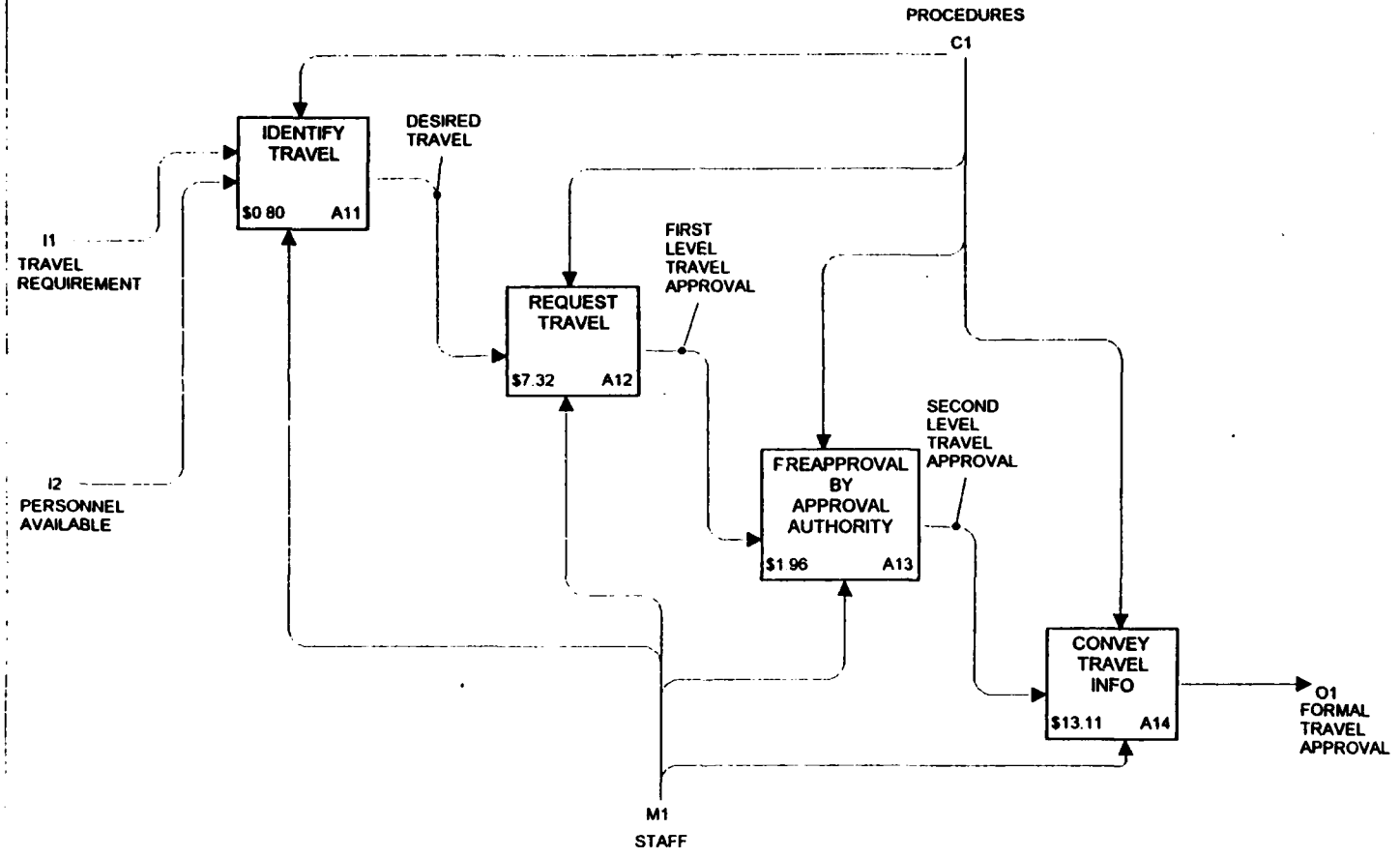
	NOTES: 1 2 3 4 5 6 7 8 9 10			RECOMMENDED			
				PUBLICATION			



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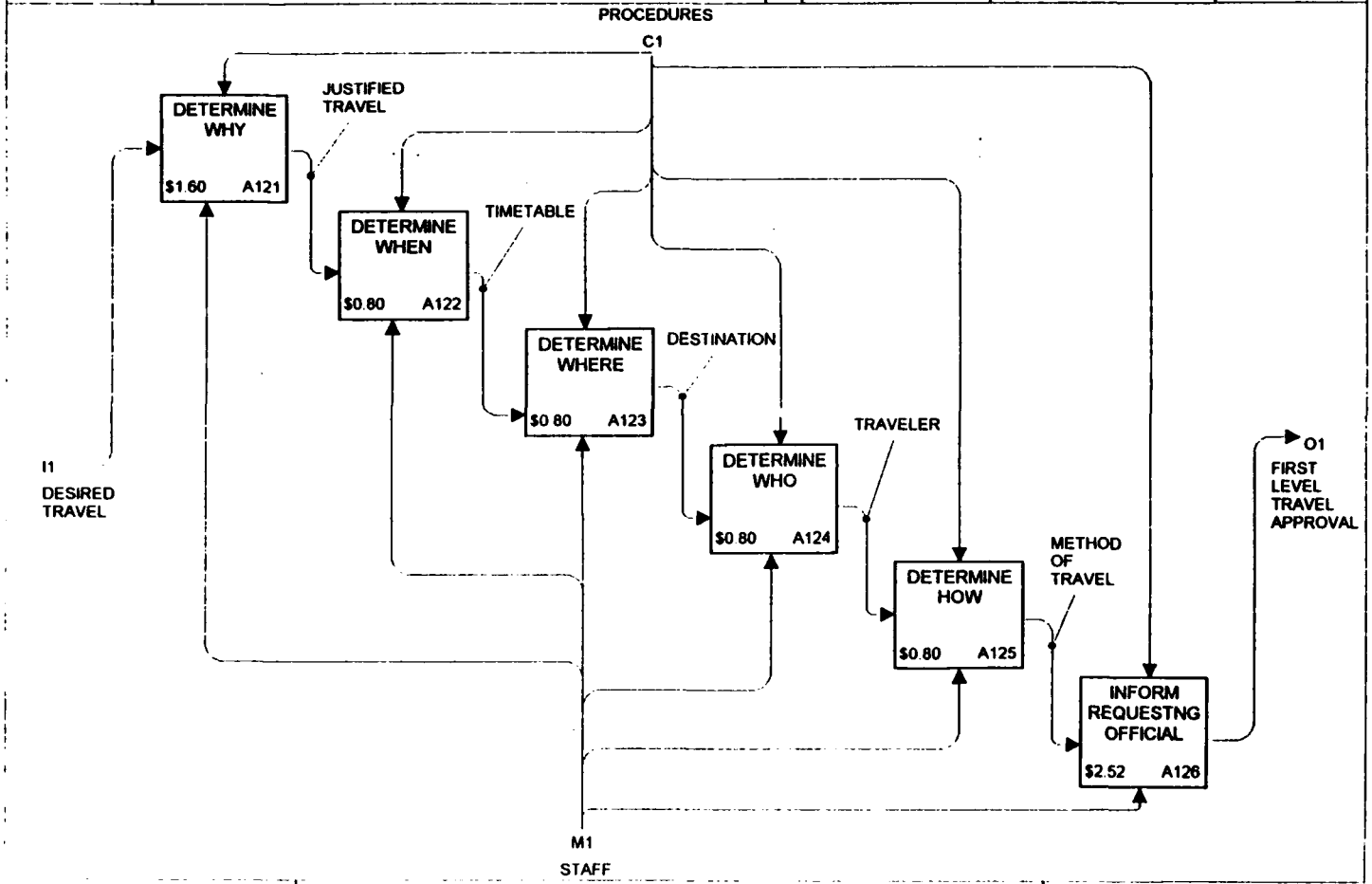
	NOTES: 1 2 3 4 5 6 7 8 9 10			RECOMMENDED			
				PUBLICATION			



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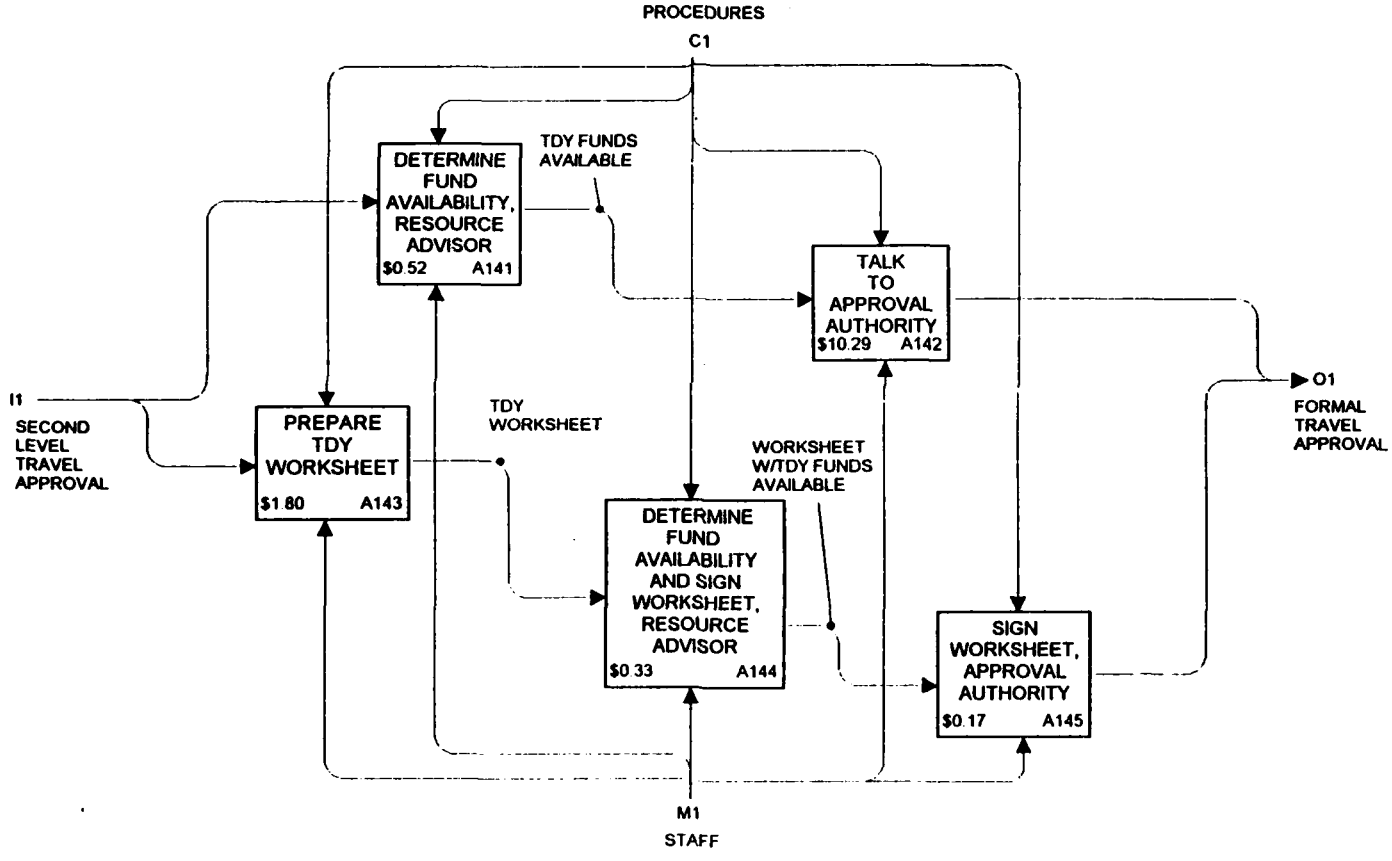
	NOTES: 1 2 3 4 5 6 7 8 9 10			RECOMMENDED		
				PUBLICATION		



