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THESIS

TRANSITION OF ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS (ACTD) INITIATIVES FROM RESEARCH TO OPERATIONAL FUNCTIONAL PROGRAMS: A CASE STUDY OF THE JOINT THEATER LOGISTICS ACTD

by

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June 2002

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I. INTRODUCTION

In 1994 the Secretary of Defense initiated the Advanced Concept Technology Demonstration (ACTD) Program under the auspice of the Under Secretary of Defense for Acquisition and Technology (USD A&T) now known as the Under Secretary of Defense for Acquisition, Technology and Logistics (USD AT&L). The purpose of the ACTD program was to:

> …exploit mature and maturing technologies to solve important military problems…expedite the transition of maturing technologies from the developers to the users. The Advanced Concept Technology Demonstration (ACTD) program was to help the DoD acquisition process adapt to today's economic and threat environments. ACTDs emphasize technology assessment and integration rather than technology development.[1]

The popular push for the ACTD program was the intended transition of mature technologies to the war fighter in a more expeditious manner than that of the current formal Department of Defense (DoD) Acquisition Process. Architects of the ACTD program envisioned a successful ACTD being able to jump into the acquisition cycle as far as Milestone II or what is now Milestone B. The acquisition cycle has been revised since the inception of the ACTD program and is now governed by DoD 5000.2R, Acquisition regulations. The new DoD 5000.2R was updated to include the ACTD process as an avenue for the Program Manager (PM) to expedite the fielding of acceptable material.

> Demonstrations based on mature technology may lead to more rapid fielding. Where appropriate, managers in the acquisition community shall make use of non-traditional acquisition techniques, such as Advanced Concept Technology Demonstrations (ACTDs), rapid prototyping, evolutionary and incremental acquisition, and flexible technology insertion.[2]

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[1] "ACTD Introduction"; http://www.acq.osd.mil/actd/intro.htm

[2] DoD 5000.2R, Para 2.7

By studying the ACTD process, barriers to transition, budgetary constraints, and the DoD formal acquisition cycle this thesis will attempt to answer the following questions:

1. What have been and are now the major barriers for ACTD transition?

2. What is the current business model for an ACTD and its respective transition plan into formal acquisition programs?

3. What can be done procedurally, doctrinally, and philosophically to enhance the ability of the ACTD programs to transition?

4. Finally, is there a better model for DoD to facilitate ACTD programs and the transition of emerging technology into the formal acquisition cycle?

This thesis encompasses the studying of the Joint Logistics and Joint Theater Logistics ACTD programs to analyze process models as well as the transition plan for both programs. The thesis also will briefly look at the Office of Naval Research's Future of Naval Capabilities (FNC) program to compare any similarities in transition barriers or to identify any process that may enable better transition for the ACTD programs or vice versa.

As a reference for the formal acquisition cycle the thesis will utilize the DoD 5000 series. The recommendations and opinions expressed in this thesis will only serve as another view of how the Evolutionary Acquisition Programs (ACTDs, FNCs) available to the Department of Defense can expedite the fielding of mature technologies to the war fighter.

II. ADVANCED CONCEPT TECHNOLOGY DEMONSTRATION PROGRAM

A. BRIEF HISTORICAL STATISTICS

The current ACTD process model is very simple in concept. However there are many challenges that face an ACTD program that must be addressed from the outset in order to provide a "recipe for success." It is imperative that the reader understands some background on the ACTD process before we go further. Since the inaugural set of ACTDs were approved and initiated in FY 1995, there have been 84 total programs initiated, 40 programs that have completed demonstration, and 31 programs that have completed the residual periods. From those 84 programs, 48 have produced 108 products. Table 1 below shows a breakdown of all ACTD programs by fiscal year. The data was taken from a DUSD(AS&C) ACTD Briefing.

	FY95	FY96	FY97	FY98	FY99	FY00	FY01	TOTAL
ACTD Initiated	11	12	9	14	11	12	15	84
Demo Outbrief Complete	11	12	6	7	4	0	0	48
Residual Complete	11	9	4	5	2	0	0	31

Table 1. ACTD Fiscal Year Breakdown "After Ref. [6]."

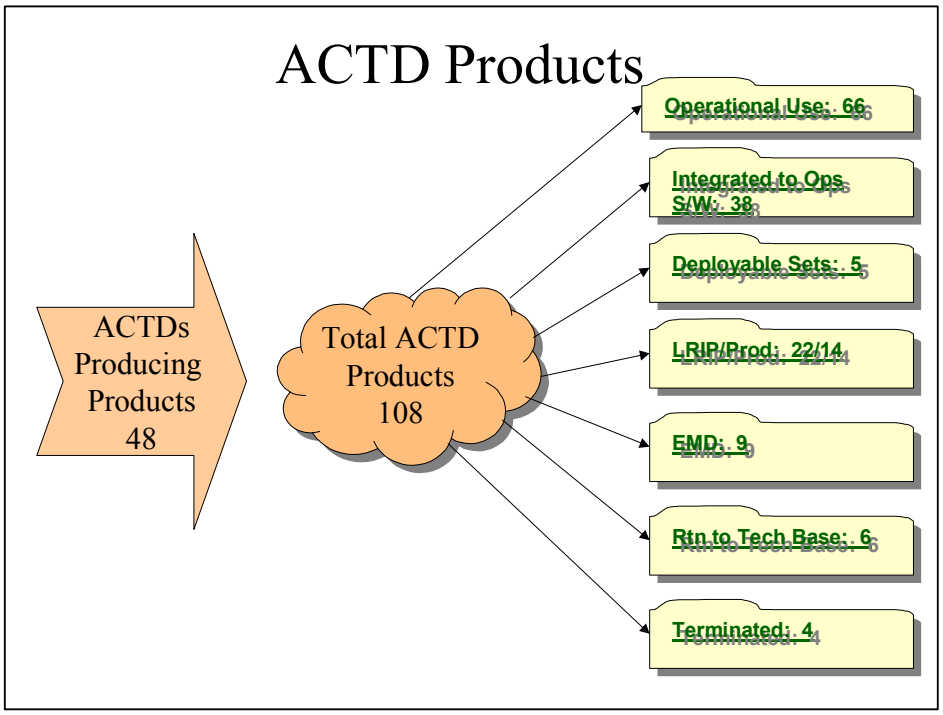

Figure 1. ACTD Product Breakdown "After Ref. [6]."

B. ACTD FORMULATION AND CANDIDATE SELECTION PROCESS

The ACTD selection process will generally start by the identification of a significant military need. Operational, acquisition, or commercial contracting communities may do this. The process is closely linked to initiatives defined within Joint Vision 2010. Those initiatives are dominant maneuver, precision engagement, focused logistics and full dimensional protection. The priority for the ACTD program should be the short-term response to validated military needs. Unlike the formal acquisition cycle, the ACTD program utilizes an evolutionary acquisition approach. This approach, although still management intensive does not force the same amount of testing and rigorous controls as a formal acquisition program. Hence, the successfully demonstrated ACTD should be able to move to the war fighter or into an ongoing acquisition program much faster than through the normal acquisition cycle.

The gathering of mature technology to answer the near-term military needs is a jump off point for ACTD candidates. The end goal of an ACTD is to provide a prototype of a technology that will meet or exceed its military need during the military utilization testing. Throughout the program lifecycle the user can expand the broad statement of

need that was prepared early on into a set of operational requirements that can support a follow-on acquisition program.

Candidates can be Service specific capabilities; however, the focus of the Department of Defense is turning more to the "purple" or joint capabilities arena. In fact another major goal of the ACTD program is to promote the "purple" or "joint" system capabilities that will cross Service specific lines.

Overall oversight responsibility of ACTD programs fall under the auspice of the Deputy Under Secretary of Defense (Advanced Systems and Concepts), DUSD (AS&C). Each ACTD candidate which is approved will have a corresponding Point of Contact within the DUSD (AS&C) office for monitoring purposes.

The basic "roadmap" of the ACTD selection process is very simple in theory. However, in practice the process is very complicated and time driven. The basics are set forth below.

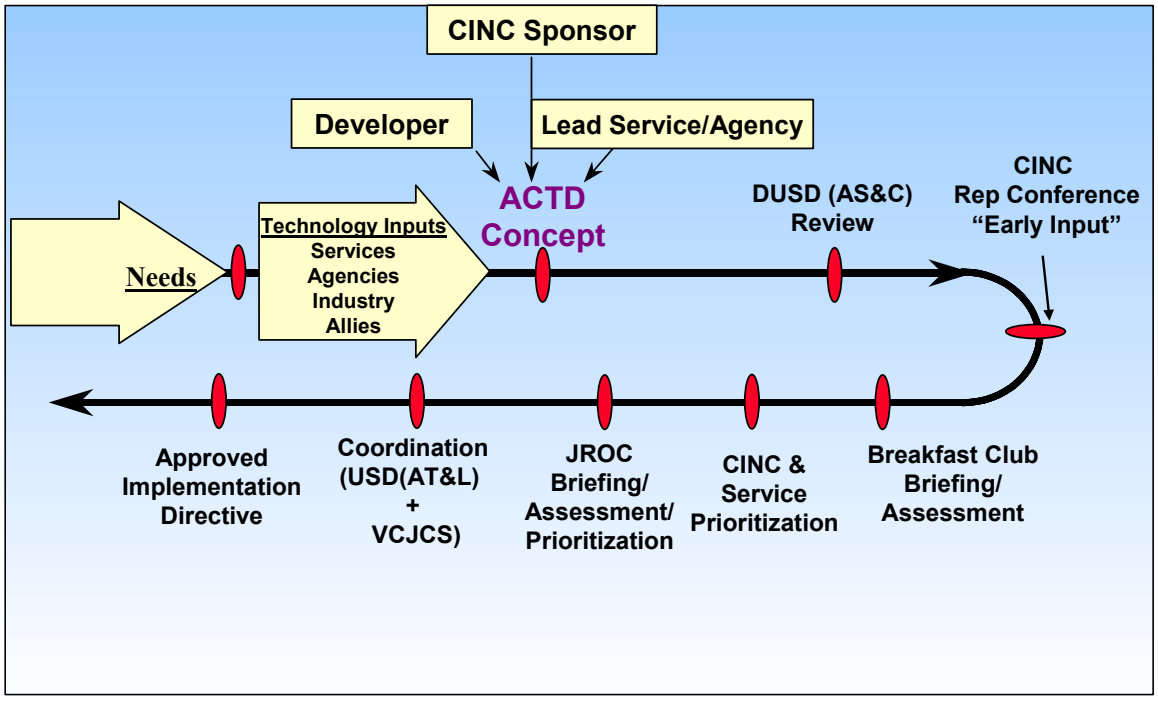

Figure 2. ACTD Development Process Flow "After Ref. [6]."

Typically candidates are proposed by the Research and Development community for capabilities that can possibly be fulfilled with developed technologies. The

capabilities may be fulfilled by new technology, new operational concepts, new organizational structure, or a combination of the three. The ACTD responses to needs must be affordable, sustainable, interoperable, and capable of evolving with technology and changing threats. Candidates can be in the form of hardware, software, or a combination. The candidate must be able to address a wide range of issues relating to each stated capability need statement.

There are currently three categories or classes of ACTDs. The figure below will describe each class and its possibility of transition and residual probability.

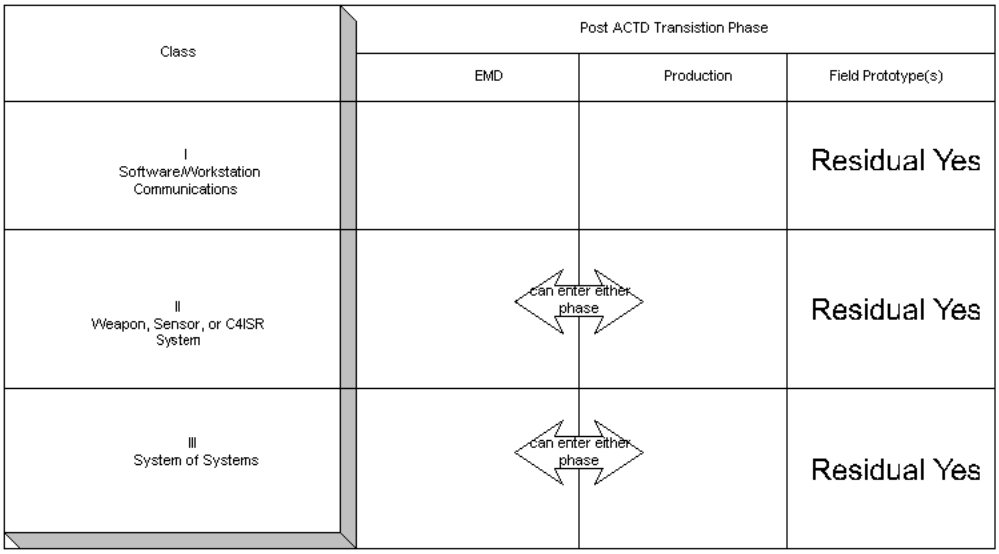

Figure 3. ACTD Class Breakdown

Timelines for evaluating the military utility of an ACTD is typically 2-4 years. The military utility of an ACTD candidate should be able to be defined as: (a) effectiveness in performing the mission, (b) suitability for use by the user, and (c) the overall impact the proposed capability has on a conflict or military operation.[3] This timeline does not allow for new technology development during the ACTD process. A user, or military beneficiary, is identified and agrees to be intimately involved with the process from inception to completion. A lead Service/Agency will be selected and that Service/Agency must show funding established to support the ACTD process above that which is funded by the DUSD (AS&C). All known, and to the very extent possible, all

[3] DUSD (AS&C) website. http://www.acq.osd.mil

possible risks are identified, addressed and accepted. Finally, the candidates if approved by the DUSD (AS&C) staff are briefed to the "Breakfast Club". This is a council of senior DoD officials who will review and recommend candidates to the Joint Warfare Capabilities Assessment (JWCA) and the Joint Requirements Oversight Council (JROC) for further review, prioritization and final approval.

One major issue for ACTD candidates in the funding responsibility required to be accepted by the Service or Agency tasked with leading the program. Currently the OSD supplemental funding covers approximately 10-15% of the overall cost of an ACTD program.[4] Throughout the interviews that were conducted with senior executives and military leaders involved in the ACTD program a single barrier repeated itself. That was that funding levels for Science and Technology are at such a low level in the Services that it is nearly impossible for them to sponsor ACTDs without more funding support from DUSD (AS&C). This will be addressed later in the thesis as a possible solution to a very critical transition barrier.

The final processes involved prior to a ACTDs final approval are the drafting of an implementation directive and the development of the ACTD management plan. The implementation directive is a key document to the ACTD cycle because of it's overarching coverage for the initial "stick and rudder" for the ACTD. Key signatures are required on this document that in principle stands for a dedication to see the program through to completion. This is yet another barrier that will be discussed later as needing possible improvement. The management plan is the final document that will be prepared prior to the ACTD beginning full bore. This too will include signatures from key individuals in the Service/Agency leading the ACTD, DUSD (AS&C) and USD (AT&L). Guidelines for the preparation of these documents can be found in the revised Acquisition Deskbook or the DUSD (AS&C) website.

