

AETC

Advanced Distributed

Learning

Implementation Plan



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Prepared by:

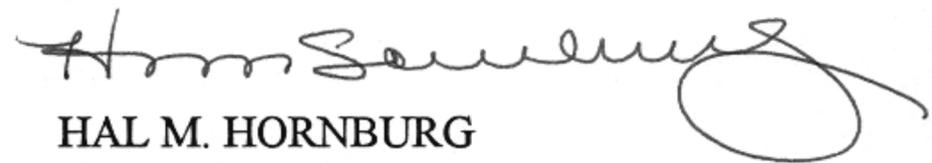
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Moving toward "anytime, anyplace learning"

As the Air Force implements the Expeditionary Aerospace Force (EAF) concept, operations tempo demands airmen who are ready to assume critical mission roles on a global basis. The active and reserve components require the best-educated and trained airmen to execute Air Force core competencies. Readiness, the ability to perform these missions, is directly linked to our ability to educate and train aerospace warriors, anytime, anyplace.

To meet these requirements, AETC has developed this Advanced Distributed Learning (ADL) Implementation Plan. It supports the SECDEF vision to reduce up to 30 percent of resident training classroom time and increases the use of non-resident Internet/Intranet education and training. In detail, the plan improves business practices and readiness, saves tax dollars, identifies investment requirements, leverages emerging technologies, and provides our customers, the operational MAJCOMs, with the quality support and services they deserve. AETC intends this plan to serve as a model for other MAJCOMs to submit requirements to the Air Force Institute for Advanced Distributed Learning for a consolidated Air Force ADL Implementation Plan.

The AETC ADL Implementation Plan was submitted as an FY02 Program Objective Memorandum disconnect. The plan provides goals for implementing ADL in coordination with the Air Force Institute for Advanced Distributed Learning (AFIADL) and the Office of the Secretary of Defense. Although AETC is re-engineering many traditional resident courses, the instructional and organizational structure is shifting toward a wide range of instructional methodologies. The plan leverages emerging instructional technologies into AETC to improve the efficiency of our operations. The plan outlines the development of an AETC ADL System that will significantly augment our traditional resident instruction. The ADL Plan facilitates meeting our core mission of education and training and will directly contribute to the Air Force vision of Global Engagement and Joint Chief of Staff's Joint Vision 2010.



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The AETC ADL Implementation Plan presented in this document is intended for use in the management and execution of Advanced Distributed Learning in the Air Education and Training Command (AETC) and its subordinate commands. The use of a name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by AETC.

Recommended changes to this plan may be forwarded to AETC/DOS DSN 487-5959, Comm (210) 652-5959, FAX DSN 487-6617

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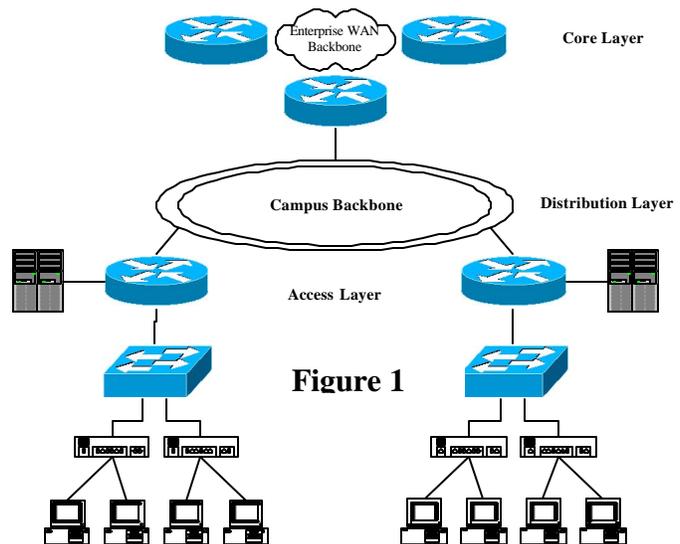
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1. Scope. Develop and implement an integrated Advanced Distributed Learning System (ADLS) that provides the capability to design, develop, sustain, track, deliver, manage and administer distributed education/training anytime, anyplace. The ADL Implementation plan provides for the migration from legacy distance learning courseware conversions based on reprogrammed funding from TDY accounts to a future AETC acquisition program appropriation end state described in the Air Force Distance Learning Roadmap and the DoD Strategic Plan for Advanced Distributed Learning. The definition of Advanced Distributed Learning is provided at Appendix 1.