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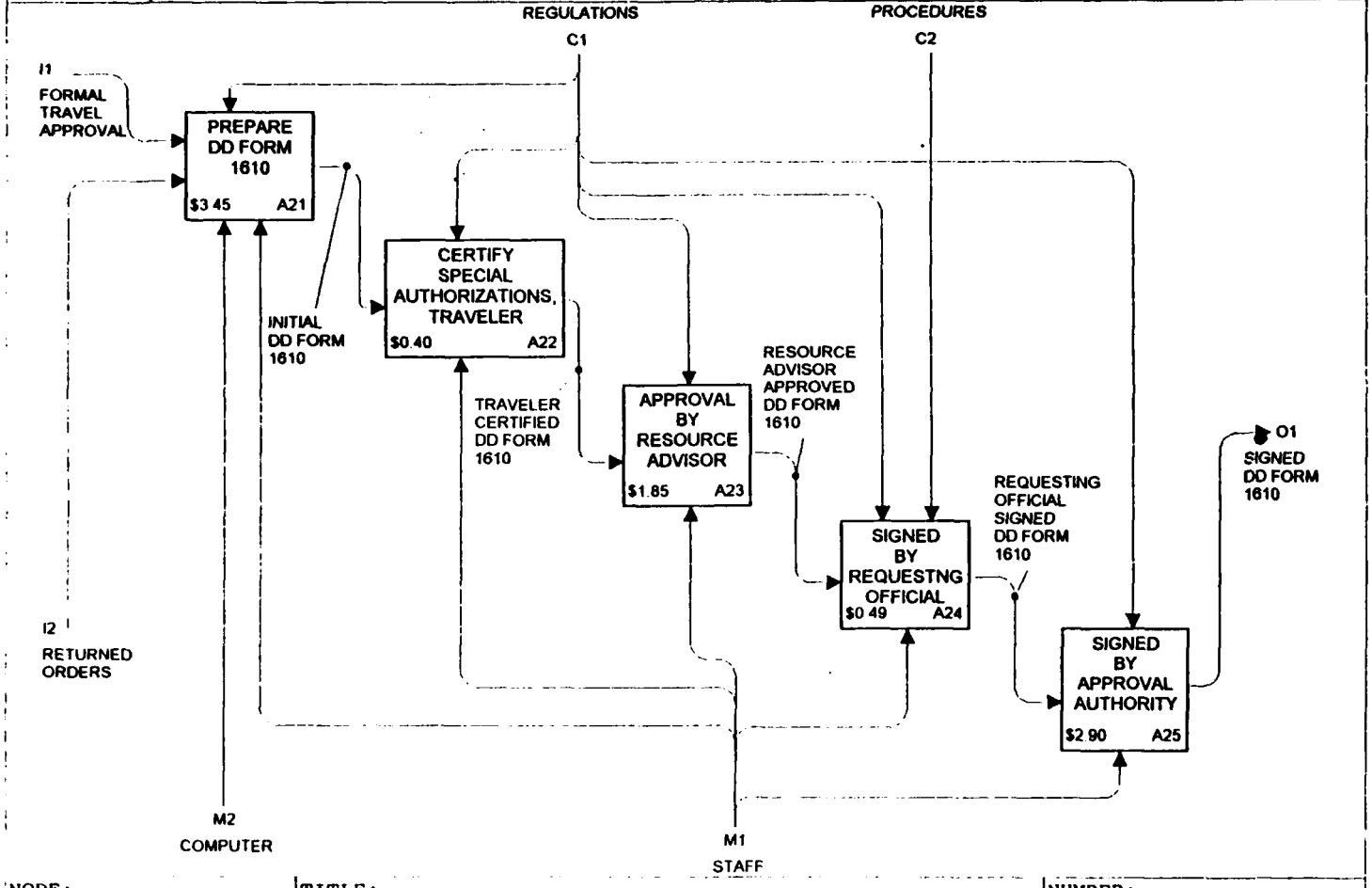

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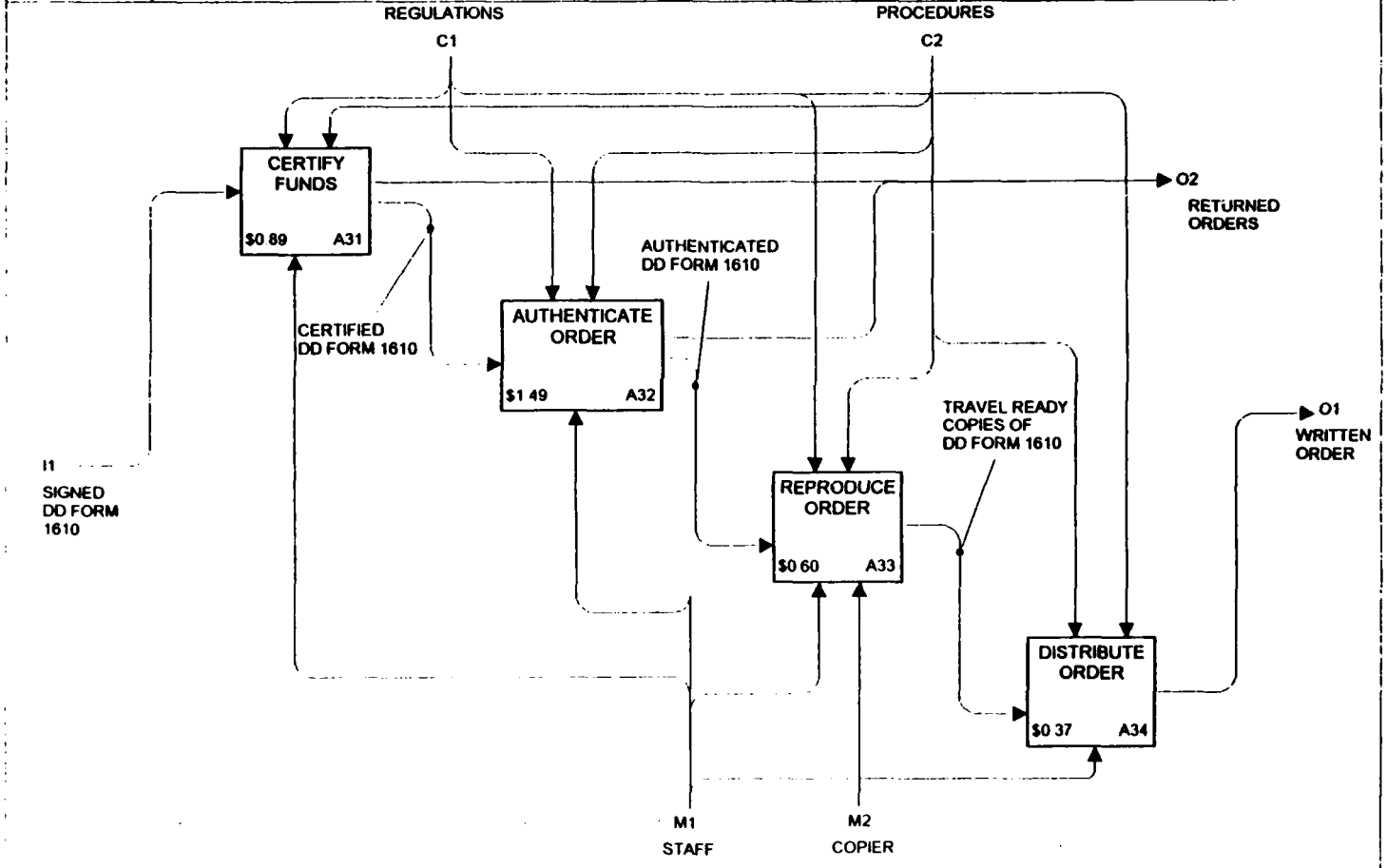