C. OPERATIONAL PHASE

1. Transition Planning and Preparation

Transition planning and preparation is an integral step in the ladder to creating a successful ACTD. The overall goal of ACTD Program Managers (PHs) is to have their

[4] DUSD (AS&C) website. http://www.acq.osd.mil.

program either be fielded in a rapid prototype model for the war fighter, or to have the program transition into the formal acquisition cycle as a stand alone item or a component of another ongoing program. During an interview with the Military Deputy to the Deputy Under Secretary of Defense for Advanced Systems and Concepts, Navy Captain Mike Knollmann, I was given a much broader definition of what can be deemed a successful ACTD program. Capt Knollmann said that his branch considers any ACTD which proves a certain technology incompatible with a military need to be a success as well as any ACTD which can transition even parts of the program into other ongoing programs.[5] The bottom line seemed to be that the transition "baton" should start as soon as possible after ACTD approval and continue with a dedicated team until completion.

The Office of the Secretary of Defense (OSD) maintains that the overall transition process is a task of the ACTD Manager and is governed by DoD 5000.2R.[6] The OSD maintains that there are eight possible major barriers to the successful transition of an ACTD program. Those are:

a. A contracting strategy to motivate the contractor for best value into Low-rate-initial-production (LRIP)

b. Ensuring interoperability with existing systems

c. Supportability of the system

d. Early and continuous cooperation with the test and evaluation community for the system

e. Affordability through a Cost as Independent Variable (CAIV) strategy

f. Proper funding resources

g. Evolving mission needs requirements into a formal Operational Requirements Document (ORD) by completion of the ACTD

h. Maintaining proper acquisition documentation needed for an acquisition decision to be made.

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[5] Interview; Capt Mike Knollmann; Military Deputy; Office of DUSD (AS&C); December 19, 2001.

[6] OSD website; http://www.osd.mil.

These eight barriers are not all encompassing nor should they be thought to be situational either. Planning early in the ACTD process is still the backbone to ensure a successful transition.

A major planning document for transition is the ACTD Management Plan. This plan, which is signed by all major players in the ACTD program, is the initial building block for which the transition plan is hinged. Some of the major role players in the process that are assigned in the Management Plan are the Executing Agent, User Sponsor, Lead Service, Demonstration Manager, and Operational Manager.

The Executing Agent (EA) is the Service or Agency that is tasked with the planning, coordination, and direction of all activities tied to the ACTD.

The User Sponsor is an operational level unit in support of an ACTD. This is normally a Service or Commander in Chief (CINC). This entity coordinates with the Executing Agent and allocates resources that the EA may need to support the project. The military utility assessment used by the JROC is the responsibility of the User Sponsor. Operational issues concerning transition and execution are brought to the attention of the Demonstration Manager and Lead Service by the User Sponsor.

The Lead Service is responsible for the transition areas of organizing, training and equipping. It will give feedback to the DUSD (AS&C) on several possible options for the ACTD. These options can be:

> …termination, additional technical concept development, or a proposed acquisition strategy for a potential program.[7]

The ACTD Demonstration Manager (DM) is designated by the EA, and is responsible for the planning, coordination, and activities of all development in the ACTD project. The DM supports the Lead Service in transition planning as required.

Finally the Operational Manager (OM) is designated by the User Sponsor to control all activities for the ACTD program within the scope of the user activities. The OM would normally be a vital link in the military utility assessment portion of the ACTD.

[7] OSD website; http://www.osd.mil.

The transition strategy should be determined during the early planning phase of the ACTD and incorporated into the Management Plan even though transition will not occur until successful military utilization for the specified requirement is demonstrated. The main thrust for the transitional manager (XM) should be to get the ACTD into the LRIP cycle upon completion of the military utilization. However the entry point into the acquisition cycle can vary and for that reason the XM should always consider contracting, supportability, interoperability, affordability, and definition of requirements for the particular entry point for that ACTD.[8] The earlier that the transition strategy is determined (what is the ACTD progression if it shows successful military utilization, means there is more time to plan the contracting, supportability, interoperability, affordability and requirements definition for transition process. This will ensure the filling of any gaps in these areas that may occur during the lifecycle of the ACTD.

OSD calls for a Transition Integrated Product Team to be formed if an ACTD is deemed to be in need of a "… significant level of transition preparation."[9] I think that we can safely say any ACTD that will create or augment a ACAT I program will be considered requiring a significant level of transition preparation. Examples of significant transition preparation may include but are not limited to incorporating the ACTD as a major change to an existing program, integrating the ACTD into a "Family of Systems", or placing the ACTD into the Acquisition cycle at the LRIP phase of an ongoing acquisition program.

2. System Engineering Integration and Testing (SEI&T)

SEI&T objective is to integrate mature technology that has already been developed into the current ACTD:

> …by means of system engineering and system integration to create a desired technical capability which, when combined with appropriate CONOPS [Concept of Operations] results in a new or improved military capability. Testing is required to characterize system performance and verify everything is working before demonstrating the system in an operational environment.[10]

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[8] OSD website; http://www.osd.mil.

[9] OSD website; http://www.osd.mil.

[10] ACTD Manager's Guide

Military utility will be the focus of the SEI&T stage of the ACTD. It is imperative that the TM has a firm working knowledge of project management, engineering, and information technology. Individuals who possess the qualities mentioned above so that they may serve as the "duty experts" for the TM and the rest of the ACTD team should form the TIPT.

Although not required by the ACTD guidelines, Work Breakdown Structures (WBS) are used to assist in coordinating activities in the SE&T phase as well as the entire ACTD program structure. The majority of planning for the SEI&T should still take place prior to the actual approval of the management plan (MP). Examples of areas requiring initial planning for the SEI&T phase are contract management, scope of the system, and budgeting for SEI&T activities.

It is of no coincidence that the roles of the TM and OM are not altogether different from that of an Acquisition Program Manager (PM). The TM and OM are responsible for the presentation and hopefully acceptance by the operational users of the ACTD to go forth with acquisition. Again the operational user that is trying to be "sold" this system may be a Service, acquisition command, or an independent command. To be successful the ACTD Manager's Guide states that

> …implemented a balanced system engineering and testing approach that qualifies the system to enter LRIP without encumbering the ACTD with extensive process and paperwork that has evolved under the formal acquisition procedures.[11]

Extensive operational user support and participation may be and in deed is highly encouraged through the OM. This participation allows for the continuous feedback loop from the Operational User to the TM, OM, and XM.

The final obstacle of the SEI&T phase of the ACTD process is a Demonstration Readiness Review (DRR). The ACTD Manager's Guide requires this review for the following purpose:

> It is extremely important to confirm dependable system operation before committing to a field demonstration event such as an exercise that includes large numbers of operations and planning personnel. There

[11] ACTD Manager's Guide

> should be no need to trouble shoot either individual equipment malfunctions or subsystem interfaces in the field where time and resource pressures are severe.[12]

The end-to-end test of the DRR is usually graded against the minimum and maximum expected functionalities of the system. This testing value will be of further importance during the CONOPS production by the ACTD Managers.

3. Military Utility Assessment

This is in itself the ultimate objective of an ACTD. Does the program or system fulfill the requirements that were identified as requirements by the operational users? Per the ACTD Manager's Guide, a MUA:

> …is a judgment of the military worth of a proposed capability. The assessment is performed by evaluating performance measured in an operationally realistic environment against critical operational issues. The assessment considers operational effectiveness and suitability in performing the assigned mission (can it do the job?) and overall importance to the success of military operations (so what?) in judging military worth.[13]

During this phase of the ACTD the OM should have already had a significant level of support and cooperation from the Test and Evaluation community. T&E support should be considered very early in the ACTD program. The T&E community both Developmental Testing (DT) and Operational Testing (OT) can be instrumental in the successful planning and execution of an ACTD. Examples of some of the critical elements that T&E personnel can assist with are gaining access to testing assets, developing scenarios, and data collection plans.

The results of the MUA can range from significant military utility to provides no military utility. In any outcome though the results must be able to hold up to scrutinization by the operational user, acquisition commands, Services, and higher headquarters. The role of the ACTD OM in the MUA stage of the SEI&T phase cannot be over stated. It is the responsibility of the OM to ensure coordination with all participants, planning for, conducting and reporting from the MUA, and all user

[12] ACTD Manager's Guide

[13] ACTD Manager's Guide

participation during the SEI&T phase of the ACTD. One important document that the OM is responsible for is the ACTD Assessment Plan (AP). This "living" document will be a task to undertake early in the ACTD process to identify possible costs, schedules and performance outcomes of the MUA.

At the conclusion of the MUA the TM, OM, and XM will produce an Assessment Report (AR). This report will be provided to the Oversight Group and the User, Technical and Transitional Sponsors. This report will form the basis for the final MUA output report: the Transition Recommendation.

D. RESIDUAL OR TRANSITION PHASE

Upon completion of the AR, the ACTD will be ready to enter its transition phase. As discussed early, there are three major transition decisions that can occur:

1. Transition to a formal acquisition program and field residual system(s)
2. Field residual system(s) only
3. Terminate the ACTD Program

Should the determination to transition to an acquisition program occur prior to the two-year mark in the ACTD program, the ACTD Managers will be required to pass the knowledge of the program on to the acquisition command. Should the decision to transition take place after the two-year mark, the operational unit using the residuals will be responsible for passing on the knowledge of the program. Although the participation of the OM is required in the transitional phase, the cooperation of the TM, XM, and OM throughout the process is vital to the success of the transition phase. The transition phase is broken down graphically in figure 4.

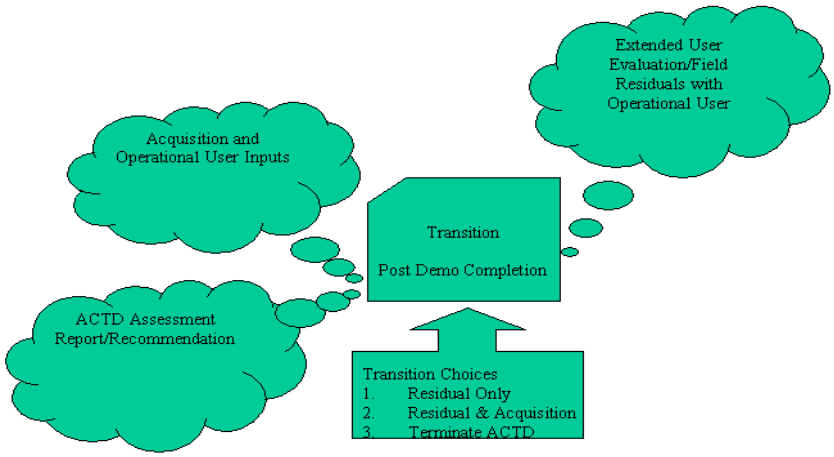

Figure 4. Transition Phase Graphic "After Ref. [27]."

The key element in transition planning is the early assignment of a XM, and the early and continuous coordination between the OM and XM. One possible goal of the XM and OM can be to perform an Extended User Evaluation (EUE) as shown in Figure 4. This is accomplished by turning the ACTD residuals over to the Operational User for a period of usually two years. During this time the Operational User will evaluate the residual prototype against real world needs of that unit.

E. ACTD FUNDING AND PAST PERFORMANCE SYNOPSIS

As discussed earlier, the DoD 5000 series is the governing regulations for acquisitions within the Department of Defense. When a formal acquisition program is initiated the PM has very stringent guidelines that must be followed with regards to budget and monetary constraints. Each portion of the program is governed by a line item in the Presidential budget. ACTDs on the other hand are not constrained by Congress or the same regulatory guidelines as formal acquisition programs. Currently approximately 10% of the overall funding of an ACTD comes from the Deputy Under Secretary for Defense (Advanced Systems and Concepts).[14] This funding is sometimes referred to as supplemental funding.

This supplemental funding is programmed by DUSD (AS&C):

[14] Interview; Mark Peterson, Senior Program Analyst, Office of DUSD (AS&C); 19 December, 2001.

> …is for (1) integration of the technologies with existing systems for the demonstration, (2) providing multiple copies of system elements where that is critical to the user's evaluation of military utility, and (3) technical support of the residual capability, during which time the user will continue to evaluate the concept during routine training activities and will continue to mature the concepts of operation.[15]

DoD research labs and/or Services will provide the majority of the remaining funds required for the ACTD. The funds that are used for ACTDs usually come from the Research and Development(R&D) 6.3 fund category. The full breakdown of the DoD (R&D) funding is shown in Table 2.

Numerical Code	Code Definition
6.1	Basic Research
6.2	Applied Research
6.3	Advanced Technology Development
6.4	Demonstration and Validation
6.5	Engineering and Manufacturing Development
6.6	Management Support
6.7	Operational Systems Development

Table 2. R&D Budget Categories

It should be noted that although the ACTD Programs do not fall directly under the oversight of normal acquisition regulations, it is imperative for the OM and XM to maintain some coordinated effort to meet certain formal acquisition regulatory goals to ensure a successful transition. The ACTD Manager's Guide states that:

> Funding for follow-on acquisition must, at some point, be included in the Lead Service POM. Scheduling MUA to provide emerging results at critical points during the POM cycle will provide added justification for essential programming and budgeting actions.[16]

[15] ACTD Guidelines: Formulation, Selection, and Initiation; http://www.acq.osd.mil/actd/guidelns/formulat.htm; October 2001.

[16] ACTD Manager's Guide

Coordination between the Lead Service's Acquisition Agency, the OM, and XM is crucial to this funding success.

F. TRANSITION MANAGEMENT ISSUES

The similarities with the ACTD process and the formal acquisition process are maybe not as blurred as first thought. Both programs expect and in deed encourage the use of IPPDs for planning. Both programs require an experienced management team with a broad range of expertise from program management, contracting, and technical. Tailoring of reports and requirements for documentation are yet more similarities in the two programs.

Oversight for all ACTDs will evolve from the DUSD (AS&C) office. Then the JROC will recommend a Lead Service who will usually assign an OM and XM. The TM will more than likely be assigned through one of the DoD's research laboratories or commercial research facilities participating in the program. The sheer fact that there are so many managers in the ACTD program makes it absolutely essential that those individuals support the ACTD Management, Implementation and Transition Plans in full. These documents are the "stick and rudder" for the entire program.

The ACTD program is built under the theory of maximum flexibility for the ACTD Team with minimal reporting and documentation requirements. Currently there are only two documents that require Executive level review: the Implementation Plan and the Management Plan. Periodic reviews of the programs are conducted by oversight groups (usually semi-annually or as required), and milestone updates and reports are provided to the DUSD (AS&C) by the ACTD Managers.

G. CONCLUSION

The ACTD Process was designed to rapidly insert mature technology into the war fighter with the least amount of acquisition oversight. The development of new technology was not a factor believed to be in keeping with the goal of the ACTD program. Millions of dollars are spent each year on ACTD programs that may or may not provide the military utility that is required of the program to succeed. However, without assertive, knowledgeable managers who understand that early planning and

coordination will enhance a programs ability to transition the program is doomed for failure from the start.