1.1. Identification. Advanced Distributed Learning System (ADLS)

1.2. System overview. The ADLS will be designed to provide high performance, high reliability connections among AETC organizations, customers, and suppliers for the accomplishment of the goals identified in the AETC ADL Plan. The system will deliver course content to train and educate Air Force and other service members to meet service requirements anytime, anyplace. The system will support course development, course delivery (via Web), administering and grading tests, and storage of course material.

1.2.1. The system architecture includes upgrades to existing (base) local area networks (LANs) for development, delivery, and tracking of Intranet-based content; it provides connectivity to a distributed or centralized enterprise warehouse of learning content and for Internet delivery and tracking via a remote Learning Management System (Figure 1). The supporting network architecture will be robust, secure, reliable, scalable,



interoperable, sustainable, and compliant with the DoD Joint Technical Architecture (JTA), ADL and SCORM standards. The network will be “transparent to courseware developers, administrators, users, and managers”. ADLS will be designed to be compatible with the AF information assurance program, Combat Information Transport System/Base Information Protect (CITS/BIP), but will require standard Air Force policy that accommodates media rich instruction, on-line collaboration applications, and secure use of mobile code technology.

1.2.2. The proposed system will have mission critical enterprise applications (e.g., personnel records administration) integrated with education and training related applications including career training programs, curricula management, course registration processes, certification processes, and student performance tracking (e.g., Technical Training Management System (TTMS), Education Management System (EMS), and Combat Crew Training Management System (CCTMS)). The future integration of instructional processes with other mission critical processes

throughout the system implies that this system must be synchronized with future requirements. ADLS supports courseware development and facilitates delivery to any online user. The system will provide the full scope of analysis, design, development, delivery, evaluation, and sustainment of advanced distributed learning. This includes online surveys and feedback through Field Evaluation Questionnaires. Adequate protection of Privacy Act data, compliant with FIPS 140-1, will be taken and ADLS will provide electronic records management compatible with AF standard records management systems. A full description of the system is provided in paragraph 5.0.

1.3. Document overview. The purpose of this document is to provide an implementation plan for AETC ADL and the ADLS. This plan describes the components within ADLS and actions required for execution. However, it does not describe expansion of the Air Technology Network (ATN), execution of the Extension Course Program, and some Professional Military Education (PME) programs that were submitted as requirements in the Air Force Advanced Distributed Learning FY02 POM. ATN as a system can provide synchronous training, datacasting, distribution of courseware, and will be addressed in a separate document. It is intended that this document will serve as a guide for other MAJCOMs to submit ADL requirements to the Air Force Institute for Advanced Distributed Learning.

1.3.1. The success of this ADL Implementation Plan is dependent on the following conditions: POM funding for initial course conversions, savings realized by increasing deployment of distance learning will be available for reinvestment in technology insertion, FY02-05 funding baseline will be sustained, funded enterprise warehouse, and validated infrastructure requirements are funded based on a gap analysis between existing capability and future architecture.

1.3.2. This implementation plan constitutes a description of mission needs. It describes the current systems, deficiencies in the current systems and recommended solutions (based upon industry standards, prototypes, and experimentation). The focus is on execution of AETC requirements identified for FY00-07.

1.3.3. Specific roles and responsibilities for AETC/ED, AETC/DO, and AETC/XP will be addressed in a separate Concept of Operations document.

1.4. Referenced documents.

Executive Order 13111, "*Using Technology to Improve Training Opportunities for Federal Government Employees,*" 12 Jan 1999

Public Law 105-261, "*Strom Thurmond National Defense Authorization Act for Fiscal Year 1999.*"

Defense Planning Guidance, 1999

Air Force Distance Learning Roadmap, AFDLO 17 Aug 1999

AETC Distance Learning Roadmap 1996

AF Handbook 36-2235, Volume 5, Instructional Technology and Distance Learning, 31 Jul 1998

Government Alliance for Training and Education (GATE), *Digital Compressed Satellite Services (DCSS) and Distance Learning Requirements Required by Agencies of the Federal Government, Revision 7.31*

DoD Sharable Courseware Object Reference Model (SCORM) Version 1.0, 31 Jan 00

DoD Memorandum, Common Specification for ADL – Information Memorandum, Mar 28, 2000

Report to 106th Congress, *DoD Strategic Plan for ADL*, Apr 2000

DoD Strategic Plan for ADL, 30 Apr 1999

DoD MIL-HDBK-29612-5, Guidance for Acquisition of ADL Compliant Products

AFI 33-117, Visual Information (VI) Management, 18 May 1999

AFI 36-2201, Developing, Managing and Conducting Training, 1 Apr 1997

AETCI 36-2203, Operations Training Development, 31 Jan 1997

AETCI 36-2208, Job Site Training, 11 Jun 1998

AETCI 36-2209, Interactive Courseware (ICW) Development and Maintenance, 29 Apr 1995