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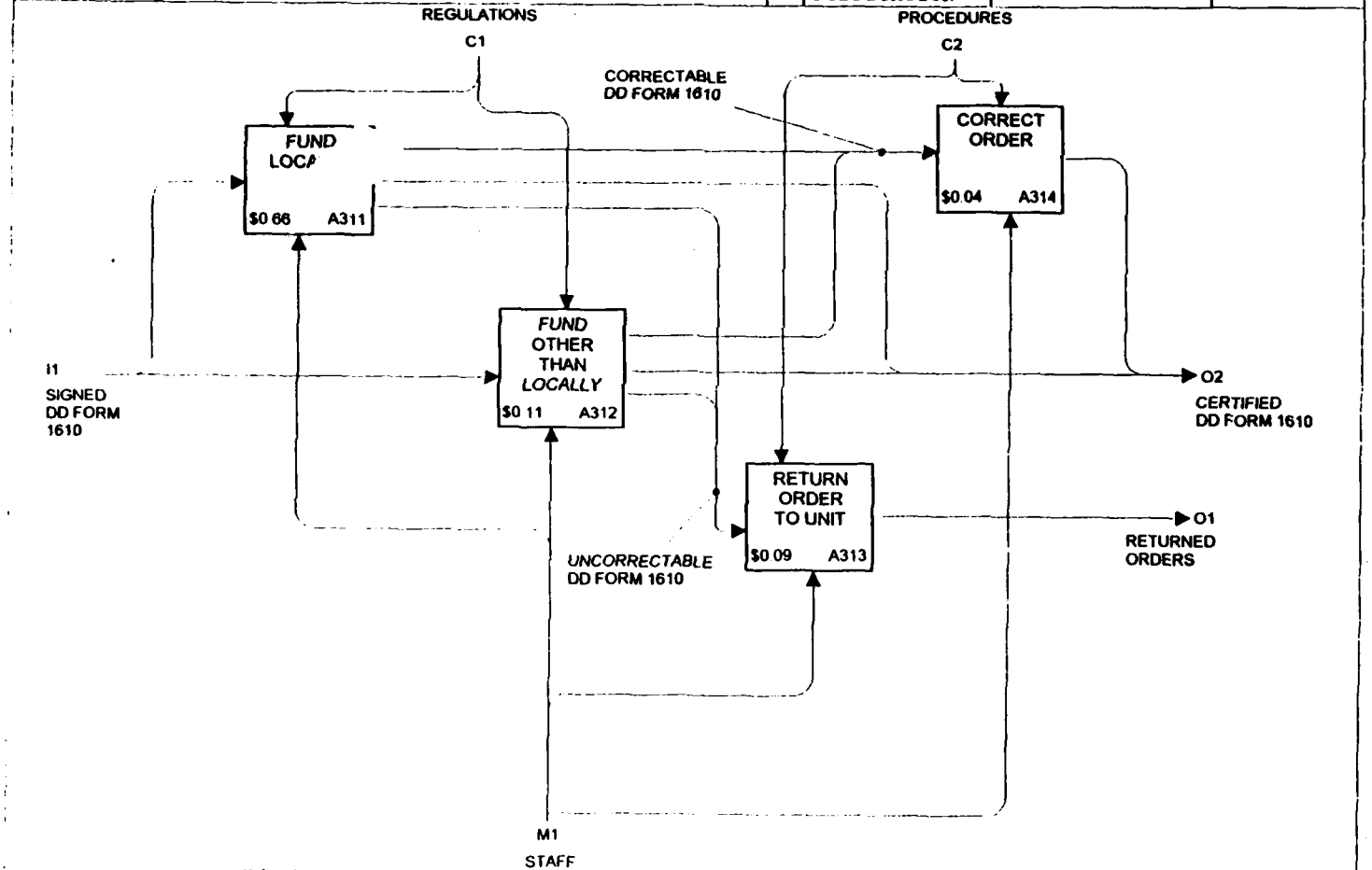
				PUBLICATION			



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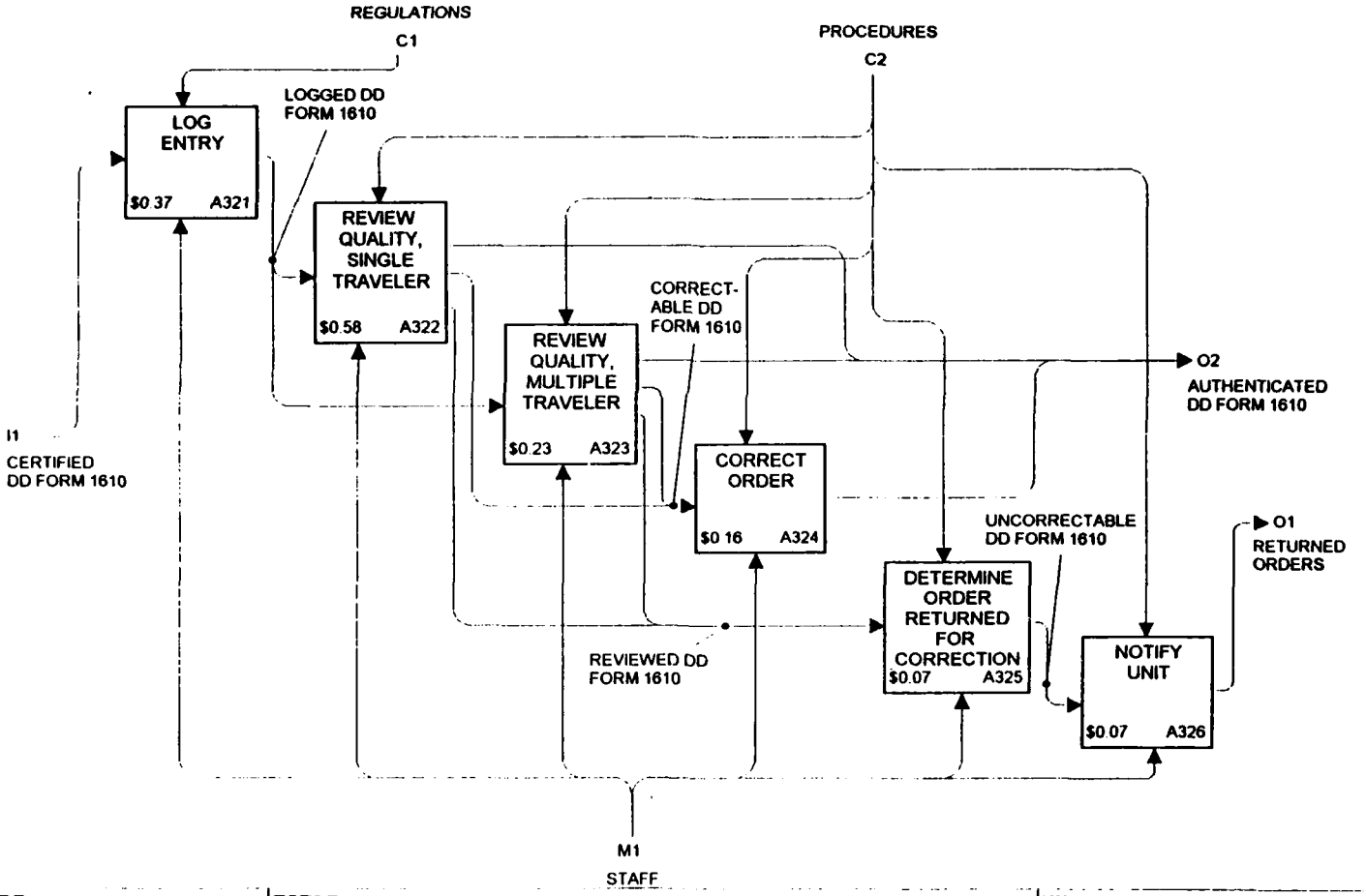

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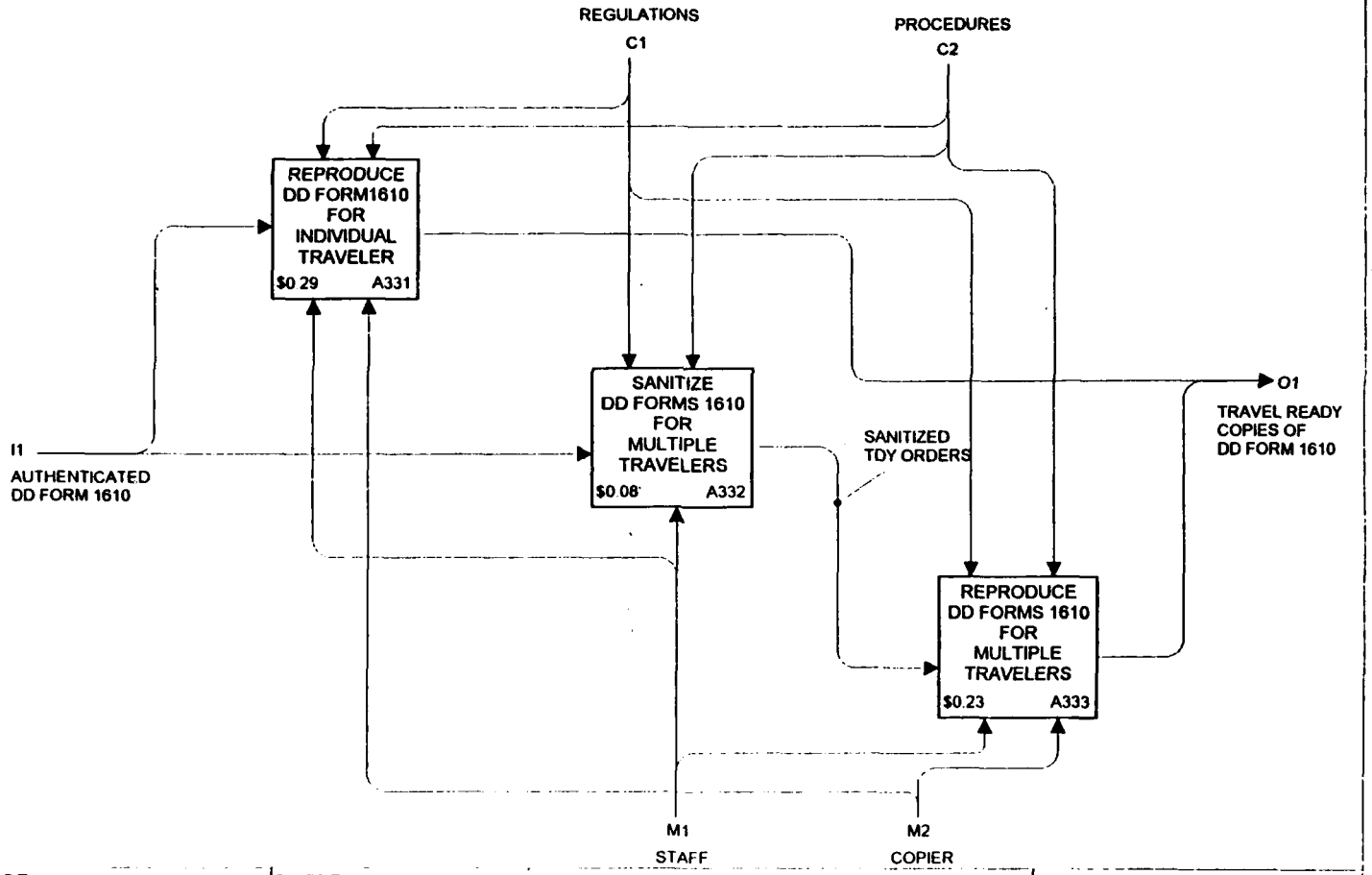

NODE: A33	TITLE: REPRODUCE ORDER	NUMBER:

Appendix B: IDEF0 Model for Duration

This IDEF0 model shows the duration times associated with each activity to produce a written TDY order. Durations for each lowest-level activity are automatically combined to attain the activity duration for their parent. For more information on reading IDEF0 models, please refer to the section "Reading IDEF0 Models" in Chapter 4.