The second phase of the ACTD process concludes with a Military Utility Assessment by Operational Users. This data is crucial for the preparation and submission of the final AR by the OM to the ACTD Decision authority.

The management of an ACTD program is complicated more by the coevolving of three managers each of whom depend upon the others to perform independently as well as a team. Formal Acquisition program skill sets enable the ACTD managers to utilize some of the same skill sets as needed within the formal acquisition process. These include but are not limited to IPPDs and Project Management principles.

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III. JOINT THEATER LOGISTICS ADVANCED CONCEPT TECHNOLOGY DEMONSTRATION

A. BACKGROUND FOR JOINT THEATRE LOGISTICS (JTL) ACTD

In August 1990 the United States and Allies from around the world undertook one of the greatest logistical build-up operations since perhaps Vietnam and in some respects larger than ever seen by a military force. The nature of that build-up is one which the United States does not foresee ever happening again in the dynamic world environment that our military is operating in today. In 1999 Army General John M. Shalikashvili, Chairman, Joint Chiefs of Staff, signed and thereby approved Joint Vision 2010. This document was to layout the concept of how America's military would build, train, sustain, and fight in the year 2010 and beyond. The major theme of the document was an increased presence in the "joint" or "purple" war-fighting world. The document also forged four major tenets to the success of the military in these future years:

> …to develop four operational concepts: dominant maneuver, precision engagement, full dimensional protection and focused logistics.[17] See Figure 5.

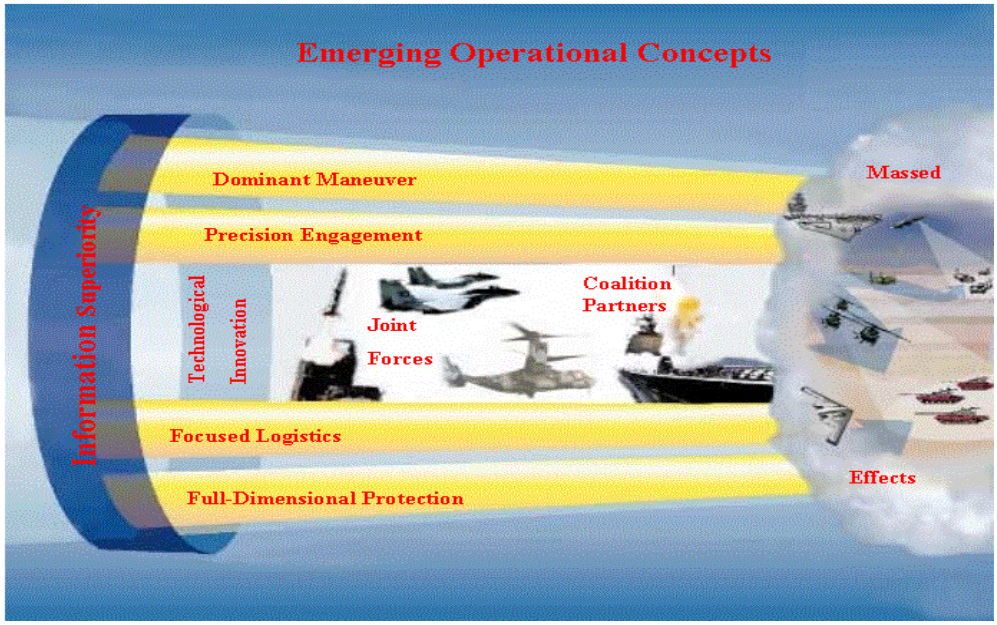

Figure 5. JV2010 Emerging Operational Concepts "After Ref. [31]."

[17] Joint Vision 2010 Publication; Joint Chiefs of Staff; June 1999.

The concept of focused logistics is what prompted the formulation, initiation and management of the JTL ACTD.

The J4, Joint Chiefs of Staff, and JV2010 describes the operational concept of focused logistics as:

> …as the fusion of logistics information and transportation technologies for rapid crisis response; deployment and sustainment; the ability to track and shift units, equipment, and supplies even while en route, and delivery of tailored logistics packages and sustainment directly to the war fighter.[18]

The JTL ACTD set out to address three specific military needs as they were assessed against the context of JV2010:

1. Operations/Logistics C2 processes, operators, and communications channels are separate and disparate. A capability to couple operations and logistics, in a virtual collaborative environment is needed.

2. Logistic planning processes are time consuming and resource intensive. Automated support, which will assist in rapid generation of logistical plans and tasks, is needed to speed the overall operation.

3. Information sources are outdated and inaccessible. Both logisticians and operators need automated assistance to track critical items, events, and support relationships of interest during an operation.[19]

The goals of the ACTD were to be accomplished by utilizing existing mature technologies from the Defense Advanced Research and Projects Agency (DARPA), government off the shelf (GOTS) software and commercial of the shelf (COTS) software. These "tool sets" would be originally broken into three areas:

1. OPSLOG Collaborative Planning Tool (Operations/Logistics collaborative capabilities)

2. LOG Analysis and Plan Development Tool (Logistics resource allocation and tasking capabilities)

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[18]JCS,J4 http://www.dtic.mil/jcs/j4/projects/foclog/execsum.html

[19] JTL ACTD Management Plan. Pg 6.

3. Log Watchboard Tool (Logistics situation tracking capabilities)[20]

To achieve the three above capabilities, the ACTD was to focus on three major focus areas:

1. Common User Interface. Compile a web-based, computer assisted planning capability that would be compatible with the current Global Combat Service Support (GCSS) Family of Systems that was mandated by JV2010. This interface would further be integrated with the applications, information and collaborative capabilities of the operator's staffs.

2. Enhanced Collaboration and Analysis. This would demonstrate near real-time operations/logistics collaboration capabilities.

3. Total Logistics Awareness. This would demonstrate the near real-time monitoring of the logistics situation and time-based status of critical items, events and trends. This would utilize emerging technologies, predictive modeling and simulation, and agent-based assembly of relevant information.[21]

The breakdown of the Organizations, Roles and Responsibilities of those participating and overseeing the JTL ACTD is broken down as follows:

1. Lead Agency. Defense Information Systems Agency (DISA)

2. Executing Agent. Advanced Information Technology Services Joint Program Office (AITS-JPO)

3. DARPA. Provide PM and resources laid out in Implementation Directive.

4. CINC Sponsor. Commander in Chief, US Atlantic Command (CINCUSACOM)

5. Supporting CINC. US Transportation Command (USTRANSCOM)

6. JTL ACTD Oversight Group. Detailed by the DUSD(AS&C)

7. OM. Provided by USACOM, J4

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[20] JTL ACTD Management Plan. Pg 6.

[21] JTL ACTD Management Plan. Pgs 7-8.

8. TM. Provided by DISA

9. XM. Provided by DISA. The JTL ACTD Management Plan stipulated that the XM and TM would be same person responsible to the GCSS Chief Engineer to guide integration and transition.

10. Operational User. US Joint Forces Command (USJFCOM)

Finally the focus again of the JTL ACTD is:

> …on tightly coupled integration of J3 and J4 tools for near real-time operations/logistics management into the GCCS and GCSS 4.0/5.0 architectures and systems.[22]

B. JTL OPERATIONAL PHASE

1. Transition Planning and Preparation

Section Five of the JTL ACTD Management Plan detailed a transition strategy and schedule. The MP is written to be flexible as the ACTD progresses so as to be able to be changed should the scope of focus of the ACTD change. The AITS-JPO Independent Verification and Validation (IV&V) was tasked to be the monitor and oversight agent for the JTL ACTD transition. Their main goal was to ensure that the ACTD met minimum guidelines for the Defense Information Infrastructure Common Operating Environment or DII COE. The version that JTL was supposed to achieve was 4.X and 5.X. It was determined that each year another capability would be:

> …put on the JTL ACTD Web site and then the source code, documentation and any other materials that may be required will be turned over to IV&V and GCSS integration.[23]

Figure 6 depicts the proposed JTL ACTD transition schedule.

[22] JTL ACTD Management Plan. Pg 11

[23] JTL ACTD Management Plan; pg 24

Event	FY	QTR	Month
Implementing Directive	99	2	Mar-99
Management Plan	99	3	Jul-99
BAA	99	4	Aug-99
Exercise Schedule	99	4	Sep-99
Transition Plan	00	1	Dec-99
Begin OPSLOG Collaborative Planning ToolDevelopment	00	1	Dec-99
Contract Negotiations	00	2	Jan-00
Contract Award	00	2	Mar-00
Assessment Plan	00	3	Jun-00
Demonstration of OPSLOG Collaborative Planning Tool	00	4	Sep-00
Begin LOG Analysis and Plan Development Tool Development	00	4	Sep-00
Begin Log Watchboard Tool Development	00	4	Sep-00
Demonstration of LOG Analysis and Plan Development Tool	01	3	Jun-01
Complete OPSLOG Collaborative Planning Tool Development	01	3	Jun-01
Complete LOG Analysis and Plan Development Tool Development	01	4	Sep-01
Transition OPSLOG Collaborative Planning Tool	02	1	Dec-01
Transition LOG Analysis and Plan Development Tool	02	1	Dec-01
Demonstration of Log Watchboard Tool	02	1	Jan-02
Complete Log Watchboard Tool Development	02	4	Sep-02
Military Utility Exercise	02	4	Sep-02
Transition Log Watchboard Tool	03	1	Dec-02

Figure 6. JTL ACTD Transition Schedule "From Ref. [17]."

Section 5.1 of the MP stated that the XM would be responsible to the GCSS Chief Engineer for the integration and transition of JTL ACTD technologies. The residual capabilities from the JTL ACTD were to be software and documentation only. There would be three such software residuals according to the MP.

Section 5.2 passed responsibility for the ACTD on to DISA and the GCSS and GCCS Programs within DISA. Several problems seem to have arisen during the development of the JTL ACTD that has placed additional obstacles to transition on the

ACTD. Several interviews that I conducted at DISA yielded the following recurring themes:

1. Lack of resources (personnel & money); did not match requirement.[24]
2. Communication between DISA (GCSS) and DARPA was strained.[25]
3. XM assigned late in ACTD process by DISA (Not until 3rd year).[26]
4. No clear guidance from DISA to developers of baseline technology to build to in order to have a successful transition into the GCSS Family of Systems.[27]

According to the JTL IP and MP, the sole purpose was to complete a set of tools that built on to the technology that was demonstrated by the JL ACTD. The transition strategy should have been, in my opinion, to compliment the transition process also used in the JL ACTD; however, there was a lack of early planning on the part of the Executive Agency to ensure this occurred. There was a clear need for a Transition Integrated Product Team (TIPT) given the very nature of the ACTD. Software integration into a known Family of Systems under the GCSS program was and still remains a very problematic process.

2. System Engineering Integration and Testing (SEI&T)

The JTL ACTD System Engineering Integration and Testing (SEI&T) work Breakdown structure is pictured in figure 7 below.

[24] Interview with Jackie Hubbard, XM, JTL ACTD, DISA, 19 December, 2001.

[25] Interview with Jackie Hubbard, Kathy Kaseman, and JTL ACTD Lou Mason, 19-21 December, 2001.

[26] Interview with Jackie Hubbard, XM, JTL ACTD, DISA, 19 December, 2001.

[27] Interview with Kathy Kaseman and Lou Mason, 19 & 20 December, 2001.

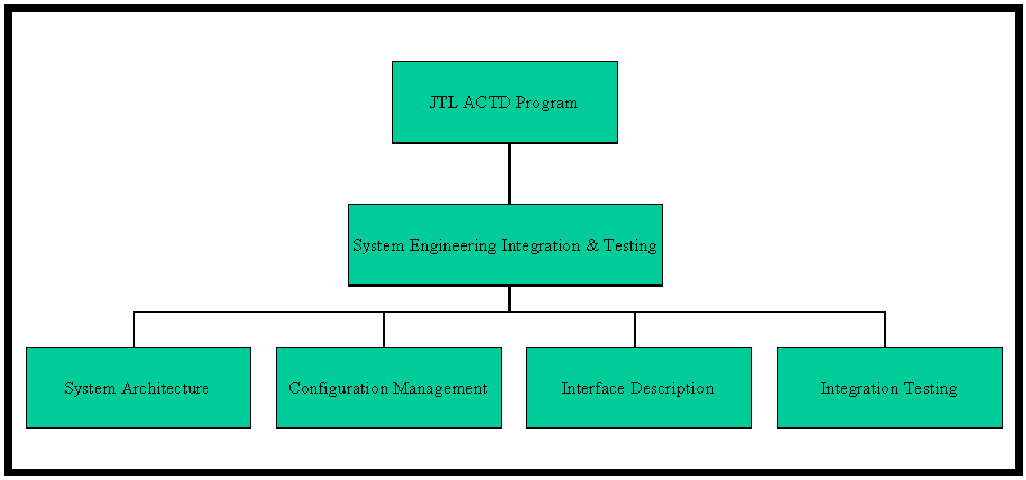

Figure 7. JTL ACTD SEI&T Work Breakdown Structure

Page 27 of the JTL MP called for several documents to be drafted in regards to the SEI&T portion of the ACTD. Those documents were the a) System Engineering Management Plan, b) System Integration Plan, and c) Configuration Management Plan. [28]

The System Engineering Management Plan (SEMP) was to be used to give direction to the refinement of system requirements once the developers received the validated user requirements. Also it would serve as the principle roadmap for the development of the functional and physical architecture, interface design specifications, and finally optimization of the system through alternative, formal tradeoffs, and prototyping.

The System Integration Plan (SIP) was to be used to be used to maintain system integrity compatible with that of the system compliance verification plan. It would also detail the testing of system integration within the JTL ACTD as well as that of JTL to feeder systems.

The Configuration Management Plan (CMP) would be used to develop and manage system level configuration. It would lay out standards for the developers while building subsystems and components to the ACTD.

The SEI&T plan called for a progressive nearly annual approach to Integration and Testing which would culminate each year with a deliverable of a portion of the JTL

[28] JTL Management Plan; pg 27

tool set. Figure 8 depicts the planned start and end schedule for the JTL ACTD tool sets which would coincide with a yearly demonstration of the current tool set. The final Military Utility Assessment was scheduled for FY 02 in conjunction of the completion of the Logistics Watchboard Tool.