AETC Course Delivery Study, Booz-Allen-Hamilton, 1999

2. Current system

2.1. Background, objectives, and scope. AETC's mission is to train, and educate quality people for our air and space forces and the nation. The scope of the current distributed learning program is limited to designing, authoring, managing, and delivering resident courseware and non-resident courseware for technical training and education courses. The current AETC Distance Learning program is composed of paper based instruction, CD-ROM instruction, and Interactive Television (ITV) instruction via satellite and prototype Internet courses.

2.2. Operational policies and constraints. Paragraph 1.4 above referenced operational policies and constraints that apply to the current system.

2.3. Description of current system or situation

2.3.1. Since the establishment of the AETC Distance Learning Program in 1995, AETC has reprogrammed Mission Ready Training (TDY) funding for designing and

developing distance learning courses. Delivery has primarily been through paper, CD ROM, and the Air Technology Network (ATN), with limited use of web-based applications. These media are also used to deliver courseware to the Air National Guard, Reserve Components, selected agencies, and other services.

- 2.3.1.1. Print Media. The Air Force Institute for Advanced Distributed Learning provides over 400 PME, specialty, professional continuing education (PCE), and career development courses (CDCs). The Extension Course Institute previously managed CDCs.
- 2.3.1.2. ATN. The current major system components and the interconnections among these components include four uplinks, one each at Sheppard, Keesler, Maxwell, and Wright-Patterson AFBs with six-channel capability. Six channels are activated at Wright-Patterson AFB, three channels at Sheppard, two channels at Keesler and one channel at Maxwell AFB. There are also terrestrial line hook-ups from Lackland AFB and Randolph AFB to Sheppard AFB. Each site has full studio capability for transmission of ITV. There are 85 downlink sites (75 CONUS and 10 OCONUS). ATN is a part of a Government-wide ITV network; the Government Education and Training Network (GETN) is comprised of 16 other DoD and Federal agencies having a total of 13 uplinks and 1,100 downlink sites currently sharing facilities and programming.
- 2.3.1.3. Interactive Courseware. AETC has Instructional Technology Elements located at Vandenberg AFB (381st TRG), Keesler AFB (81st TRG), Lackland AFB (37th TRG), Goodfellow AFB (17th TRG), Hill AFB (367th TRSS), and Sheppard AFB (82nd TRG, 782nd TRG, and 882nd TRG). Additionally, Randolph AFB AETC TRSS develops courseware for flying training. Maxwell AFB (AU) and Wright-Patterson AFB (AFIT) have limited courseware development capability for education courseware.
- 2.3.1.4. Limited Internet-based Courses. This includes limited ancillary courses, (e.g., Law of Armed Conflict (LOAC), acquisition training, etc.) education courses (e.g., ACSC, AFCIC) and training courses (e.g., information technology, 3S2).
- 2.3.2. Capabilities/functions of the current system. Currently, AETC provides 105 technical training courses through CD ROM and over 3000 hours of synchronous ATN ITV and technology insertion. AU provides 54 PME DL courses (in nine core programs), 37 AFIT DL courses, 15 PCE DL courses, and 380 CDCs. Each base has an existing LAN capability for data transfer on limited twisted pair and fiber connections. Standards for connectivity rates will be established by AFIADL.
- 2.3.3. Performance characteristics, such as speed, throughput, volume, and frequency of use of the ATN are not part of the current plan. Excluding print media throughput and Internet delivery, volume and throughput of the interactive courseware units is limited by lack of funding, inability to retain experienced personnel, restricted access to subject matter experts, and number of assigned personnel (185). Of this figure, 65 at Hill AFB are dedicated to developing and maintaining MAJCOM (Air

Combat Command) specific training. AETC's in-house development capability is limited.

2.3.4. Provisions for safety, security, privacy, and continuity of operations are constrained by the lack of personnel and equipment. The key item here is to follow Privacy Act information guidelines/policies and avoid copyright violations. No student records are currently hosted on the web due to privacy act concerns. Public key infrastructure standard operating instructions are not in place. In most cases, manpower is taken out of hide for systems maintenance, duplication, and distribution.

2.4. Users or involved personnel

2.4.1. Technical Training. AETC provides exportable technical training to military and civilian personnel of active and reserve components. For purposes of this document, it is assumed all current technical training distance learning includes skill level, supplemental, and specialized training. The primary users of this system are designers, developers, students, instructors, and managers.