USED AT:	AUTHOR: McDOWELL/MORGAN	DATE: 06/01/93		WORKING	READER	DATE	CONTEXT:
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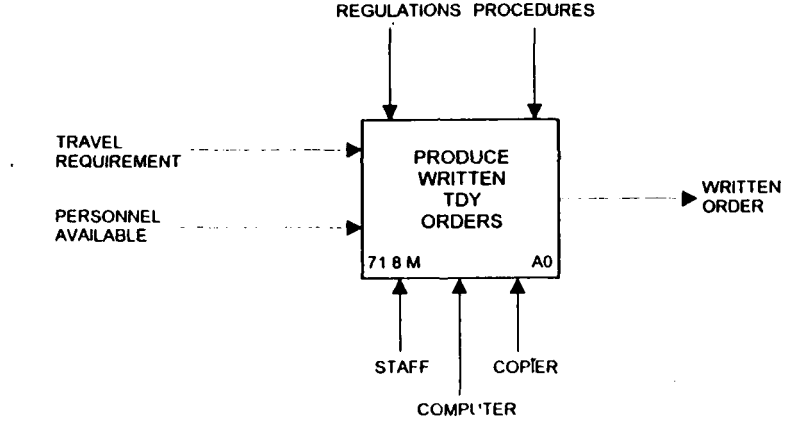

PURPOSE DOCUMENT PROCESS

VIEWPOINT EXPERT FUNCTIONAL/TECHNICAL TEAM

NODE: A-0	TITLE: CONTEXT FOR PRODUCING WRITTEN TDY ORDERS	NUMBER:

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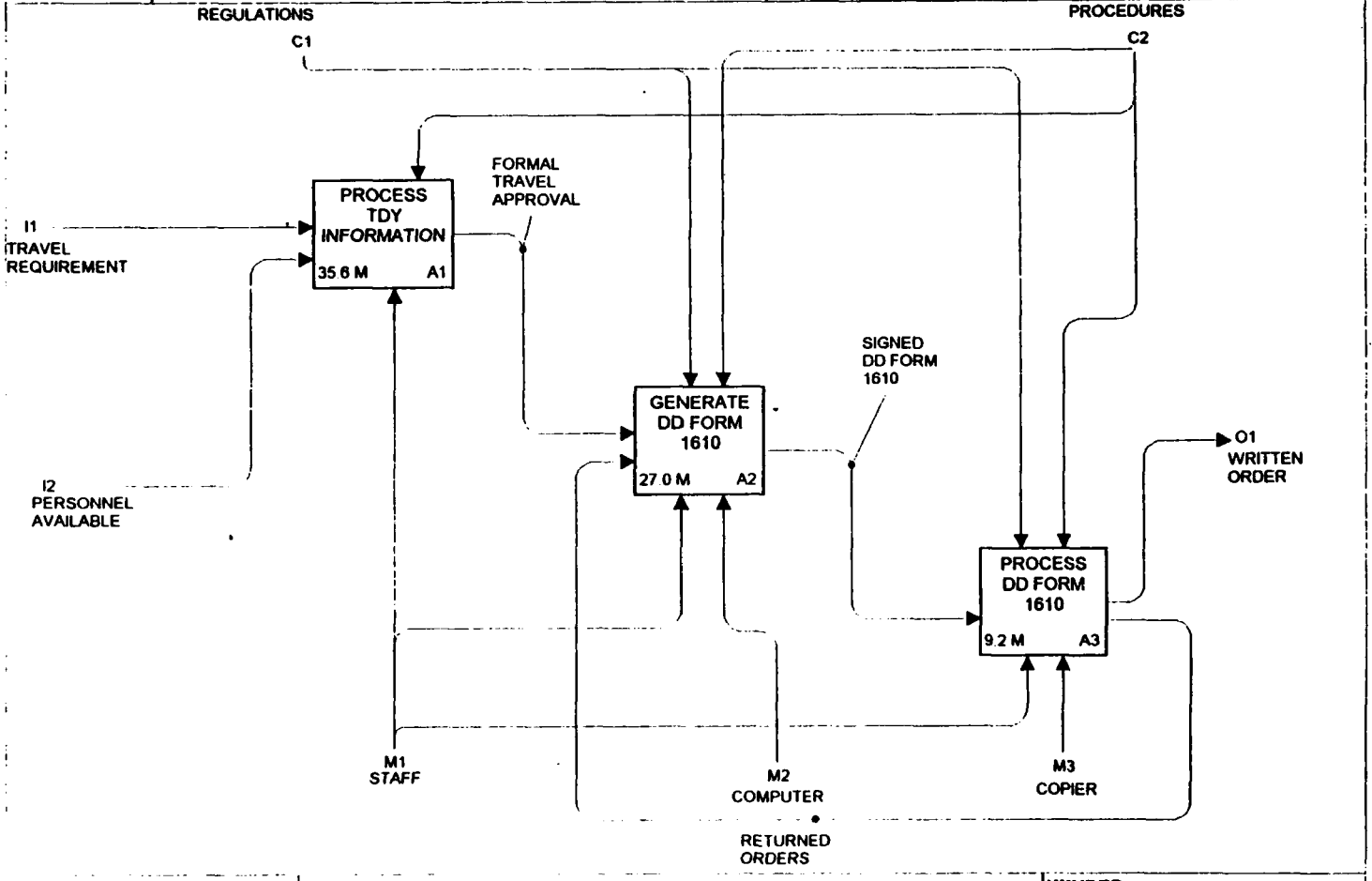

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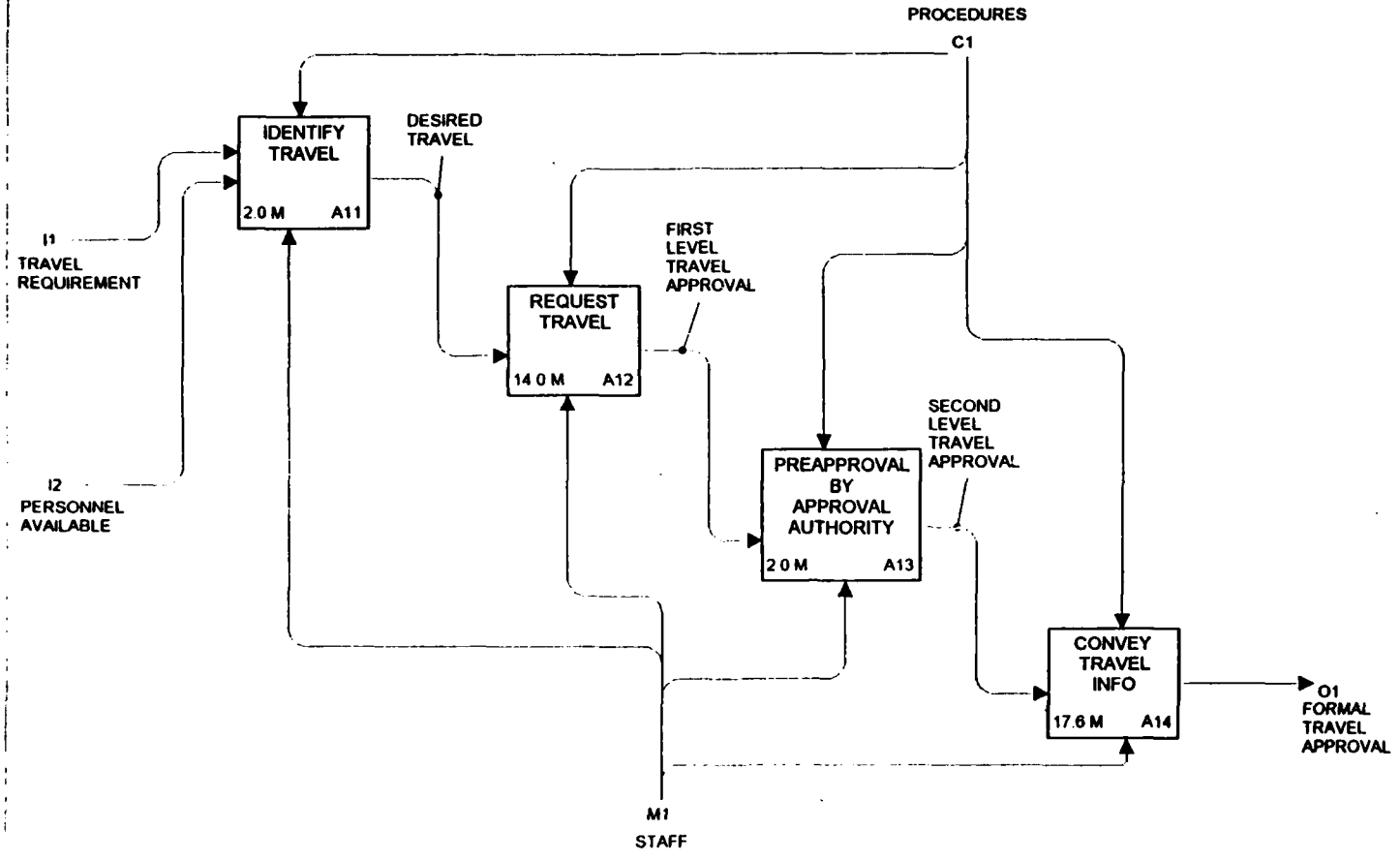