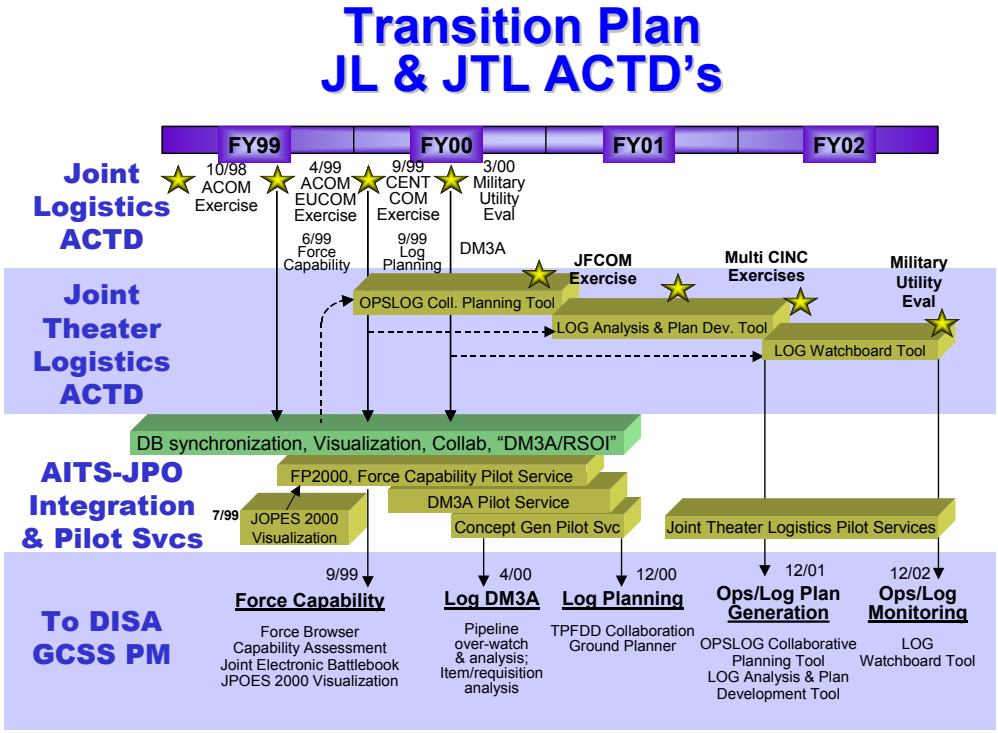

Figure 8. JL & JTL ACTD SEI&T Schedule "From Ref. [17]."

At the core of the JTL ACTD SEI&T effort seemed to be a spiral development process for the software toolsets that would operate on DoD compliant hardware. The spiral development approach allows for the user to continually refine requirements during the development process through feedback mechanisms to the developers. The JTL ACTD feedback mechanisms were embedded in the annual demonstration exercises as well as a proactive approach of "selling" the ACTD products to various military organizations.

The Program Manager intended to create a high level of visibility among a wide spectrum of the DoD operational and logistics community. Figure 9 indicates a short list of organizations briefed on the JTL ACTD as of the Military Utility Assessment Exercise held in March 2002. Stated in the JTL ACTD MP is that the DISA Center for Integration

(CFI) or DISA COOP and Test Facility (DCTF) would perform the final integration and testing of the ACTD components to ensure that all met compliance standards.[29] The MP stipulated that the requirements for DII COE 4.x or current standard would be adhered to.

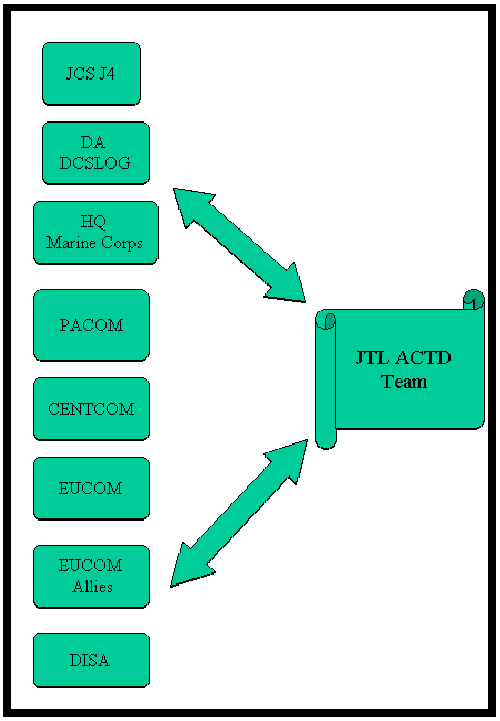

Figure 9. Commands Briefed on JTL

3. Military Utility Assessment

The JFCOM military utility assessment exercise for the JTL ACTD is not scheduled until October 2002. The goals of that MUA remain constant from the original CONOPS of the ACTD: Provide the war fighter with a set of operational and logistics tools that meet emerging and urgent requirements. Appendix B is a detailed list of current Measures of Effectiveness (MOEs) that the JTL ACTD is being evaluated against for the MUA final report. One major hurdle for the development team for the JTL ACTD was having a solid DII COE architecture to develop towards. This is a major issue due to the need for interoperability and integration of the JTL ACTD into the Global Combat Support System and Global Command and Control System. The problem that arose from this critical need was that the GCSS Chief Engineer, according to JTL personnel, did not disseminate a definitive answer to the question of what architecture to build to.

The MUA is to be evaluated against a series of MOEs and more detailed MOPs. Table 3 is a list of MOEs, which will be utilized by the JTL team and the Test and Evaluation organization to perform the MUA assessment and final report. Appendix B is a complete breakdown of each MOE and its underlying MOPs. The appendix also details at which demonstration the MOP was evaluated.

[29] JTL ACTD Management Plan; pg 24

MOE	Description	MOE	Description
1.01	Collaboration	1.02	Visualization
1.03	Database Warehousing and Mining	1.04	Security
2.01	Conduct Operational Mission Analysis	2.02	Conduct Logistics Reviews of the Battlespace
2.03	Ability to Develop Tasks	2.04	Ability to Develop Courses of Action
2.05	Ability to Develop Logistics Estimates	2.06	Ability to Develop Support Options
2.07	Ability to Analyze Courses of Action	2.08	Ability to Access Information Used in Planning

Table 3. JTL ACTD MOE Breakdown

Currently the findings from the 3rd demonstration held at USJFCOM's Joint Training, Analysis and Simulations Center (JTASC) in Suffolk, VA March 11-15 2002 are not available. The Assessment Team for this demonstration was from the Air Force Operational Test and Evaluation Center Detachment 1(AFOTEC Det 1)based out of Kirtland AFB in New Mexico. Through an interview with the JTL Program Manager the tone of the demonstration seemed to be upbeat even though there were minor software problems during the weeklong exercise that simulated a Joint Task Force Planning Staff's functions and actions during crisis planning.

C. RESIDUAL OR TRANSITION PHASE

As of the time of writing this thesis the Executive Agent, DISA, has yet to publish a transition plan for the JTL ACTD. It is currently in Draft at DISA and I have requested a copy of the draft. During my interview with the former XM for JTL and the GCSS Chief Engineer, I was told that the ACTD would not be transitioned as it looked today to users.[30] The problem for JTL transition seems to be stemming from a lack of clear developmental guidelines on the part of the Executive Agent, and over anxious

[30] Interview, Jackie Hubbard and Robert Vietmeyer, JTL XM and GCSS Chief Engineer, 20 December, 2001.

development on the ACTD side. The XM had only recently been selected in December 2001 while there was only nine months left for the demonstration to continue. The JTL ACTD PM has been resolute in his attempt to find the ACTD a "champion" so that the war fighter in the field who has seen demonstrations of JTL will recognize that same set of tools after it has been integrated into the GCSS and GCCS family of Systems. On April 24-25 2002, the JTL ACTD tool sets were incorporated into the Homeland Security Command and Control (HLS C2) ACTD for its first demonstration at five selected sites. Should the HLS C2 ACTD find functionality in the JTL tools, the JTL ACTD could transition fully to that ACTD and in fact be deemed a total success in accordance with criteria mentioned in chapter two. The JTL ACTD could also still transition parts of the tool set in to the DISA led GCSS and GCCS systems. Transition kickoff for the JTL ACTD began on 30 April 2002.

D. JTL ACTD FUNDING

The JTL ACTD was programmed to meet a funding level of $29 million dollars, which was to be spread over a 6 fiscal year span. Table 4 and 5 (provided within the JTL ACTD Management Plan) below provide a breakdown of the programmed JTL funding.

Agency	FY99	FY00	FY01	FY02	FY03	FY04	Total
DARPA	0	5	9	10	0	0	24
DISA-JPO	1	0	0	0	1	1	3
DUSD	1.5	.5	0	0	0	0	2
Total	2.5	5.5	9	10	1	1	29

Table 4. Funding Breakdown- RDT&E ($M) "After Ref. [17]."

JTL ACTD COMPONENTS	FY99	FY00	FY01	FY02	FY03	FY04	Total
OPSLOG Collaborative Planning Tool	0	3.5	3.0	0	0	0	6.500
LOG Analysis and Plan Development Tool	0	.7	3.7	3.2	0	0	7.640
Log Watchboard Tool	0	0	1.0	5.5	0	0	6.500
Other- Planning Support	2.356	0.7	0.7	0.7	0.210	0.210	4.876
CINC Sponsor-USACOM	0.144	0.570	0.570	0.570	0.050	0.050	1.954
Testing, Cleanup & Transition	0	0	0	0.1	0.7	0.7	1.530
Total	2.5	5.5	9.0	10.0	1.0	1.0	29.000

Table 5. Funding Breakdown by Component – RDT&E ($M) "After Ref. [17]."

Currently the funding goals of the JTL ACTD stand intact and the program is scheduled to complete its normal cycle in December 2002. DARPA, for example, has remained on budget as seen in Table 2 above, but it is worth noting that only about 65% of that yearly money goes to development. The other 35% covers taxes, Congressional Cuts, SETA wages, contractor (LMI & Mitre), and operational costs.[31] The JTL ACTD Program Office has aggressively been seeking customers (See figure 9) who are willing to support the tools that this ACTD brings to the war fighter in the form of a set of Logistics/Operational tools within the GCSS. Transition money currently only exists in the two million dollars programmed by DISA for FY03 and FY04.

E. TRANSITION MANAGEMENT ISSUES

The largest transition management issue currently facing the JTL ACTD is actually approving a transition plan and being able to staff such a plan efficiently and effectively. USJFCOM has looked at how it can somehow forego transition management issues such as this in their Transition Guidance for Operational Managers. On page 12 of the Transition Guidance for Operational Managers the initial Planning for transition management is explained by the following:

> …the OM, TM, and XM should confer to determine a target transition strategy. The TM should whether the nature of the objective system and the quantities would require entry into the formal acquisition process (versus alternate approaches such as small purchases of commercial products). If entry in the formal process is necessary, define the intended entry point (e.g. LRIP)…Define strategies for the areas of contracting,

[31] Email,Lou Mason, dtd 4/30/02

> supportability, interoperability, affordability…that are consistent with the intended entry point.[32]

Another key issue with the JTL ACTD is that it was initiated with the premise that it would transition into GCSS as an application tool set for Operations and Logistics planning. DISA, being the Executive Agent for GCSS had to be an integral player in the transition planning and execution of the JTL ACTD to ensure success. Communications between the JTL ACTD team members and DISA was admittedly by both parties strained due to a sense of perceived "lack of interest" on the part of DISA and a "without guidance, develop the best offered" approach by DARPA. I believe that these two attitudes fed on a "if we didn't build it, we must rebuild" attitude on DISA's part. This led to a much weaker codependence for the team effort than should have been exhibited given the difficult nature of the software integration that was being attempted. A shear lack of communication of the correct DII COE standard to which the developer needed to work to led to some of the frustration within the ACTD. Speaking to the GCSS Lead Engineer at DISA, I was informed that any of the hardware within the JTL ACTD would probably transition easily; however, the software portions that might be incorporated would conceivably be of a totally different nature than those used in the demonstrations. This once again will lead to increased budget for the tools to be recoded (if required) and certified by DISA once again to meet standards for the current DII COE and GCSS standards.

A fundamental question that one has to ask in this case is whether or not a conclusion that this problem of transition was an isolated incident caused only by the personalities of the ACTD/DISA personnel involved, or was this problem one that is buried in the policies that guide the ACTD process from the DoD level? Would a change in the policies that govern the ACTD program have made a difference in the process followed during the JTL ACTD program? The next section will look at a comparison of the DoD guidelines for ACTD transition management and the actual process followed during the JTL ACTD program. It must be noted again that the JTL ACTD only recently began a full transition tempo with a TIPT assigned and regular meetings scheduled. Up

[32] Transition Guidance for Operational Managers; USJFCOM; pg 12; dtd 17 Sept 2001.

until this point there were only meetings of key players usually at the conclusion of one the 3 formal demonstrations held up to this point.

1. DoD Transition Guidelines

DoD 5000.2R states that the basic transition strategy is fairly straight forward:

> At the beginning of the ACTD, estimate whether the nature of the objective system and the quantities will require entry into the formal acquisition process…If entry in the formal process is necessary, define the intended entry point…Define implementation timelines for each strategy…The objective is not to encumber the ACTD to the point that it cannot be executed in 2 to 4 years, but rather to define what must be done, what can be deferred, and when the deferred activity will be completed.[33]

The first thing that would need to occur would be to determine if the JTL ACTD was going to be part of an Acquisition Category (ACAT) I program if transitioned. The GCSS Family of Systems was in fact an ACAT I program which should have mandated that a TIPT be set up for the JTL ACTD program upon completion of the MP. According to the DoD 5000.2R the TIPT should be co-chaired by a representative from DUSD(AS&C) and the ACTD TM.

When a significant level of useful assessments has been made to determine that the ACTD is in fact going to transition to formal acquisition, the TIPT should be passed to a Overarching IPT in preparation for a final review against guidelines established within the DoD 5000.2R for Major Programs. By this point it is pointed out that the transition should be fully funded because the OIPT or DAB do not formally review plans not funded by a component. At the same time as the transition IPT handoff is occurring, the Lead Service should be conducting a review (at least six months prior to end of ACTD) to address operational support requirements (manning, logistics, training, operational costs). Figure 10 is a graphic from the OSD ACTD website depicting the transition preparation timeline for ACTD programs.

[33] DoD 5000.2R and OSD ACTD Website

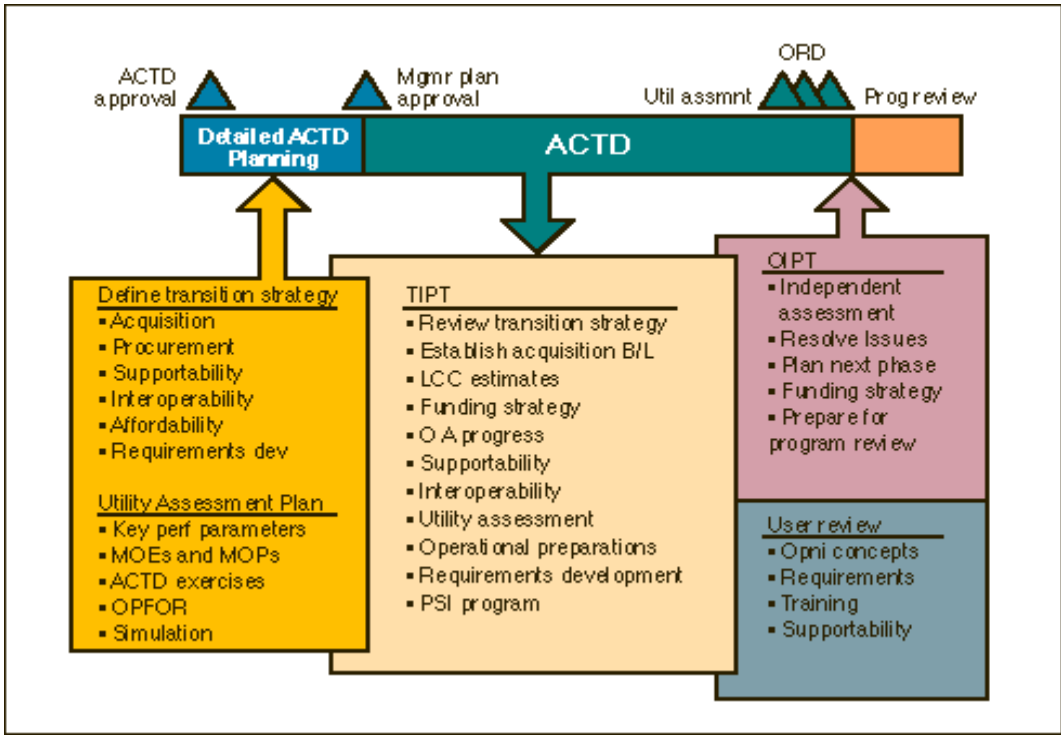

Figure 10. Transition Preparation Timeline "From Ref. [15]."