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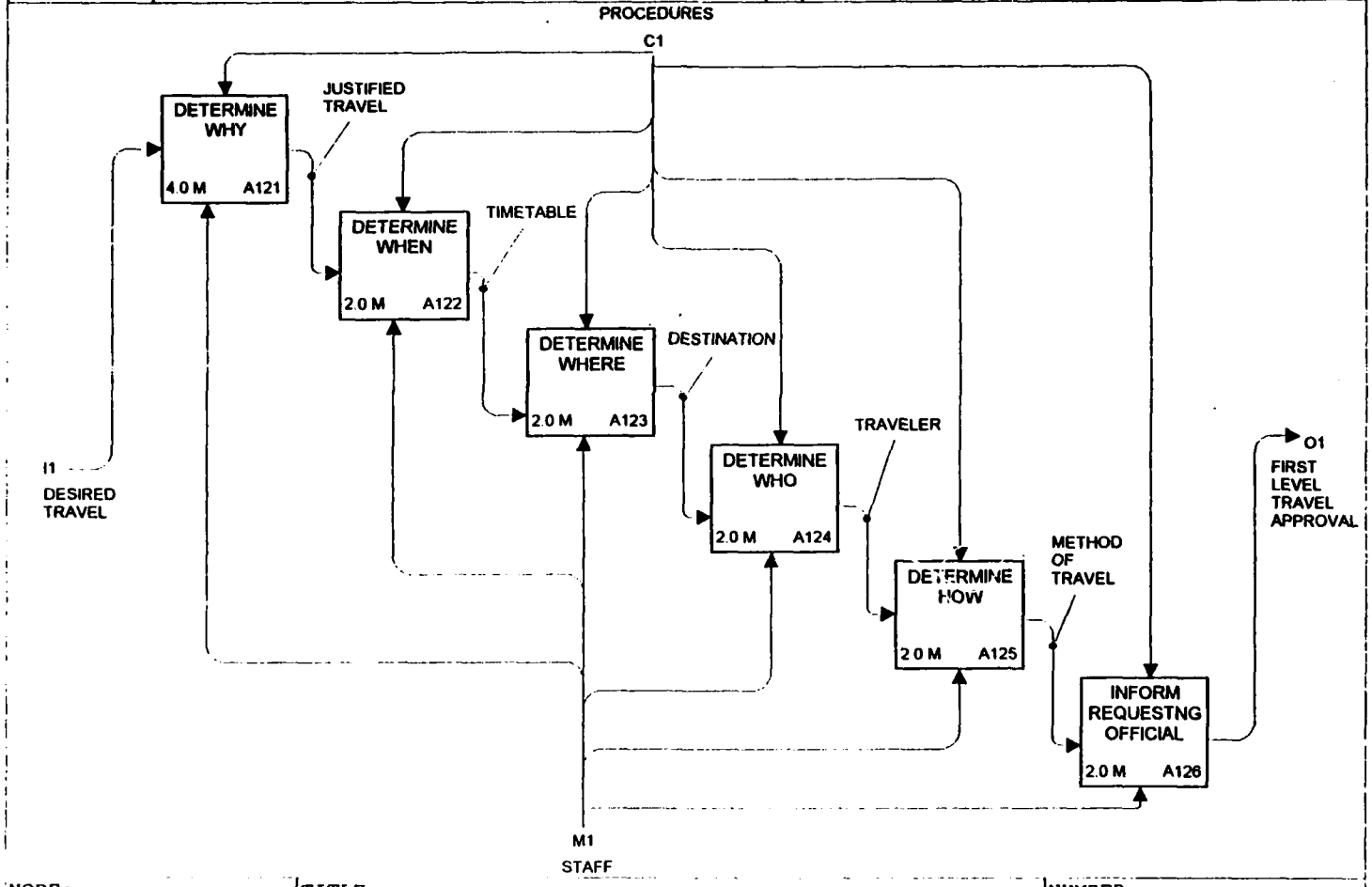

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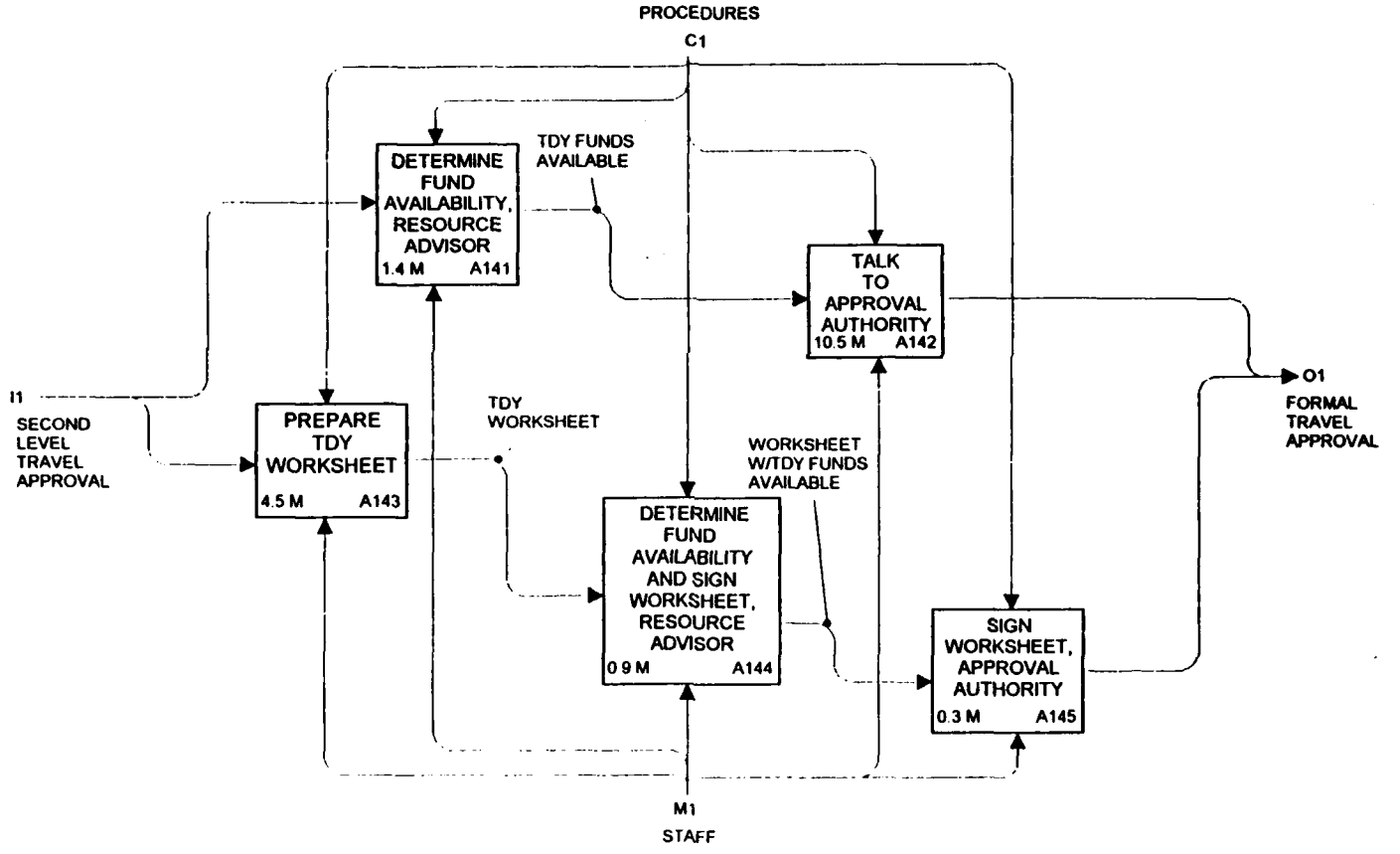

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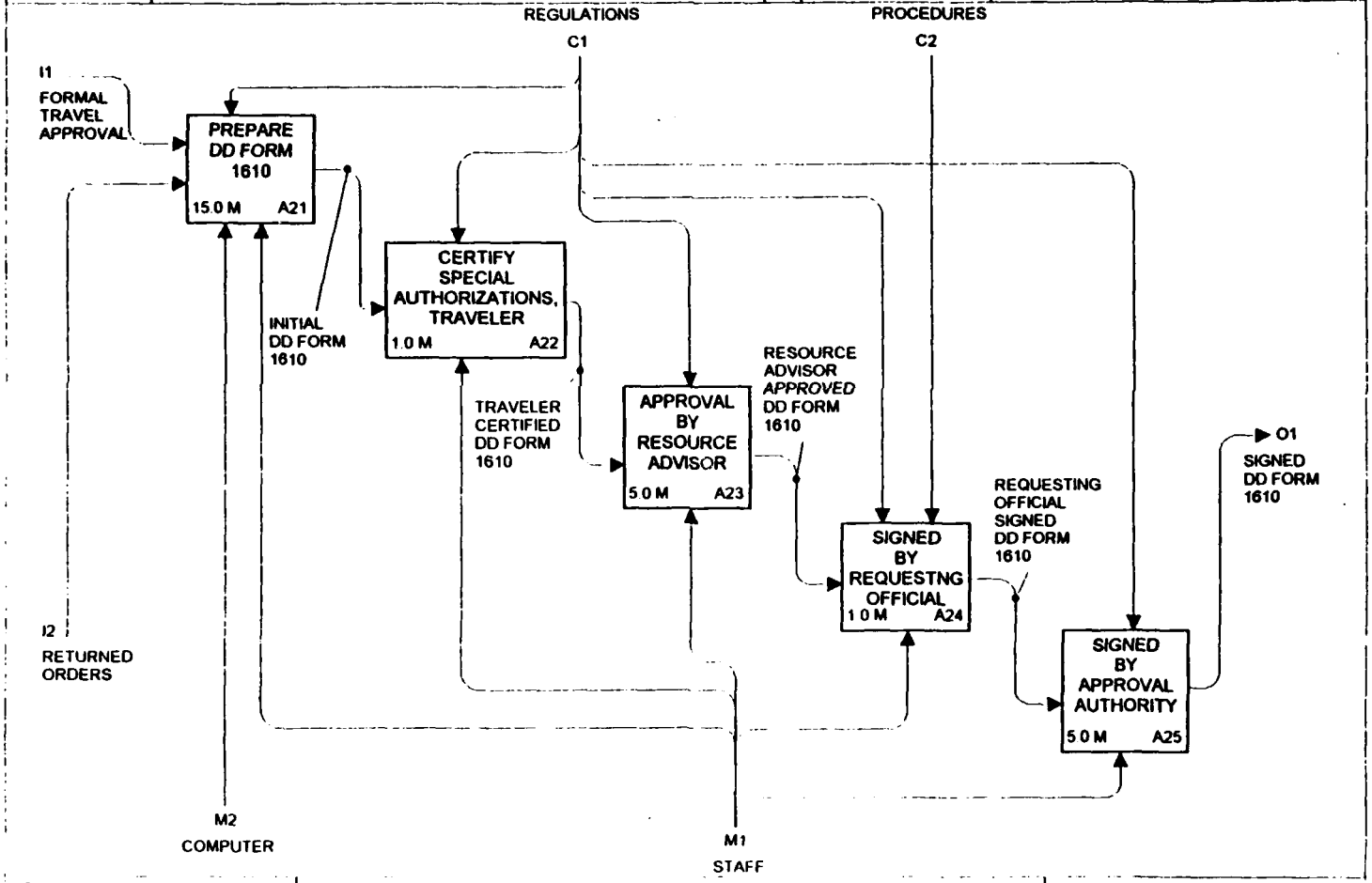