2. JTL ACTD Actual Transition Roadmap

The JL and JTL ACTDs were both designed to be software ACTD programs which would provide successfully tested and mature Joint Decision Support Tools to the GCCS/GCSS Family of Systems. I will agree with Mr. Jim Etzel, a member of the JTL ACTD team, when he states that the programs were never intended to go into formal acquisition programs themselves, but were intended to be capable of integrating with the GCCS/GCSS Family of Systems. The DoD guidelines for ACTD transition does appear to be intended for more hardware oriented ACTD programs where a specific prototype is achieved at the end of the program vice software that must be integrated with other systems even if proven successful at MUA.

According to the JTL ACTD PM, only in December of 2001 was there a draft transition plan started with modifications again in February of 2002. The current XM was appointed on 4 April, 2002 and the first transition meeting was held on 29 April. This was the first where a transition team was assembled to coordinate transition only. In the past there have been meetings usually coinciding with demonstrations concerning how to transition the tools made available in JTL to the war fighter. Currently a complete

architecture review of the JTL tool set is being planned by DISA with only a cursory "it doesn't match ours" given at this time. From a PM perspective the JTL tool set will have its best chance of transition if a Service were to pick it up for integration into their existing or transformational operational logistics systems.

Goals set for the TIPT during the first meeting appear to be in line with DoD guidelines for TIPTs, evaluating through independent entities a) Architecture (Bandwidth Requirements and Scalability), b)Information Assurance/Security, c) Data Architecture (Data Environment, Documentation, System Information) and d) the O&M Containment Tail.[34] These all seem like realistic goals to set for such an ACTD; however, with only eight months left until DARPA funding for JTL expires, this late push for transition integration may be at the cost of getting JTL JDSTs into the GCCS/GCSS arena in the near future.

The Management and Implementation Plans for the JTL ACTD seemed to have been followed as per the DoD guidelines; however, there still seems to be an increasing lack of ownership of the JTL ACTD by the Executive Agency to ensure successful transition. The fact that the JTL ACTD is not a Service led ACTD may also have played a part in the late integration of an TIPT.[35] The JDSTs that represent the mainstay of the JTL ACTD were not able to follow a Service accepted software development guideline; rather they were left to gain access to the current software build requirements that comprised the GCCS and GCSS systems at DISA. This was due to the fact that the JTL ACTD was programmed as a "Joint" Service/CINC ACTD rather than a Service specific ACTD. Earlier I discussed the lack of a clear set of guidelines for the developers to build the JTL tool set to.

F. CONCLUSIONS

The Joint Theater Logistics ACTD was slated to be built on the efforts of the Joint Logistics ACTD. It would appear that from the beginning there was a disconnect with transition preparation and planning between the OM, TM, and XM. One major problem had to be that the XM was not formally in place until late in the ACTD process;

[34] Transition meeting notes dtd 30 april 2002

[35] Email, Jim Etzel, dtd 16 May 2002

therefore, there was no champion at the Executive Agent, DISA, ensuring that documentation and planning were underway early enough to alleviate some of the problems facing the JTL ACTD as it comes to the end of its normal cycle and heads into the MUA.

USJFCOM has put together through their ACTD Branch a very comprehensive guide for Operational Managers on the transition process. It introduces a strategy known as the USJFCOM Joint Interoperability and Integration strategy. A major tenet of the strategy is the Doctrine, Organization, Training, Material, Leadership, Personnel, and Facilities (DOTMLPF) plan.

While discussing the ACTD process and goals with the Deputy Under Secretary for Defense (Advanced Systems and Concepts) office, I was told that DUSD (AS&C) has a more lofty approach to determining whether an ACTD is successful or not. Where many PMs may consider nothing less than a total transition a success, they consider any transition of any product from an ACTD or no transition (if the military utility is not proven) to be a success. If the JTL ACTD transitions into the GCSS family of systems and/or into the Homeland Security Command and Control (HLS C2) ACTD then I think that it will be a successful transition. The real verdict will have to be reserved until final MUA and CINC/DUSD findings occur.

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IV. IMPACT OF ACTD TRANSITION ON ACQUISITION PROGRAM

A. OBSTACLES

A 1997 Audit Report (Rpt No. 97-120) prepared by the Department of Defense Inspector General's Office was the first formal audit of the new ACTD program. The audit sited several findings that were addressed, corrected, or rationalized by the DUSD(A&T) Office and included in the new release of the Defense Acquisition Deskbook (DAD). Those findings in part were that the use of Integrated Product Teams should be utilized in the transition effort of future ACTDs, that only mature technology should be utilized when executing an ACTD, and that clearer definitions of terms, policies, and practices be published by DUSD(A&T) in support of the ACTD Program.[36]

Five years later has seen yet another formal audit being conducted by the DoD IG's Office in the transitioning of ACTDs. At the time of this thesis the audit was still ongoing and the DoD IG's Office would not release any findings until the audit was completed and approved for distribution.

From the perspective of this military Officer conducting research in the Washington, DC "Beltway", I found what I considered several main obstacles to the transition effort of ACTDs. These are in no particular order of importance since they all strike me as being vital to the continued success of the program:

1. Lack of Science and Technology (S&T) Funding for Services to support ACTD programs.

2. Lack of clear and concise communications between the ACTD Managers and Executive Agents such as DISA in proper requirements validation prior to development. This coupled with a somewhat ambiguous set of guidelines concerning differences between hardware ACTDs (e.g. the Predator) and software ACTDs (e.g. JL/JTL).

3. Lack of a Joint Forces "Champion" to deal with the ACTDs that are all supposed to be of a Joint or "Purple" variety.

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[36] Advanced Concept Technology Demonstration Audit Report; Office of Inspector General, Department of Defense; April7, 1997.

Services continue to battle annually for an ever decreasing amount of S&T funding dollars from Congress. In the past 5 years the S&T budget for the Marine Corps alone has only been $468,394.00. During an interview with the Marine Corps' ACTD Manager in December 2001, I was told that he routinely sits in on meetings with the Breakfast Club and has to inform the Assistant Commandant of the Marine Corps that they do not have the S&T funding to support an ACTD that may be on the table. Services I believe will remain reluctant to agree to fund the ACTDs properly until a suitable solution to the "what am I getting for my buck" question is answered. Speaking to a senior Program Analyst at the Pentagon within the DUSD(AS&C) office, I was told that many attempts at solving the up front cost of an ACTD have been discussed. One solution would be to pool money from each Service and then yearly allow the Breakfast Club (JROC) to prioritize and assign money from that pot to the ACTD programs. The JROC would then assign a lead Service for the duration of the program.[37] The money would help to defray the cost of the up front years, but would lock a Service into a POM cycle for the residual years or "out years." Once again this is only taking money from the Services to pay a Joint bill. Another solution would be to have Congress increase funding for the ACTD Program. It was estimated that the DUSD(AS&C) Office would require a plus-up of over $100 million dollars to accomplish the total funding of the first 2 years of the ACTD program. See figure below for a graphical depiction of the suggestion.

The first two years of the program would be funded by the DUSD(AS&C). The Lead Service would have to program money into its POM cycle that year for the year 3 and 4 funding. Then the Service would only have to fund approximately 25% of the residual years (years 5 and 6) with the Joint Acquisition Executive funding the other 75%.

The theory of a Joint Acquisition Executive, JAE, would alleviate the problem that the current Joint Forces CINC has no Title X authority. With one and only one Acquisition Executive for the Joint programs coming from an ACTD there would be a

[37] Interview, Mark Peterson, Senior Program Analyst, DUSD(AS&C) Dec 18 2001.

clear champion for that program with vested interest in seeing it succeed. The figure below assumes that the candidate was chosen and approved in FY02:

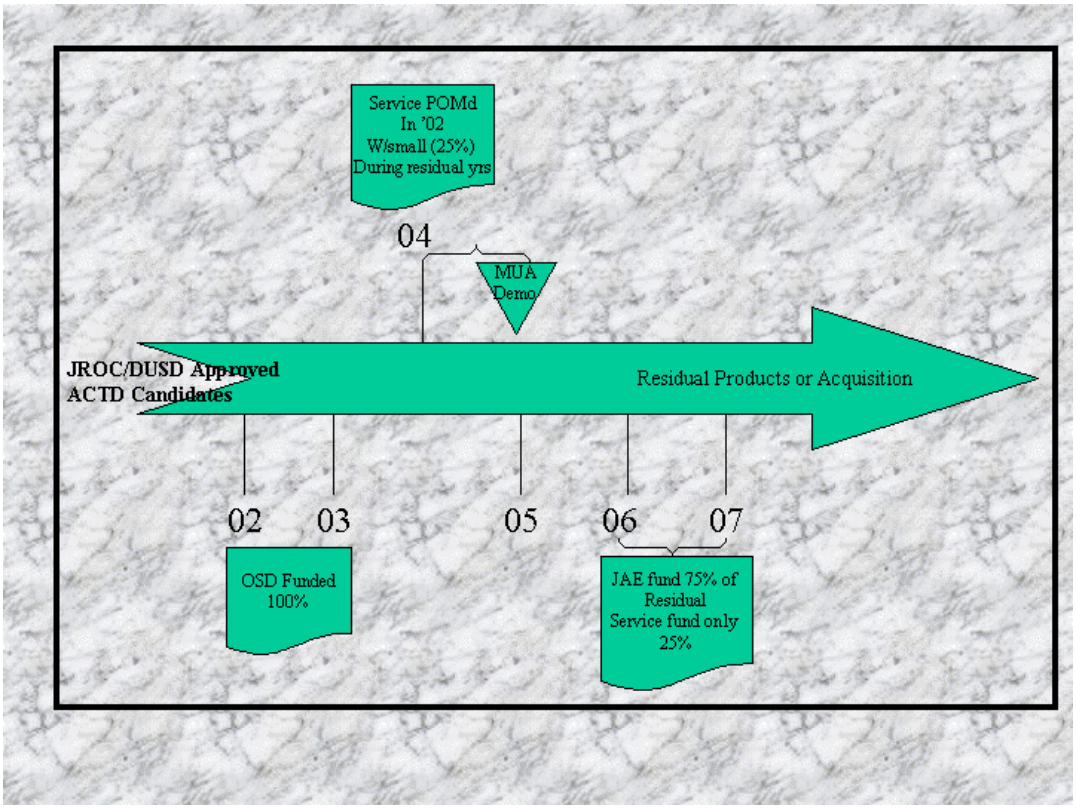

Figure 11. JAE ACTD Concept

Lack of communication or lack of pushing correct requirements to the developers for integration into the GCCS/GCSS systems seems to be a major hurdle for ACTDs (at least with the two that I looked at). A whitepaper written describing the problem of DII COE Convergence and the use of ACTD initiatives describes the problem as:

> …Joint Logistics and Joint Theater logistics have been able to provide limited sets of users with some much needed deployment/redeployment and other logistics information. However, neither the DII COE approved GCCS operating system nor database structures are prepared to accept the technical solutions identified. Security has not reviewed these final products sufficiently, nor has the DISA Center for Integration aligned itself to test them as usable DII COE segments. Instead, re-engineering efforts are underway by GCSS to move these capabilities backwards in the DII COE, or delay fielding until JOPES 2000 provides the needed database structure.[38]

[38] Convergence of DII COE Migration Path and ACTD Initiatives; Maj Heckroth; 6 Feb 2001

B. BENEFITS OF SUCCESSFUL TRANSITION

What are the benefits to having a successful transition of an ACTD to a formal acquisition process or to residual fielding of prototypes or further development within another ACTD? I think that if you were to talk to individuals on each level of the ACTD program you would probably be able to receive a different answer from each. To me the most important opinion is that of the war fighter. These are the men and women that the program was designed to ultimately benefit, and without them there would be no need for the program.

The benefit to the war fighter is that he/she gets a mature technology in an military utility proven prototype and later system (depending on transition strategy) that meets the urgent needs they communicate to the CINCs or Services. This residual is usually available in a relatively shorter timeframe (3-4 years) than if the system were introduced as a formal acquisition program.

If you go to the ACTD Program Manager you would get a view that they have solved an urgent military requirement with the least amount of time, documentation, and oversight that is possible. The reduced requirements for documentation and oversight of an ACTD as compared to the formal acquisition cycle allows the PM to focus only on meeting the requirements of the war fighter in an expeditious manner.

If you were to go to a formal acquisition PM who has been able to insert mature technology from an ACTD into the program he/she is currently running they would more than likely tell you that it allows them to be able to insert proven technology in at intervals that reduce the Research and Development phase of the acquisition process and may mean a reduced cost of ownership for the overall program. The ACTD can give a PM the leverage to insert new technology into say the LRIP portion of the acquisition cycle with little impact on the schedule or budget program line of the formal program.

Successful transition of an ACTD program will mean different things to different personnel and to different programs. The bottom line of a successful transition should be that it helped to get the mature technology to the war fighter in an expeditious manner while possibly saving money and effort in the process. For the JTL ACTD, a successful transition would mean that the war fighter would have a proven military capability that it

does not have currently in the GCCS/GCSS Family of Systems, an Operational Logistics Joint Decision Support Tool Kit tailored for the Joint Tack Force commander and the CINCs.

Measures of the benefits of the successful ACTD transition can and should be measured in the amount of time, money, manpower, and duplicated effort that were able to be cut out of acquisition programs who use ACTD products or those deriving directly from the ACTD itself. The monetary value to a program that an ACTD product that can be introduced at LRIP vice R&D will bring is readily measurable and in fact becomes a "bullet" for the PM if used properly. The value of the JTL ACTD products will not be ready to determine by the time of this thesis' printing, but after the program has ended this analysis can surely be of great interest to the government.

Under Secretary of Defense for Acquisition, Technology, and Logistics (USD AT&L) has stated that he places a high value on the ACTD program and its ability to enhance the acquisition cycle in favor of the war fighter.[39] The Acquisition Initiatives Office within the Office of the USD (AT&L) use the current DoD 5000 model to show how ACTDs can leverage mature technology to increase availability of Milestone B and C entrance into the Acquisition cycle. (See Figure 12)

[39] "Acquisition: From Reform to Excellence", ACTD Manager's Conference Brief, September 6, 2001.