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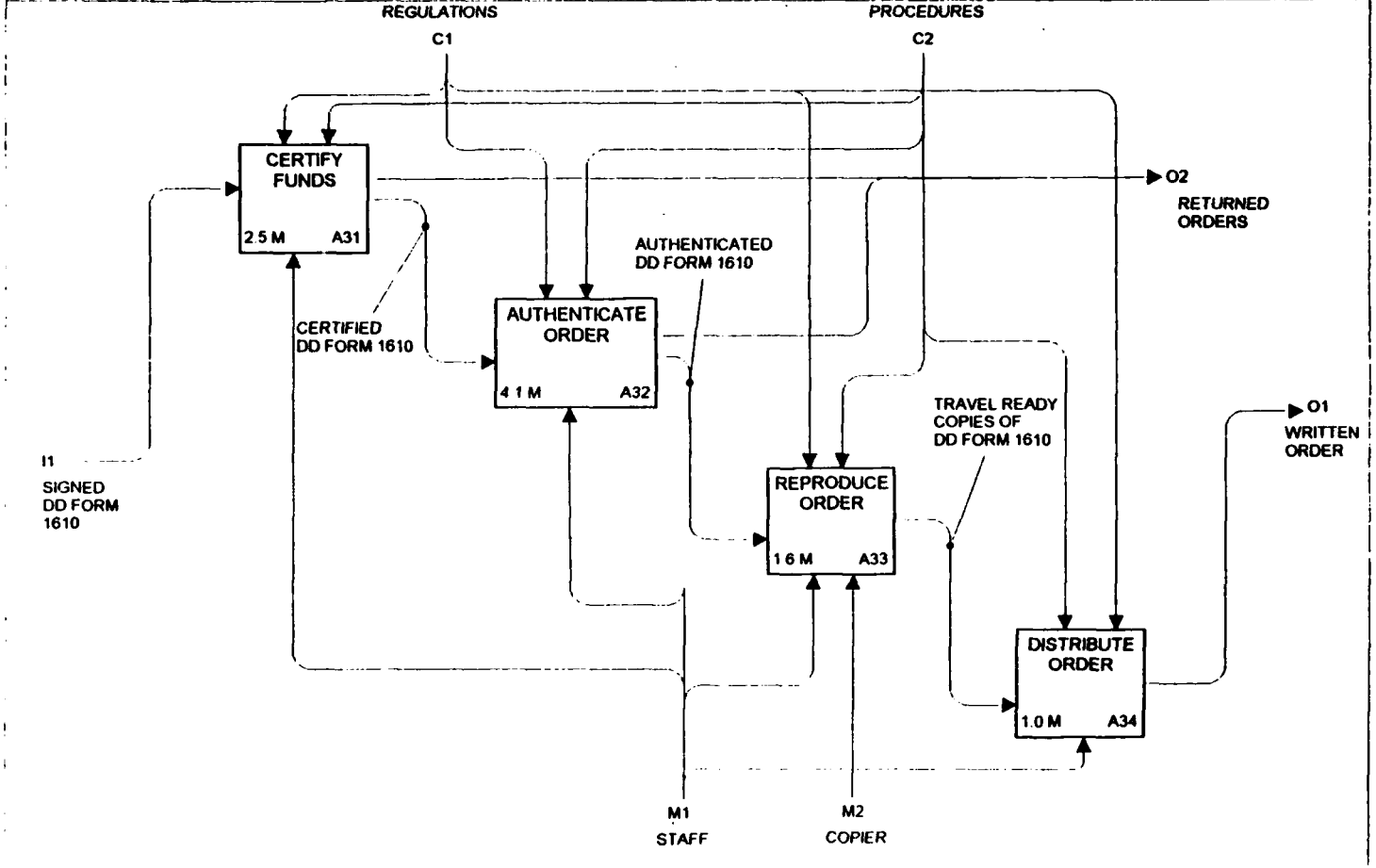
				PUBLICATION			



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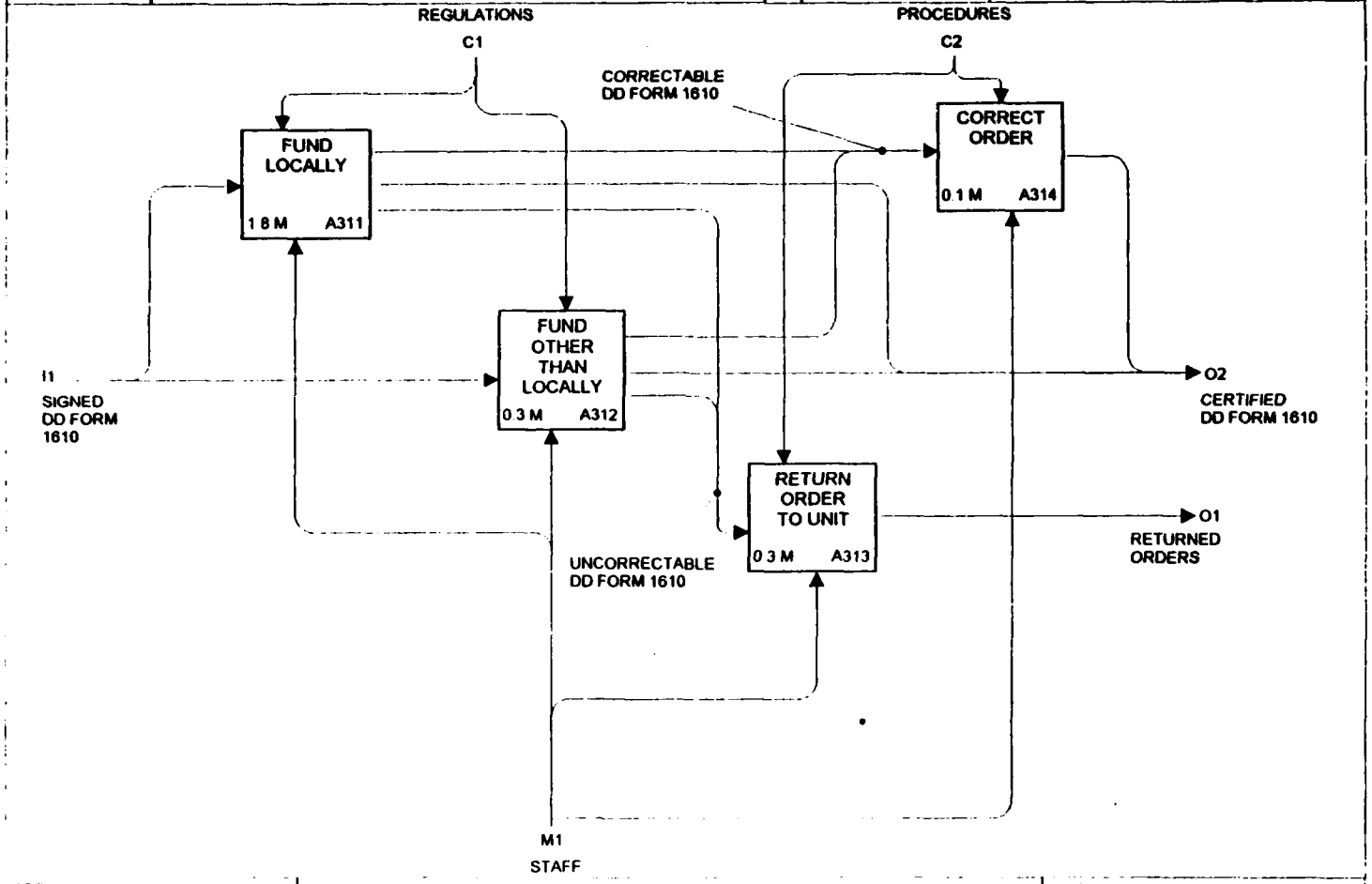
				PUBLICATION			