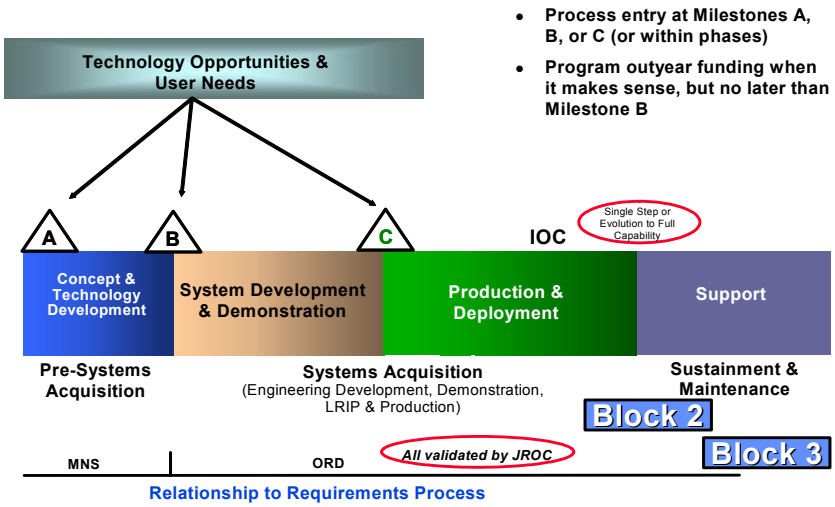

Figure 12. DoD 5000 Model "From Ref. [30]."

The Office of the USD (AT&L) considers the approval of an ACTD as an approval of a Mission Need Statement (MNS). Therefore, a ACTD could enter the acquisition cycle at milestone C if all acquisition requirements are met and the ACTD deems fully military utility a success. Again the ACTD has been heralded as a means to reduce the total ownership cost and production time for formal acquisition programs.

C. CORRELATIONS OF TRANSITION ISSUES WITH OTHER RAPID ACQUISTION PROGRAMS

1. Future Naval Capabilities Program

The Future Naval Capabilities Program was approved in 1999 to concentrate the Department of the Navy's Scientific and Technology resources on the near-term achievement of programs to support the Navy and Marine Corps. In much the same way that the ACTD program goes through a high-level executive decision making board (JROC) for approval, the FNC programs are prioritized and approved by a similar board consisting of the Vice Chief of Naval Operations, the Assistant Commandant of the Marine Corps, and the Assistant Secretary of the Navy for Research, Development, and Acquisition. Central to the management of the FNC programs are Integrated Product Teams that include representatives from the acquisition, science and technology, operational, and requirements and resource sponsor.

The typical FNC program is set up in much of the same way that an ACTD is (in regard to time table). The following figure depicts what ONR's "Transitional Profile" looks like for the typical FNC. One of the main premises behind the current setup of the FNC program is that there will be significant program buy-in and responsibility up-front. Currently the program has 12 FNC programs in progress , and of those none have come to a point where the transitional strategy has been significantly tested. However, unlike the ACTD programs, the FNC program is Service specific (while still sharing S&T information with other Services and Departments) so the Resource Sponsor has a vested interest in seeing the program through to fruition. One similar problem that the FNC program will begin to face is that of budget constraints. Speaking to a senior Officer at ONR, I was told that ONR's budget is currently being decreased

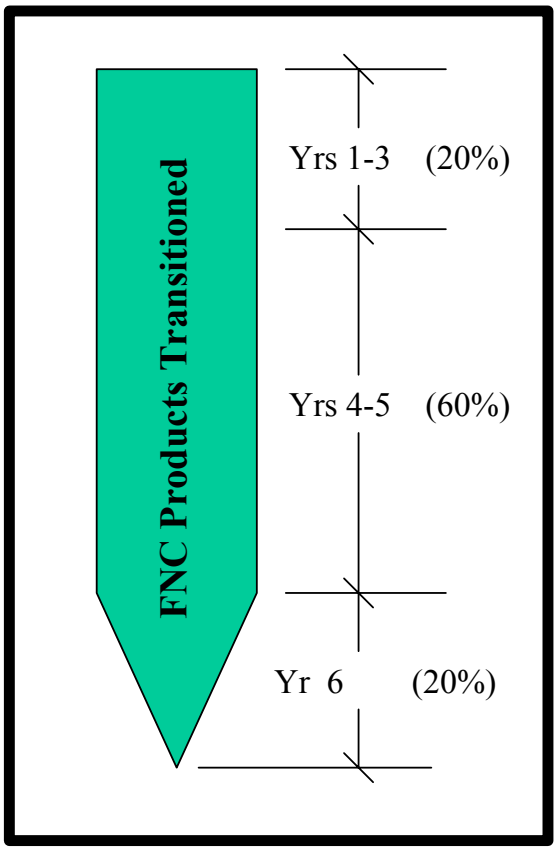

Figure 13. FNC Transition Schedule

by 8% while the FNC program is increasing by 10%. ONR is fielding an attempt to head off any large scale drawbacks from this by proposing a limit on the FNC program to 500 million or 30% of ONR's Total Obligation Authority (TOA).[40] Admiral Jay Cohen of the Office of Naval Research has made it clear at ONR that he will not preclude programs (of value) from other Services in an attempt to foster further S&T cooperation among the Services and Agencies within and supporting the Department of Defense.

D. CONCLUSIONS

The ACTD and FNC programs were developed to rapidly speed technology to the war fighter. This premise should in my opinion be at the pinnacle of every science and technology and research and development project that the Department of Defense

[40] Interview, Capt Rich Kikla, Transition Manager, FNC Program, dtd 5 May 02.

undertakes. Although the present administration has supported an increase in Defense spending, I think that the DoD owes it to the American people and more importantly to those men and women who are in the uniformed services to only develop and procure viable technology that will aid in the current and future protection of the American principles and way of life. Currently transition of technology within the realm of the S&T and Acquisition communities within DoD is more vital to the national security than perhaps at any other time in US history. The benefits of a rapid transitioning technology framework as seen in the ACTD program and as envisioned in the FNC program can not be overstated. Mature technology that will decrease the R&D time line, budget requirements, and total cost of ownership will certainly benefit the entire DoD. Further attempts to put into place policies and guidelines that will help to govern these transition programs are needed and should be embraced at all levels of the DoD and Executive Level Chain of Command.

V. CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

During the research and evaluation of the JL/JTL ACTD programs, I found that there appears to be a significant lack of procedural guidelines when software ACTD programs are approved. The current guidelines, in my opinion, are much more tailored to a hardware type programs that will have tangible assets that are stand-alone and usually have a Service as the Lead Agency. With that being said, if the guidelines currently in place would be rigorously adhered to in connection with the Implementation and Management Plans, transition should be able to occur without major obstacles. In regards to this thesis I would like to tailor my conclusions to several key areas:

1. DISA Involvement with Developers and DARPA throughout ACTD

It appeared to me that if you looked blindly at the JTL Implementation and Management Plans the support of DISA was there and signed off on by the GCSS Chief Engineer. However through the interviews that I conducted at both DISA and DARPA it seemed apparent that the perceived support was not furnished and that led to developers not having a clear baseline to develop the JDST tool set towards, and this in turn looks to have led to a increased amount of testing and integration funding required now at DISA to include the tools in the next version of GCCS/GCSS.

2. Joint ACTD Programs Suffer without a Joint Acquisition Executive

The increased focus of the DoD on Joint or "Purple" systems does not appear to have yet spilled over into the acquisition process hierarchy. The JL and JTL ACTDs were joint programs that were centered around the JDSTs to develop a operational logistics tool set within the GCSS. US Joint Forces Command, although a major player as the Operational Manager, does not have Title X authority. Therefore the funding for this program has to be footed by other sources. The residual years of the JTL ACTD program will most likely be funded by individual Services that like the JDST tool set that was developed and demonstrated. The DUSD(AS&C) Office has clearly seen that a program without a clear "Champion" has an uphill battle from inception. The Services

are more and more looking at joint endeavors as a budgetary constraint rather than a value added option.

B. RECOMMENDATIONS

1. Selection

For the purpose of this thesis I use the term selection to mean the process of selecting the yearly ACTD programs to be funded by the DoD and/or Services/Agencies. I believe that a joint monetary account taken from the Service's S&T budgets with final ACTD approval and Lead assignment by the JROC yearly would be best. The DUSD(AS&C) would surely have to address an increase in the President's budget for upfront funding of the first 2 years of the ACTD program. The Lead Service would then be required to POM for the 3rd and 4th years with some small outlay in years 5 and 6 for residual or out years. A Joint Acquisition Executive who would oversee all "Joint" ACTD programs should be included in the JROC and should be given Title X authority.

2. Operational Phase

The Operational phase of the ACTD programs should more strictly adhere to the guidelines set down by DUSD(AS&C). I would also recommend that the current guidelines for ACTDs be updated to reflect the inherent differences between hardware and software type ACTDs. There is in my opinion enough of a difference in the typical path of these two to merit a separate set of guidelines. The overall scheme of maneuver that has been set down for the ACTD program seems to be solid as it is currently stated other than the noted exceptions above.

Although the planning of the ACTD is crucial to its success, the execution of the planning documents is ultimately what will determine the success or failure of the ACTD process. In Section A, subparagraph 1 above I discussed what appeared to be a failure of communications between DISA, DARPA, and the developers. I asked the Military Deputy to the DUSD(AS&C) what if any oversight can OSD have on the process. Particularly, what oversight can OSD have to ensure that the signatories of the ACTD Implementation, Management, and Transition plans complete the tasks that they have agreed to do by signing the plans? His response was "…work the chain of command." OSD feels that the General/Flag Officer/SES (GO/FO/SES) level leadership would rather

comply with the plans than be branded as "shortshrifters."[41] This would leave me to recommend that any ACTD program that is not getting the appropriate attention that the program officials feel it should be getting should push the "uncomfortable" tasks of IP/MP/TP compliance up the chain of command to the GO/FO/SES level.

3. Funding

I would recommend a plus up of S&T funds for all Services to stimulate interest in the ACTD program. Services will continue to shy away from programs that will take S&T funds up front from them without any concrete tangibles to show for it. A more up-front funding profile by the DUSD(AS&C) could possibly alleviate this as described earlier. Another recommendation would be that tighter control be maintained when products are turned over to another organization for further integration or development so that a continued duplication of effort and expenditures does not occur. A point brought to my attention by the Military Deputy to the DUSD(AS&C) when speaking about oversight of the ACTD programs was that DUSD(AS&C) gets a courtesy call when OSD Comptroller is about to release 6.3 dollars to a Service or Agency.[42] This is can be in the future a leverage tool to use to help further the cooperation given to the ACTD programs.

C. AREAS FOR POSSIBLE FOLLOW-ON RESEARCH

The next several years should yield some much needed data into the transition efficiency of the FNC programs. The JTL ACTD is due to transition in December 2002 at which time a in depth analysis of the cost of transition could prove effective for DARPA, DISA, and the DUSD(AS&C) to prove or disprove that software ACTDs do require more management and guidelines than hardware ACTDs.

[41] Email, Military Deputy, DUSD(AS&C); May 28, 2002

[42] Email, Military Deputy, DUSD(AS&C); May 28, 2002

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APPENDIX A: ACRONYMS

ACAT	Acquisition Category
ACTD AP	ACTD Assessment Plan
ACTD AR	ACTD Assessment Report
ACTD	Advanced Concept Technology Demonstration and Concepts
CAIV	Cost as Independent Variable
CINC	Commander in Chief
CMP	Configuration Management Plan
CONOPS	Concept of Operations
COTS	Commercial of the Shelf
DAB	Defense Acquisition Board
DAD	Defense Acquisition Deskbook
DARPA	Defense Advanced Research Projects Agency
DII COE	Defense Information Infrastructure Common Operating Environment
DISA	Defense Information Service Agency
DM	Demonstration Manager
DoD	Department of Defense
DRR	Demonstration Readiness Review
DT	Developmental Testing
DUSD(AS&C)	Deputy Under Secretary of Defense (Advanced Systems
EA	Executing Agent
EUE	Extended User Evaluation

FNC	Future Naval Capability
GCCS	Global Command and Control System
GCSS	Global Combat Support System
GO/FO/SES	General Officer/Flag Officer/Senior Executive Service
GOTS	Government off the Shelf
HLS C2	Homeland Security Command and Control
IG	Inspector General
IP	Implementation Plan
IPPD	Integrated Product & Process Development
IV&V	Independent Verification and Validation
JDST	Joint Decision Support Tool
JROC	Joint Requirements Oversight Committee
JTASC	Joint Training Analysis and Simulations Center
JV2010 & JV2020	Joint Vision 2010 & 2020
JWCA	Joint Warfare Capabilities Assessment
LRIP	Low-rate-initial-production
MP	Management Plan
MUA	Military Utility Assessment
NFFTIO	Naval Fleet Force Technology Integration Office
OM	Operational Manager
ONR	Office of Naval Research
ORD	Operational Requirements Document
OSD	Office of the Secretary of Defense
OT	Operational Testing

PM	Program Manager
R&D	Research and Development
SEI&T	System Engineering Integration and Testing
SIP	System Integration Plan
T&E	Testing and Evaluation
TIPT	Transition Integrated Process Team
TM	Technical Manager
USD(AT&L)	Under Secretary of Defense (Acquisition, Technology and Logistics)
USJFCOM	US Joint Forces Command
USTRANSCOM	US Transportation Command
WBS	Work Breakdown Structure
XM	Transition Manager

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APPENDIX B: MILITARY UTILITY ASSESSMENT (MUA) MEASURES OF EFFECTIVENESS (MOE)

Measure	Criteria	MOE / MOP Statement	Source	Demonstrations			
				I	II	III	IV
MOE 1.01	**Collaboration**						
MOP 1.01.01	Yes/No	Provide capability to share text and workspace products	Functional Requirement #2		√	√	√
MOP 1.01.02	Yes/No	Provide capability to edit text and workspace products while sharing	System Requirement #2		√	√	√
MOP 1.01.03	Yes/No	Provide voice chat capability to a variety of users (compatible with DCTS)	System Requirement #3		√	√	√
MOP 1.01.04	Yes/No	Provide text chat capability to a variety of users (compatible with DCTS)	System Requirement #3		√	√	√
MOP 1.01.05	Yes/No	Provide capability to access military messages (cut and paste)	System Requirement #4		√	√	√
MOP 1.01.06	Yes/No	Provide capability to collaborate using email (both classified/unclassified email capability)	System requirement #4	**Not Measured**			
MOP 1.01.07	Yes/No	Provide web-based coordination (collaboration) environment	System Requirement #5		√	√	√
MOP 1.01.08	Yes/No	Provide "whiteboard capability" including ability to sketch and mark workspace products	System Requirement #15		√	√	√
MOP 1.01.09	Yes/No	Permit synchronous collaboration environment	User Requirement-JFCOM J86		√	√	√
MOP 1.01.10	Yes/No	Permit asynchronous collaboration environment	User Requirement-JFCOM J86		√	√	√
MOP 1.01.11	Yes/No	Provide discretionary access capability to a variety of users and groups	User Requirement-JFCOM J86		√	√	√
MOP 1.01.12	Rating	Commander and staff assessment of collaboration time improvement between the JFC J3 and JFC J4	MUA Measure			√	√

Measure	Criteria	MOE / MOP Statement	Source	Demonstrations			
				I	II	III	IV
MOP 1.01.13	Rating	Commander and staff assessment of the utility of the collaboration capability between the JFC J3 and JFC J4	MUA Measure			√	√
MOP 1.01.14	Rating	Commander and staff assessment of collaboration time improvement between the JFC J4 and the Service Component Log staff	MUA Measure			√	√
MOP 1.01.15	Rating	Commander and staff assessment of the utility of the collaboration capability between the JFC J4 and Service Component Log staff	MUA Measure			√	√
MOP 1.01.16	Rating	Commander and staff user assessment of collaboration time improvement between the JFC J3 and Service Component Ops staff	MUA Measure			√	√
MOP 1.01.17	Rating	Commander and staff assessment of the utility of the collaboration capability between the JFC J3 and Service Component Ops staff	MUA Measure			√	√
MOP 1.01.18	Rating	Commander and staff assessment of the utility to post orders and directives into an electronic notebook for individual and multi-person collaboration session	MUA Measure			√	√
MOE 1.02	**Visualization**						
MOP 1.02.01	Yes/No	Capability to access/display DOD generated, COTS, and US Govt. / Agency JMTK maps	Functional Requirement #3.1		√	√	√
MOP 1.02.01.01	Rating	Improvement in the ability to access / display DOD generated, COTS, & US Govt. / Agency JMTK maps	MUA Measure			√	√
MOP 1.02.02	Yes/No	Capability to display data in graph and table formats	Functional Requirement #3.2		√	√	√
MOP 1.02.02.01	Rating	Improvement in the ability to display data in graph and table formats	MUA Measure			√	√
MOP 1.02.03	Yes/No	Capability to overlay lines of communication (Air, Land, Sea)	Functional Requirement #3.3		√	√	√
MOP 1.02.03.01	Rating	Improvement in the ability to overlay lines of communication (Air, Land, Sea)	MUA Measure			√	√

Measure	Criteria	MOE / MOP Statement	Source	Demonstrations			
				I	II	III	IV
MOP 1.02.04	Yes/No	Capability to display operational graphics (i.e. boundaries, main supply routes, supply support areas, alternate supply routes, etc.)	Functional Requirement #3.4		√	√	√
MOP 1.02.04.01	Rating	Improvement in the ability to display operational graphics (i.e. boundaries, main supply routes, supply support areas, alternate supply routes, etc.)	MUA Measure			√	√
MOP 1.02.05	Yes/No	Capability to display pre-positioned assets	Functional Requirement #3.5		√	√	√
MOP 1.02.05.01	Rating	Improvement in the ability to display pre-positioned assets	MUA Measure			√	√
MOP1.02.06	Yes/No	Permit simultaneous access to multiple visualization perspectives	User Requirement-JFCOM J86		√	√	√
MOP1.02.07	Yes/No	Provide access to a variety of mime types	User Requirement-JFCOM J86		√	√	√
MOP1.02.08	Yes/No	Ability to import data into existing database and display as Integrated Joint Theater Logistics Picture (Watchboard)	User Requirement-JFCOM J86				√
MOP1.02.09	Yes/No	Ability to access mapping tools that will allow overlays such as lines of communication (Duplicate of Functional Requirement 3.3)	System Requirement #20	**Not Measured**			
MOP 1.02.10	Yes/No	Ability to determine map distance by point and click, and drag and click (Not Feasible)	System Requirement #21	**Not Measured**			
MOP 1.02.11	Yes/No	Access the same mapping tools found in GCCS (Not Practical – Thick Client)	System Requirement #22	**Not Measured**			
MOP 1.02.12	Yes/No	Capability to geo-register objects on a map	System Requirement #23		√	√	√
MOP 1.02.13	Yes/No	Capability to select resolution (zoom in / out) on a map	System Requirement #24		√	√	√
MOP 1.02.14	Yes/No	Capability to use generic symbols to represent info on a map, with capability to access/insert text (like sticky) by clicking on symbol	System Requirement #25		√	√	√
MOP 1.02.15	Yes/No	Capability to selectively layer map overlays	System Requirement #26		√	√	√
MOP 1.02.16	Yes/No	Capability to utilize standard joint symbology	System Requirement #27		√	√	√

Measure	Criteria	MOE / MOP Statement	Source	Demonstrations			
				I	II	III	IV
MOP 1.02.17	Yes/No	Capability to display UTM grids and latitude / longitude on maps	System Requirement # 29		√	√	√
MOP 1.02.18	Yes/No	Capability to declutter or spread map symbols leaving HQs at actual location	System Requirement #33		√	√	√
MOP 1.02.19	Yes/No	Capability to click on a symbol and pull up unit / command information	System Requirement #34		√	√	√
MOP 1.02.20	Rating	User assessment of time improvement using interactive visualization compared to current command methods	MUA Measure			√	√
MOP 1.02.21	Rating	User assessment of the utility of using interactive visualization compared to current command methods	MUA Measure			√	√
MOE 1.03	**Database Warehousing and Mining**						
MOP 1.03.01	Yes/No	Capability to have role based user permissions	User Requirement-JFCOM J86			√	√
MOP 1.03.02	Yes/No	Capability to measure data refresh rates	User Requirement-JFCOM J86			√	√
MOP 1.03.03	Yes/No	Capability to control access	User Requirement-JFCOM J86			√	√
MOP 1.03.04	Yes/No	Permit global storage of user products	User Requirement-JFCOM J86			√	√
MOP 1.03.05	Rating	Assessment of the confidence of information accuracy and currency	MUA Measure			√	√
MOP 1.03.06	Yes/No	Refresh and update data at least every hour	System Requirement #6		√	√	√
MOP 1.03.07	Yes/No	Databases must have date time stamp of last review / update and transaction history	System Requirement #7			√	√
MOP 1.03.08	Yes/No	Database retrievals must have data element source	System Requirement #8			√	√
MOE 1.04	**Security**						
MOP 1.04.01	Yes/No	Does system meet IATO security requirements	User Requirement-JFCOM J86			√	√

Measure	Criteria	MOE / MOP Statement	Source	Demonstrations			
				I	II	III	IV
MOE 2.01	**Conduct Operational Mission Analysis**						
MOP 2.01.01	Yes/No	Capability to review and collaborate in the JTL workspace on JCS/CINC Orders and Planning Directive	Functional Requirement # 1.1		√	√	
MOP 2.01.01.01	Rating	Improvement in the ability to review and collaborate in the JTL workspace on JCS/CINC Orders and Planning Directive	MUA Measure			√	
MOP 2.01.02	Yes/No	Capability to review and collaborate in the JTL workspace on Planning assumptions and limitations	Functional Requirement #1.2		√	√	
MOP 2.01.02.01	Rating	Improvement in the ability to review and collaborate in the JTL workspace on Planning assumptions and limitations	MUA Measure			√	
MOP 2.01.03	Yes/No	Capability to review and collaborate in the JTL workspace on the Mission Statement	Functional Requirement #1.3		√	√	
MOP 2.01.03.01	Rating	Improvement in the ability to review and collaborate in the JTL workspace on the Mission Statement	MUA Measure			√	
MOP 2.01.04	Yes/No	Capability to review and collaborate in the JTL workspace on the Commander's intent	Functional Requirement #1.4		√	√	
MOP 2.01.04.01	Rating	Improvement in the ability to review and collaborate in the JTL workspace on the Commander's intent	MUA Measure			√	
MOP 2.01.05	Yes/No	Capability to review and collaborate in the JTL workspace on the Concept of Operations	Functional Requirement # 1.5		√	√	
MOP 2.01.05.01	Rating	Improvement in the ability to review and collaborate in the JTL workspace on the Concept of Operations	MUA Measure			√	
MOP 2.01.06	Yes/No	Capability to review and collaborate in the JTL workspace on the Forces Available	Functional Requirement #1.6		√	√	
MOP 2.01.06.01	Rating	Improvement in the ability to review and collaborate in the JTL workspace on the Forces Available	MUA Measure			√	
MOP 2.01.07	Yes/No	Capability to review and collaborate in the JTL workspace on the Area of Operations	Functional Requirement # 1.7		√	√	
MOP 2.01.07.01	Rating	Improvement in the ability to review and collaborate in the JTL workspace on the Area of Operations	MUA Measure			√	

Measure	Criteria	MOE / MOP Statement	Source	Demonstrations			
				I	II	III	IV
MOP 2.01.08	Yes/No	Capability to review and collaborate in the JTL workspace on the Essential Tasks	Functional Requirement # 1.8		√	√	
MOP 2.01.08.01	Rating	Improvement in the ability to review and collaborate in the JTL workspace on the Essential Tasks	MUA Measure			√	
MOP 2.01.09	Yes/No	Capability to review and collaborate in the JTL workspace on the Operational Situation / threat – both friendly and enemy	Functional Requirement # 1.9		√	√	
MOP 2.01.09.01	Rating	Improvement in the ability to review and collaborate in the JTL workspace on the Operational Situation / threat	MUA Measure			√	
MOP 2.01.10	Yes/No	Capability to review and collaborate in the JTL workspace on the Risk Assessment	Functional Requirement #1.10		√	√	
MOP 2.01.10.01	Rating	Improvement in the ability to review and collaborate in the JTL workspace on the Risk Assessment	MUA Measure			√	
MOP 2.01.11	Yes/No	Capability to review and collaborate in the JTL workspace on the Planning Guidance	Functional Requirement #1.11		√	√	
MOP 2.01.11.01	Rating	Improvement in the ability to review and collaborate in the JTL workspace on the Planning Guidance	MUA Measure			√	
MOP 2.01.12	Yes/No	Capability to review and collaborate in the JTL workspace on the Task Organization and Command Relationships	Functional Requirement #1.12		√	√	
MOP 2.01.12.01	Rating	Improvement in the ability to review and collaborate in the JTL workspace on the Task Organization and Command Relationships	MUA Measure			√	
		Capability to review and collaborate in the JTL workspace on the Mission Analysis Briefing	Functional Requirement #1.13				
MOP 2.01.14	Rating	Assessment of the time improvement to conduct operational mission analysis compared to current command methods	MUA Measure			√	
MOP 2.01.15	Rating	Assessment of the utility of using JTL software to conduct operational mission analysis compared to current command methods	MUA Measure			√	

Measure	Criteria	MOE / MOP Statement	Source	Demonstrations			
				I	II	III	IV
MOE 2.02	**Conduct Logistics Review of the Battlespace**						
MOP 2.02.01	Yes/No	Capability to conduct a review of Log Engineering capability in the AOR	Functional Requirement #4.1	**Not Measured**			
MOP 2.02.02	Yes/No	Capability to conduct a review of Log Transportation and Mobility Infrastructure in the AOR	Functional Requirement #4.2	**Not Measured**			
MOP 2.02.03	Yes/No	Capability to conduct a review of Supply Class III capability in the AOR	Functional Requirement #4.1	**Not Measured**			
MOP 2.02.04	Yes/No	Capability to conduct a review of Log Reception and Basing infrastructure in the AOR	Functional Requirement #4.3	**Not Measured**			
MOP 2.02.05	Yes/No	Capability to conduct a review of Log Forces and unit capabilities in the AOR	Functional Requirement #4.1	**Not Measured**			
MOP 2.02.06	Yes/No	Capability to conduct a review of the Geography (climate, topography, hydrography) in the AOR	Functional Requirement #4.4	**Not Measured**			
MOP 2.02.07	Yes/No	Capability to conduct a review of the availability of Host Nation Support / Infrastructure in the AOR	Functional Requirement #4.5	**Not Measured**			
MOP 2.02.08	Yes/No	Capability to conduct a review of the echelons of the Echelons of Support in the AOR	Functional Requirement #4.7	**Not Measured**			
MOP 2.02.09	Rating	Assessment of the time improvement to conduct Log review compared to current command methods	MUA Measure	**Not Measured**			
MOP 2.02.10	Rating	Assessment of the utility of conducting a Log review using the JTL software as compared to current command methods.	MUA Measure	**Not Measured**			
MOE 2.03	**Ability to Develop Tasks**						
MOP 2.03.01	Time	To develop Operational tasks	MET Measure OP 5.3.1		√	√	
MOP 2.03.02	Time	To develop Log tasks for Class III and IV	Functional Requirement #5.1		√	√	
MOP 2.03.03	Rating	Assessment of the utility of using the JTL software to develop Ops and Log tasks compared to current command methods	MUA Measure			√	

Measure	Criteria	MOE/MOP Statement	Source	Demonstrations			
				I	II	III	IV
MOP 2.03.04	Rating	Assessment of the time improvement to develop tasks compared to current command methods	MUA Measure			√	
MOE 2.04	**Ability to Develop Courses of Action**						
MOP 2.04.01	Yes/No	Capability to develop courses of action (COAs)	MET Measure OP 5.3.4		√	√	
MOP 2.04.02	Time	To develop COAs using JTL software.	Functional Requirement #5.2		√	√	
MOP 2.04.03	Time	To develop COAs that are suitable, feasible, and acceptable	MET Measure OP5.3.41	**Not Measured**			
MOP 2.04.04	Rating	Assessment of the time improvement to develop COAs compared to current command methods	MUA Measure			√	
MOP 2.04.05	Rating	Assessment of the utility of using the JTL software to develop COAs compared to current command methods.	MUA Measure			√	
MOE 2.05	**Ability to Develop Logistics Estimates**						
MOP 2.05.01	Yes/No	Ability to develop Class III Log sustainment estimates for each COA	Functional Requirement #5.3		√	√	
MOP 2.05.02	Yes/No	Ability to develop Class IV Log sustainment estimates for each COA	Functional Requirement #5.3		√	√	
MOP 2.05.03	Yes/No	Ability to develop selected Class IX (consumables) Log sustainment estimates for each COA	Functional Requirement #5.3		√	√	
MOP 2.05.04	Time	To develop Log sustainment estimates after receipt of the warning order using JTL software	MET Measure OP 5.3.4			√	
MOP 2.05.05	Yes/No	Capability to provide Log sustainment estimate format Templates	Functional Requirement #5.4			√	
MOP 2.05.06	Rating	Assessment of the utility of using the JTL software to develop Log sustainment estimates compared to current command methods	MUA Measure			√	