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	NOTES: 1 2 3 4 5 6 7 8 9 10			RECOMMENDED			
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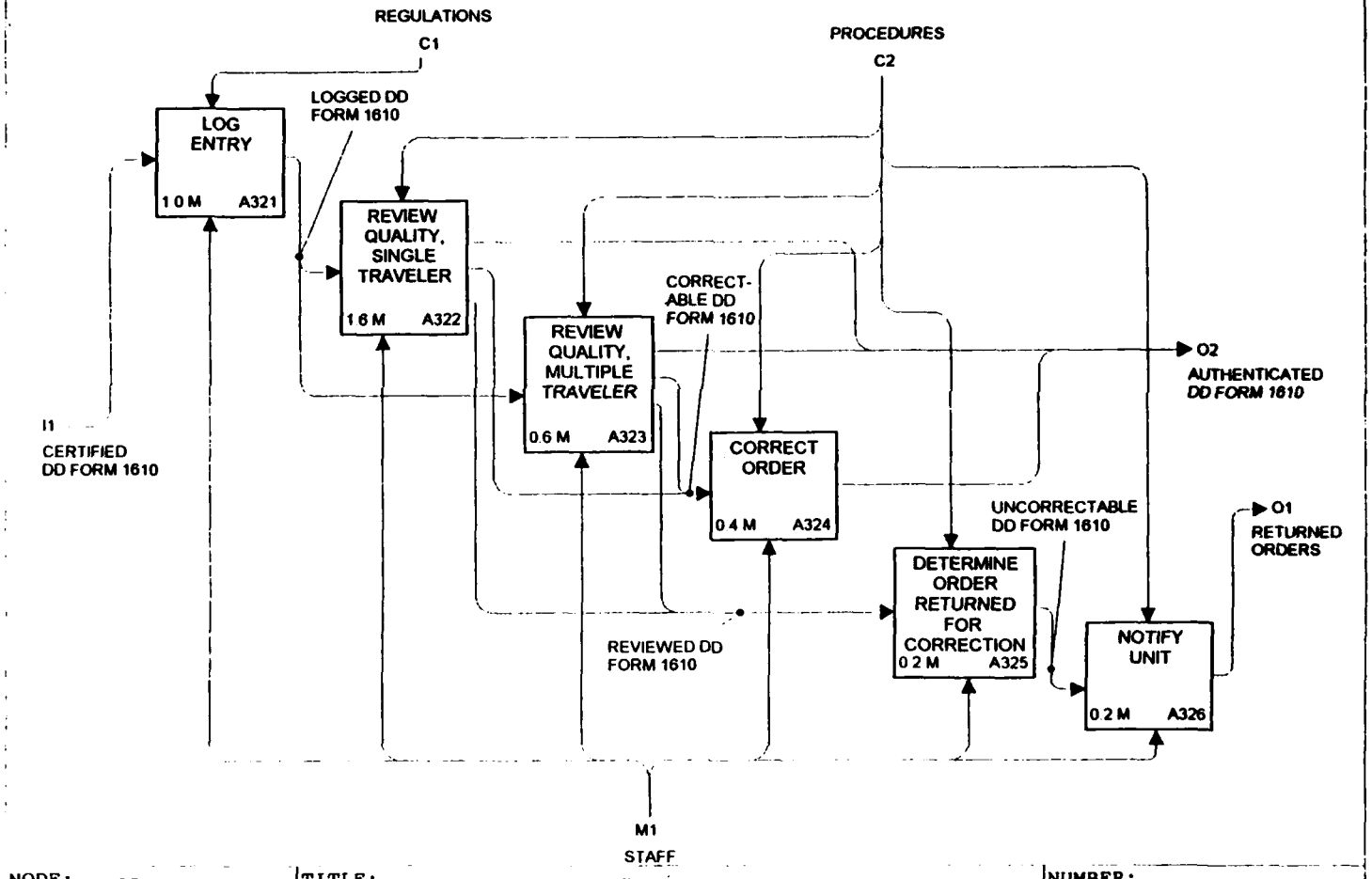

NODE: A32	TITLE: AUTHENTICATE ORDER	NUMBER:

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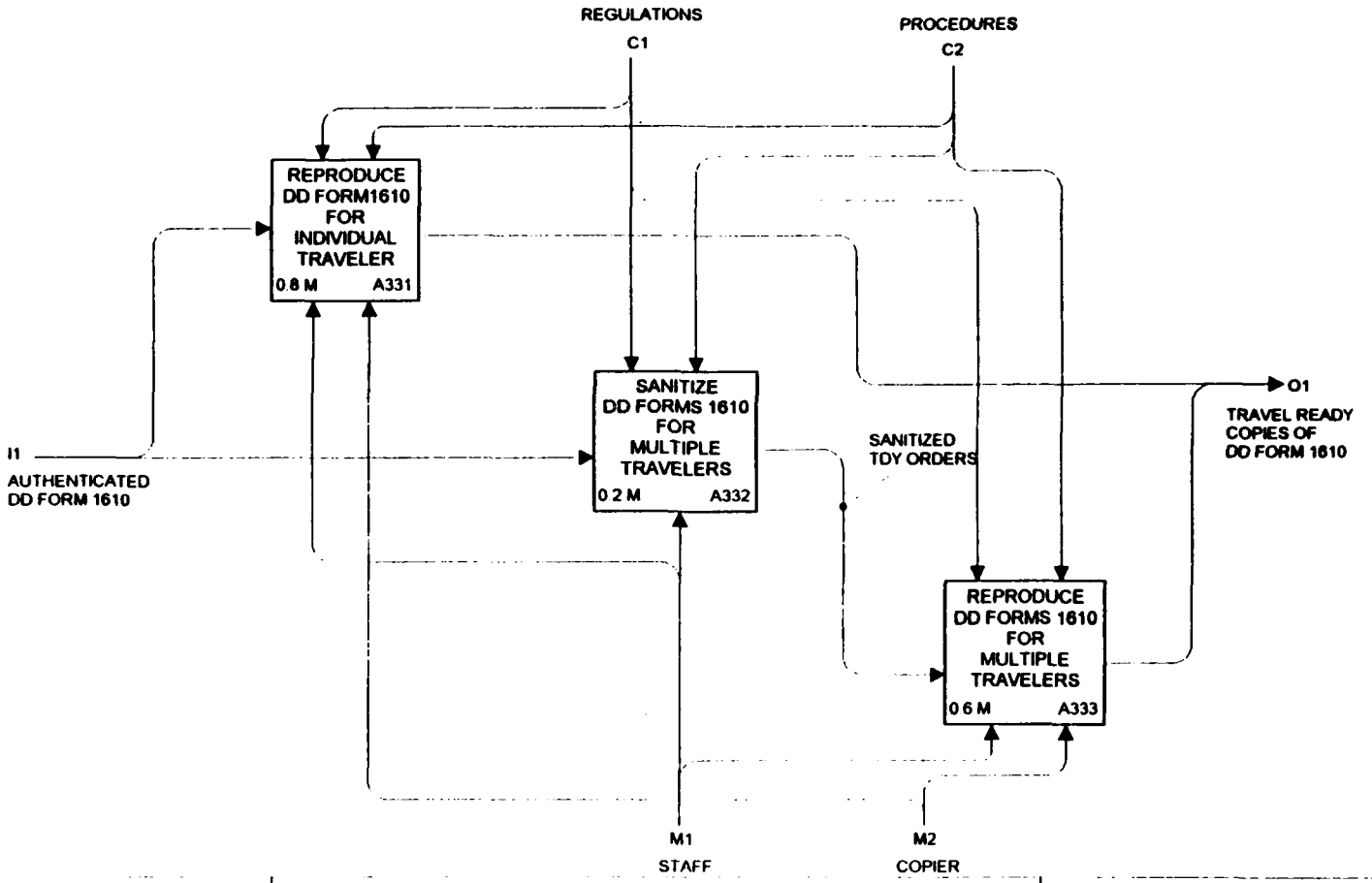

NODE: A33	TITLE: REPRODUCE ORDER	NUMBER:

Appendix C: Glossary for "Produce Written TDY Orders"

This glossary defines all terms used in the IDEF0 models in Appendices A and B. All activity and ICOM (inputs, controls, outputs, and mechanisms) names are presented to facilitate communication with individuals wishing to use the previously mentioned IDEF0 models. For more information on these particular IDEF0 models, please refer to the section "IDEF0 Models" in Chapter 4.

GLOSSARY FOR "PRODUCE WRITTEN TDY ORDERS"

APPROVAL AUTHORITY: The person authorized to obligate TDY funds for an organization

APPROVAL BY RESOURCE ADVISOR: An activity where the Resource Advisor signifies approval of travel funds on the DD Form 1610

AUTHENTICATE ORDER: An activity performed by Information Management (IM) to review and determine validity of DD Form 1610

AUTHENTICATED DD FORM 1610: A DD Form 1610 which is dated, numbered, and stamped with IM seal (loosely a form of notarizing the document)

CERTIFY FUNDS: An activity performed by FM to verify Approval Authority has sufficient travel funds

CERTIFY SPECIAL AUTHORIZATIONS, TRAVELER: An activity where the traveler signs the Initial DD Form 1610 signifying acknowledgement of travel benefits not normally granted (such as authority to rent a car)

CERTIFIED DD FORM 1610: A DD Form 1610 with Financial Management (FM) sanction

COMPUTER: An electronic mechanism used to produce the initial DD Form 1610

CONVEY TRAVEL INFO: An activity to inform the Approval Authority of travel requirements and expected costs

COPIER: A mechanism used to reproduce copies of the Authenticated DD Form 1610

CORRECT ORDER: An activity performed by FM or IM when DD Form 1610 is not in conformance with regulations or procedures and the DD Form 1610 can be corrected without reaccomplishing

CORRECTABLE DD FORM 1610: A DD Form 1610 not in conformance with regulations or procedures that can be corrected without returning it to the generating organization

DD Form 1610: The form used throughout the Department of Defense to authorize individual(s) to perform TDY

DESIRED TRAVEL: Travel identified by the prospective traveler and thought to be necessary or in the best interest of the organization

DESTINATION: The place where travel determined to be necessary or in the best interest of the organization will occur

DETERMINE FUND AVAILABILITY AND SIGN WORKSHEET, RESOURCE ADVISOR: An activity performed by written means between the prospective traveler and the Resource Advisor to determine if sufficient travel funds are available

DETERMINE FUND AVAILABILITY, RESOURCE ADVISOR: An activity performed face-to-face between the prospective traveler and the Resource Advisor to determine if sufficient travel funds are available

DETERMINE HOW: An activity to determine the means of travel (airplane, vehicle, etc.)