Measure	Criteria	MOE/MOP Statement	Source	Demonstrations			
				I	II	III	IV
MOP 2.05.07	Rating	Assessment of the time improvement to develop Log sustainment estimates compared to current Command methods	MUA Measure			√	
MOE 2.06	**Ability to Develop Support Options**						
MOP 2.06.01	Yes/No	Ability to develop Log concept of support for each COA	Functional Requirement # 5.5		√	√	
MOP 2.06.02	Time	To develop Class III concept of support for each COA	MET Measure OP 4.2		√	√	
MOP 2.06.03	Time	To develop Class IV concept of support for each COA	MET Measure OP 4.1		√	√	
MOP 2.06.04	Rating	Assessment of the time improvement to develop Log concept of support for each COA compared to current command methods	MUA Measure			√	
MOP 2.06.05	Rating	Assessment of the utility of using the JTL software to develop Log concept of support for each COA compared to current command methods	MUA Measure			√	
MOE 2.07	**Ability to Analyze Courses of Action**						
MOP 2.07.01	Yes/No	Ability to analyze concept of support for each COA and identify the strengths and weaknesses of each	Functional Requirement #6.1			√	√
MOP 2.07.02	Yes/No	Ability to determine (i.e. document) the associated shortfalls, risks, & constraints associated with each COA	Functional Requirement #6.2			√	√
MOP 2.07.03	Yes/No	Ability to evaluate the suitability of COAs using JTL software.	MET Measure OP 5.3.4	**Not Measured**			
MOP 2.07.04	Yes/No	Ability to evaluate the feasibility of COAs using the JTL software	MET Measure OP 5.3.5	**Not Measured**			
MOP 2.07.05	Yes/No	Ability to evaluate the acceptability of COAs using the JTL software	MET Measure OP 5.3.4	**Not Measured**			

Measure	Criteria	MOE/MOP Statement	Source	Demonstrations			
				I	II	III	IV
MOP 2.07.06	Measure	Ability to determine the Log course of action that would best support the mission	MUA Measure			√	
MOP 2.07.07	Percent	Of Log COAs analyzed against potential enemy COAs	MET Measure OP 5.3.5	**Not Measured**			
MOP 2.07.08	Time	To determine if each course of action is logistically supportable	MET Measure OP 5.3.6	**Not Measured**			
MOP 2.07.09	Rating	Assessment of the time improvement to analyze COAs using the JTL software compared to current command methods	MUA Measure			√	
MOP 2.07.10	Rating	Assessment of the utility of using the JTL software to analyze COAs compared to current command methods	MUA Measure			√	
MOP 2.07.11	Rating	Assessment of the utility of using the JTL software to identify and list shortfalls, risks, and constraints associated with each COA compared to current command methods	MUA Measure	**Not Measured**			
MOP 2.07.12	Rating	Assessment of the time improvement to identify and list shortfalls, risks, and constraints associated with each COA compared to current command methods	MUA Measure	**Not Measured**			
MOE 2.08	**Ability to Access Information Used in Planning**						
MOP 2.08.01	Yes/No	Ability to access existing plans and orders (i.e. concept/functional/operations plans, and fragmentary orders) using the JTL software	Functional Requirement #2.1		√	√	
MOP 2.08.01.01	Rating	Improvement in the ability to access existing plans and orders (i.e. concept/functional/ operations plans, and frag orders) using the JTL software	MUA Measure			√	
MOP 2.08.02	Yes/No	Ability to access Service	Functional Requirement		√	√	

		and Joint Log Planning factors (look-up tables) using the JTL software	#2.2				
MOP 2.08.02.01	Rating	Improvement in the ability to access Service and Joint Log planning factors (look-up tables) using the JTL software	MUA Measure			√	

Measure	Criteria	MOE/MOP Statement	Source	Demonstrations			
				I	II	III	IV
MOP 2.08.03	Yes/No	Ability to access Log forces and unit location info using the JTL software	Functional Requirement #2.3		√	√	√
MOP 2.08.03.01	Rating	Improvement in the ability to access Log forces and unit location info using the JTL software	MUA Measure			√	√
MOP 2.08.04	Yes/No	Ability to access Service and DLA Log capabilities info using the JTL software	Functional Requirement #2.4		√	√	√
MOP 2.08.04.01	Rating	Improvement in the ability to access Service and DLA Log capabilities info using the JTL software	MUA Measure			√	√
MOP 2.08.05	Yes/No	Ability to access Host Nation Support (HNS) infrastructure info and Contingency Contract Agreements using the JTL software	Functional Requirement #2.5		√	√	√
MOP 2.08.05.01	Rating	Improvement in the ability to access Host Nation Support (HNS) infrastructure info and Contingency Contract Agreements using the JTL software	MUA Measure			√	√
MOP 2.08.06	Yes/No	Ability to access a checklist template for OPLAN and OPORDER development	Functional Requirement #2.6	**Not Measured**			
MOP 2.08.07	Rating	Assessment of the ease of use to access Info used in planning using the JTL software compared to current command methods	MUA Measure			√	
MOP 2.08.08	Rating	Assessment of the time improvement to access info used in planning using the JTL software	MUA Measure			√	
MOE 3.01	**Ability to Access and Display Logistics Readiness Data**						
MOP 3.01.01	Yes/No	Ability to retrieve Service Component and	Functional Requirement #7.2				√

		Functional Component execution data and operational status using the JTL software					
MOP 3.01.02	Yes/No	Ability to roll up (aggregate) unit and component execution data and operational status using the JTL software	Functional Requirement #7.1				√
MOP 3.01.03	Yes/No	Ability to display operational status of high interest Weapon Systems using the JTL software	Functional Requirement #7.3				√

Measure	Criteria	MOE/MOP Statement	Source	Demonstrations			
				I	II	III	IV
MOP 3.01.04	Yes/No	Ability to display operational status of Class III Fuel using the JTL software	Functional Requirement #7.3				√
MOP 3.01.05	Yes/No	Ability to display operational status of Class IV Engineering Materiel using the JTL software	Functional Requirement #7.3				√
MOP 3.01.06	Yes/No	Ability to display operational status of Critical Class IX Aviation DLRs using the JTL software	Functional Requirement #7.3				√
MOP 3.01.07	Yes/No	Provide options to display data using the JTL software	Functional Requirement #7.4				√
MOP 3.01.08	Yes/No	Ability to display data in Stop Light displays (i.e. Red / Amber / Green ball environment) using the JTL software	Functional Requirement #7.5				√
MOP 3.01.09	Yes/No	Ability to access parameter info and supporting data for the displays using the JTL software	Functional Requirement #7.5				√
MOP 3.01.10	Yes/No	Ability to establish flexible trigger and threshold settings using the JTL software	Functional Requirement #7.8				√
MOP 3.01.11	Yes/No	Provide flexible tools to track usage data using the JTL software	Functional Requirement #7.6				√
MOP 3.01.12	Yes/No	Ability to monitor and report over aged reports and data using the JTL software	Functional Requirement #7.9				√
MOP 3.01.12.01	Rating	Improvement in the ability to monitor and report over aged reports and data using the JTL software	MUA Measure				√
MOP 3.01.13	Percent	Of subordinate components reporting Log execution data and operational status using the JTL software	MET Measure OP 5.1.1	**Not Measured**			
MOP 3.01.14	Time	Since latest readiness information collected using the JTL software	MET Measure OP 5.1.1	**Not Measured**			
MOP 3.01.15	Rating	Assessment of the time improvement to post, process and display component execution data and operational status (from receipt) using the JTL software	MUA Measure				√

Measure	Criteria	MOE/MOP Statement	Source	Demonstrations			
				I	II	III	IV
MOP 3.01.16	Rating	Assessment of the utility of the JTL software to post, process, and display component Log execution data and operational status using the JTL software	MUA Measure				√
MOP 3.01.17	rating	Assessment of the ease of use of the JTL software to post, process, and display component Log execution data and operational status using the JTL software	MUA measure				√
MOP 3.01.18	Rating	Assessment of the time improvement for a Logistics commander to access current Log execution data and operational status and JTILP using the JTL software	MUA Measure				√
MOP 3.01.19		Assessment of the utility of the JTL software to access and display Log execution data and operational status	MUA Measure				√
MOP 3.01.20	Rating	Assessment of the time improvement to access and display Log execution data and operational status using the JTL software	MUA Measure				√
MOP 3.01.21	Rating	Assessment of the ease of use to access and display Log execution data and operational status using the JTL software compared to current command methods	MUA Measure				√
MOE 3.02	**Ability to Assess Logistics Readiness Data**						
MOP 3.02.01	Yes/No	Provide flexible tools to forecast consumption in time inte	Functional Requirement #7.6				√
MOP 3.02.01.01	Rating	Assessment of the improvement in the ability to forecast consumption in time intervals such as 24 / 48 / 72 / 96 hours, etc	MUA Measure				√
MOP 3.02.02	Yes/No	Provide flexible tools to identify possible problems in weapons systems and classes of supply	Functional Requirement #7.6				√
MOP 3.02.02.01	Rating	Improvement in the ability to identify possible problems in Weapon Systems and Classes of Supply	MUA Measure				√

Measure	Criteria	MOE/MOP Statement	Source	Demonstrations			
				I	II	III	IV
MOP 3.02.03	Yes/No	Provide flexible tools to compare planned versus actual consumption for bulk commodities	Functional Requirement #7.6				√
MOP 3.02.03.01	Rating	Improvement in the ability to compare planned consumption versus actual for bulk commodities	MUA Measure				√
MOP 3.02.04	Rating	Assessment of the time improvement to assess Log execution data and operational status and make decisions using JTL software	MUA Measure				√
MOP 3.02.05	Rating	Assessment of the ease of use to assess Log execution data and operational status compared to current command methods	MUA Measure				√
MOP 3.02.06	Rating	Assessment of the utility of using the JTL software to assess Log execution data and operational status	MUA Measure				√
MOE 3.03	**Ability to Manage Logistic Support**						
MOP 3.03.01	Rating	Assessment of the time improvement to forecast Log situational awareness and assessment using the JTL software	MUA Measure				√
MOP 3.03.02	Rating	Assessment of the ease of use to forecast Log situational awareness and assessment using the JTL software	MUA Measure				√
MOP 3.03.03	Rating	Assessment of the utility of using the JTL software to forecast Log situational awareness and assessment	MUA Measure				√
MOE 3.04	**Ability to Access and Display Selected Operations Data**						
MOP 3.04.01	Yes/No	Ability to access and display selected Ops Data (where are we, where are we going, and what will we do when we arrive)	Functional Requirement # 8.0				√

Measure	Criteria	MOE/MOP Statement	Source	Demonstrations			
				I	II	III	IV
MOP 3.04.02	Rating	Assessment of the ease of use to access and display selected Ops data using the JTL software compared to current command methods	MUA Measure				√
MOP 3.04.03	Rating	Assessment of the time improvement to access and display selected Ops data using the JTL software	MUA Measure				√
MOP 3.04.04	Rating	Assessment of the utility of using the JTL software to access and display selected Ops data	MUA Measure				√
MOE 4.01	**Operational Reliability**						
MOP 4.01.01	Percent	System down time due to faults, failures, or malfunctions of the JTL software resulting in the loss of system functionality	MUA Measure			√	√
MOP 4.01.02	Time	Mean time to restore the system to its full operating state after a fault, failure, or malfunction	MUA Measure			√	√
MOP 4.01.03	Percent	Of system uptime that Users have JTL capabilities	MUA Measure			√	√
MOP 4.01.04	Rating	Operator assessment of the impact to mission/ task accomplishment due to system down time	MUA Measure			√	√
MOP 4.01.05	Rating	Assessment of the JTL software to meet GCSS reliability standards	MUA Measure			√	√
MOE 4.02	**Operational Supportability**						
MOP 4.02.01	Rating	Can users be trained to operate the JTL software in a reasonable amount of time?	MUA Measure			√	√
MOP 4.02.02	Rating	User assessment of the ability to exchange JTL information with existing command software applications and compatible platforms	MUA Measure			√	√
MOP 4.02.03	Rating	User assessment of the ability to disseminate JTL products to supported units and forces, and capability for supported units and forces to receive and use JTL products	MUA Measure			√	√

Measure	Criteria	MOE/MOP Statement	Source	Demonstrations			
				I	II	III	IV
MOP 4.02.04	Rating	User assessment of the ability for the JFC and Service Components to maintain and support the JTL software	User Requirement-JFCOM J86			√	√
MOP 4.02.05	Yes/No	Is source code owned / maintained by the Government	User Requirement-JFCOM J86			√	√
MOP 4.02.06	Yes/No	Does system operate on existing / standard DOD ADP Hardware	User Requirement-JFCOM J86			√	√
MOE 4.03		**Operational Readiness for Transition**					
MOP 4.03.01	Yes/No	Interoperable with GCCS	System Requirement #9	**Not Measured**			
MOP 4.03.02	Yes/No	JTL software meets DII COE standards	Transition Measure				√
MOP 4.03.03	Yes/No	Can JTL software be accessed through the GCSS portal?	User Requirement-JFCOM J86				√
MOP 4.03.04	Capture	Document JTL software training and skill requirements for Users and System Administrators	Transition Measure				√
MOP 4.03.05	Yes/No	The JTL software has an approved integrated authority to operate (IATO) certification	User Requirement-JFCOM J86				√
MOP 4.03.06	Rating	Assessment of the adequacy of the JTL documentation and supporting materials for pilot services and transition	Transition Measure				√
MOE 4.04	**Attainment of User System Requirements Common Across Capabilities**						
MOP 4.04.01	Yes/No	Provide search engine with basic and advanced search capabilities	System Requirement #1	**Not Measured**			
MOP 4.04.02	Yes/No	Drag and drop	System Requirement #10		√	√	√

MOP 4.04.03	Yes/No	Platform Independent	System Requirement #11	**Not Measured**			
MOP 4.04.04	Yes/No	Standard WINDOWS menu options & keystroke commands, plus right mouse options	System Requirement #12		√	√	√

Measure	Criteria	MOE/MOP Statement	Source	Demonstrations			
				I	II	III	IV
MOP 4.04.05	Record	Allow multiple drop down windows simultaneously	System Requirement #13		√	√	√
MOP 4.04.06	Yes/No	Ability to save queries for repeated use	System Requirement #14		√	√	√
MOP 4.04.07	Yes/No	Ability to drill down, with lookups or reference tables	System Requirement #16		√	√	√
MOP 4.04.08	Yes/No	Help tool capability to assist the planner	System Requirement #18	**Not Measured**			
MOP 4.04.09	Yes/No	Ability to make ad hoc queries and allow choice of data source from multiple databases	System Requirement #19	**Not Measured**			
MOP 4.04.10	Yes/No	Ability to tailor and share an address book that is specific to an operation	System Requirement #28	**Not Measured**			
MOP 4.04.11	Yes/No	Provide common look and feel with operations environment	System Requirement # 30	**Not Measured**			
MOP 4.04.12	Yes/No	Undo and cancel buttons	System Requirement #31		√	√	√
MOP 4.04.13	Yes/No	Ability to save a view as HTML	System Requirement #35		√	√	√
MOP 4.04.14	Yes/No	Ability to set / select User default settings	System Requirement #36	**Not Measured**			
MOP 4.04.15	Yes/No	Hour glass cursor display when system is processing or retrieving data	System Requirement #37		√	√	√
MOP 4.04.16	Yes/No	Status bar for estimated time remaining to load an application or complete a download	System Requirement #40		√	√	√

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