DETERMINE ORDER RETURNED FOR CORRECTION: An activity performed by IM when DD Form 1610 is not in conformance with regulations or procedures and the DD Form 1610 must be reaccomplished

DETERMINE WHEN: An activity to determine when the travel will occur

DETERMINE WHERE: An activity to determine where the travel will occur

DETERMINE WHO: An activity to determine who will perform the travel

DETERMINE WHY: An activity to determine if travel is necessary or in the best interest of the organization

DISTRIBUTE ORDER: An activity performed by IM to return the Written Order (finalized DD Form 1610) to the traveler

FIRST LEVEL TRAVEL APPROVAL: Concept of travel approved by the Requesting Official

FORMAL TRAVEL APPROVAL: An output of the Process TDY Information activity and an input to the Generate DD Form 1610 activity. Formal Travel Approval signifies the Approval Authority has deemed the travel as necessary or in the best interest of the organization and approved the individual(s) to perform the TDY and the expenditure of TDY funds

FUND LOCALLY: An activity performed by FM when travel funds come from on-base sources

FUND OTHER THAN LOCALLY: An activity performed by FM when travel funds come from off-base sources

GENERATE DD FORM 1610: A high-level activity to produce and obtain necessary signatures on the DD Form 1610 prior to processing

IDENTIFY TRAVEL: An activity entailing recognizing a travel requirement

INFORM REQUESTING OFFICIAL: An activity to receive First Level Travel Approval

INITIAL DD FORM 1610: An initially prepared DD Form 1610 without required signatures or initials

JUSTIFIED TRAVEL: Travel determined to be necessary or in the best interest of the organization

LOG ENTRY: An activity performed by IM to track a DD Form 1610

LOGGED DD FORM 1610: A DD Form 1610 after being entered in an IM tracking system

METHOD OF TRAVEL: How travel determined to be necessary or in the best interest of the organization will occur

NOTIFY UNIT: An activity performed by IM to inform the preparing organization when DD Form 1610 is not in conformance with regulations or procedures and the DD Form 1610 must be reaccomplished

PREAPPROVAL BY APPROVAL AUTHORITY: An activity performed by the traveler to receive an initial, cursory travel approval from the Approval Authority

PREPARE DD FORM 1610: An activity to initially generate a DD Form 1610

PREPARE TDY WORKSHEET: An activity performed by the prospective traveler to record travel requirements and information in written form

PERSONNEL AVAILABLE: An input defining the people available and qualified to perform duties related to a specific TDY

PROCEDURES: A control internally levied by organizations during the Produce Written TDY Order process

PROCESS DD FORM 1610: A high-level activity to perform regulatory required actions on the DD Form 1610 prior to the traveler(s) receiving their travel-ready copies

PROCESS TDY INFORMATION: A high-level activity to gather all the required information and receive formal travel approval prior to generating the DD Form 1610

PRODUCE WRITTEN TDY ORDERS: The high-level activity process that entails producing travel-ready copies of DD Form 1610

REGULATIONS: A control that governs many aspects of the Produce Written TDY Order process

REPRODUCE DD FORM 1610 FOR INDIVIDUAL TRAVELER: An activity performed by IM to copy sufficient quantities of DD Form 1610 for one traveler

REPRODUCE DD FORMS 1610 FOR MULTIPLE TRAVELERS: An activity performed by IM to copy sufficient quantities of DD Form 1610 for more than one traveler

REPRODUCE ORDER: An activity performed by IM to copy sufficient quantities of the DD Form 1610

REQUEST TRAVEL: An activity determining the necessary travel details and securing the approval of the Requesting Official

REQUESTING OFFICIAL: The first-line supervisor of the prospective traveler(s)

REQUESTING OFFICIAL SIGNED DD FORM 1610: An initially prepared DD Form 1610 with optional Requesting Official signature

RESOURCE ADVISOR: A individual who budgets, tracks, and manages an Approval Authority's travel funds

RESOURCE ADVISOR APPROVED DD FORM 1610: An initially prepared DD Form 1610 with required Resource Advisor initials

RETURN ORDER TO UNIT: An activity performed by FM when DD Form 1610 is not in conformance with regulations or procedures and the DD Form 1610 must be reaccomplished

RETURNED ORDERS: An output of the Certify Funds and Authenticate Order sub-activities and an input to the Prepare DD Form 1610 sub-activity. Returned Orders are DD Forms 1610 that do not meet regulatory or procedural requirements, can not be corrected by processing sub-activity, and must be returned to the original preparer to reaccomplish the entire DD Form 1610

REVIEW QUALITY, MULTIPLE TRAVELER: An activity performed by IM to determine if a DD Form 1610 for more than one traveler is completed in accordance with regulations and procedures

REVIEW QUALITY, SINGLE TRAVELER: An activity performed by IM to determine if a DD Form 1610 for one traveler is completed in accordance with regulations and procedures

REVIEWED DD FORM 1610: A DD Form 1610 after an IM quality review

SANITIZE DD FORMS 1610 FOR MULTIPLE TRAVELERS: An activity performed by IM to prevent individual traveler copies of DD Form 1610 for more than one traveler from showing other travelers' personal information (social security numbers, etc.)

SANITIZED TDY ORDERS: Copies of DD Form 1610 for more than one traveler that show only one traveler's personal information

SECOND LEVEL TRAVEL APPROVAL: Concept of travel approved by the Approval Authority

SIGN WORKSHEET, APPROVAL AUTHORITY: An activity performed by written means between the Resource Advisor and the Approval Authority signifying sufficient travel funds are initially approved prior to preparation of the DD Form 1610

SIGNED BY APPROVAL AUTHORITY: An activity where the Approval Authority signs the DD Form 1610

SIGNED BY REQUESTING OFFICIAL: An activity where the Requesting Official signs the DD Form 1610

SIGNED DD FORM 1610: An output of the Generate DD Form 1610 activity and an input to the Process DD Form 1610 activity. A Signed DD Form 1610 indicates the Approval Authority has officially approved the TDY

STAFF: A mechanism that describes the personnel who actually perform the work during an activity

TALK TO APPROVAL AUTHORITY: An activity performed face-to-face between the prospective traveler and the Approval Authority to initially approve sufficient travel funds pending preparation of the DD Form 1610

TDY: A standardized abbreviation for Temporary Duty

TDY FUNDS AVAILABLE: A verbal confirmation from the Resource Advisor that sufficient travel funds are available

TDY WORKSHEET: A written form on which to record travel requirements and information

TEMPORARY DUTY: When an individual(s) performs duties at a location other than the one to which they are assigned

TIMETABLE: When travel determined to be necessary or in the best interest of the organization will occur

TRAVEL READY COPIES OF DD FORM 1610: Reproduced copies of Authenticated DD Form 1610 in sufficient quantities for the traveler(s)

TRAVEL REQUIREMENT: An input that begins the Written TDY Order process. Travel Requirements may be generated from messages, phone calls, higher headquarters, supervisors, or self-generated from personal knowledge. Travel Requirements may also be recurring or one-time events. A Travel Requirement causes an individual(s) to perform duties at a location other than the one to which they are assigned

TRAVELER: Person accomplishing the travel determined to be necessary or in the best interest of the organization

TRAVELER CERTIFIED DD FORM 1610: An initially prepared DD Form 1610 with required traveler signature for travel benefits not normally granted

UNCORRECTABLE DD FORM 1610: A DD Form 1610 not in conformance with regulations or procedures that can not be corrected

WORKSHEET W/TDY FUNDS AVAILABLE: A written form containing travel requirements and information with the Resource Advisor's designation that sufficient travel funds are available

WRITTEN ORDER: An output that describes the copies of the travel-ready DD Form 1610 ending the Produce Written TDY Order process

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Vita

Major Philip W. McDowell was born on 14 December 1950 in Hickory, North Carolina, where he graduated from Hickory High School in 1969. He enlisted in the USAF in 1971. After graduating Summa Cum Laude from Troy State University with a Bachelor of Science in Resource Management, Major McDowell was commissioned through Officer Training School. Upon entering the administration field, he served in several squadron section commander positions. In 1984 he was chosen USAFE's Top Company Grade Administration Officer. Major McDowell earned a Master of Science in Management from Troy State University in 1984. In 1985 he became Director of Administration at HQ 17th AF, and again was selected USAFE's Top Company Grade Administration Officer of the Year. He was named the USAF Outstanding Company Grade Administration Officer for 1985. In 1990, he became the Information Policy Division Chief at Headquarters Air Force Systems Command (AFSC). Major McDowell was selected AFSC's Top Field Grade Information Manager of the Year for 1991. He entered the School of Logistics and Acquisition Management, Air Force Institute of Technology, in 1992. Upon graduation, Major McDowell will be assigned to HQ AFMC/CI.

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Vita

Captain David W. Morgan was born in Lincoln, Illinois on 3 July 1953. He graduated from Champaign Centennial High School in Champaign, Illinois in 1971 and attended Western Illinois University, graduating with a Bachelor of Arts in Music Education in June 1976. He was commissioned after graduating as a Distinguished Graduate from Officer Training School in January 1985. He began as an Executive Support Officer and later served as Chief, Base Administration at Fairchild AFB, Washington. He then served as Director, Personnel and Administrative Services at Hessich-Oldendorf AS, Germany. While assigned to Germany, he attended Squadron Officer School in residence earning Distinguished Graduate status and voted Outstanding Contributor by the members of his section. He then served as a Squadron Section Commander and later was chosen as the Executive Officer to the Base Commander at Kelly AFB, Texas. He entered the School of Logistics and Acquisition Management, Air Force Institute of Technology, in 1992. Upon graduation, Captain Morgan will be assigned to the Information Management Research and Development Branch located at Wright-Patterson AFB, Ohio.

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13. ABSTRACT *(Maximum 200 words)*

This study analyzed the process currently endemic to the activity of producing written TDY orders. Business Process Improvement (BPI) methodology using IDEF (ICAM [Integrated Computer Aided Manufacturing] Definition) and Activity Based Costing methods were used for this study. The objectives of the written TDY order activity were determined as identifying the traveler(s) and verifying authenticity of the travel requirement and subsequent entitlements. Processing the TDY information, generating the TDY order, and processing the TDY order showed activities that add no value or limited value for either the traveler or the government. The activity costs incurred to produce a written TDY order average approximately $35.63. A literature review revealed large civilian enterprises do not typically preauthorize travel in writing. This limited the ability of the study to benchmark the current process against civilian industry. The BPI methodology was not completed due to the five-month time alloted for this study. However, preliminary data demonstrates improvements can be obtained by applying a BPI methodology. Specifically, activities identified for possible elimination could save $11.68 of the $35.63 activity cost to produce one written TDY order.

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