2.4.2. Education. AETC provides alternative non-residence education of military and civilian personnel of active and reserve components. For purposes of this document, it is assumed all current education distance learning includes graduate level courses, professional military education, and other continuing education requirements. The primary users of this system are designers, developers, students, instructors, and managers.

2.4.3. Flying Training. AETC is responsible for conducting undergraduate flying qualification training. Undergraduate flying training is evaluated using the Graduate Evaluation System. The system distributes questionnaires and collects responses using Internet technology. The primary users of this system are squadron commanders, groups, and staff.

2.4.4. Instructional Support. The education centers provide in-house or contractual services (e.g., administrative, technical, computer based instruction, testing, and print media). The primary users of this system are the students, facilitators, and administrative and technical points of contact.

2.5. Sustainment concept. Sustainment is provided out of operations and maintenance baseline funding.

3. Justification for and nature of changes.

3.1. Justification for change.

3.1.1. In response to Congressional mandate, SECDEF's vision expects ADL to reduce resident training classroom time up to 30 percent

- 3.1.2. Air Staff recommended reductions in Mission Readiness Training TDY and direct costs associated with resident training and reprogramming these funds into one Program Element Code to be titled Advanced Distributed Learning.
- 3.1.3. Excessive course development and delivery time for non-resident training resulted in the identification of the following deficiencies:
- 3.1.3.1. No enterprise-wide storage system, Internet-based delivery system or learning management system (course management, administration, registration, and student tracking) for Internet-based delivery. No upgrades identified to Intranet development and delivery capability on existing LANs (e.g., Combat Information Transfer System).
- 3.1.3.2. No formal methodology for reuse of legacy courseware.
- 3.1.3.3. A backlog of students awaiting training exists at various schoolhouses.
- 3.1.3.3.1. An unmet requirement for continuum of education and training and career-long learning.
- 3.1.3.3.2. Current deficiencies identified in the most recent education and training Mission Area Plans.
- 3.1.3.3.2.1. Technical Training Deficiencies:
- Training infrastructures in technical, logistics, support, and medical training were found deficient.
 - Within the infrastructure capability, classroom configurations as well as mission-support, were found inadequate to support distance learning.
 - Within the training infrastructure capability, delivery methods were found fragmented, aging and unresponsive.
 - Infrastructure lacked adequate communications to support future resident/nonresident computer-based instruction.
 - Faculty professional development training lacked an upgraded training system to provide training for faculty and staff.
- 3.1.3.3.2.2. Education Deficiencies:
- Lacks adequate telecommunications systems and high speed/high capacity networks, limited local area networks, and global connectivity for curriculum development and delivery.
 - Need more effective tools and techniques to develop curriculum for computer-based medium.
 - Education systems lack the integrated ability to survey, test, capture and analyze data, and evaluate in-resident and non-resident student performance.
 - Lack the ability to efficiently collect, distribute and maintain information in support of the education mission.

- Limited ability to effectively track student registration and instructional material distribution.
- Educational technologies not state-of-the-art: lack life-cycle cost/ replacement/modernization effort throughout AETC.

3.1.3.3.2.3. Other Deficiencies. Deficiencies identified by MAJCOMs include:

- Need for MAJCOM central planning and management
- Need for comprehensive evaluation of all Air Force courses for possible DL conversion
- Need for base-level DL standardization
- Need manpower allocations and performance criteria for base-level POCs
- Need for faculty development instructor courses for interactive television, interactive multimedia instruction, and Internet-based instruction
- Need for staff development courses in all DL media for course designers and instructional systems specialists
- Need for standardization of DL hardware, software, and network technologies
- Need to evaluate informal and ancillary courses for possible conversion to DL format, tailored specifically for the active force, Reserve, and Guard.
- No efficient way for instructors/course managers and students to interact with each other online
- No integrated way to track student performance for non-resident education and training

3.1.4. The emergence of technology specifications and standards will facilitate implementation of the DoD Advanced Distributed Learning Initiative.

3.1.5. The Booz-Allen & Hamilton (BAH) contracted course delivery study analyzed 1154 courses and identified 128 courses for conversion to distance learning, technology insertion or combined delivery. Of these 128 courses, 42 have been approved for conversion with 6 approved for technology insertion. Course conversions are currently unfunded. AETC XPP has submitted the FY02 POM requesting Air Staff approval for conversions and implementation of the AETC ADLS. AETC is using the course delivery study results and the collective recommendations of course functional managers to develop a schedule.

3.1.6. The Booz-Allen Hamilton contracted course delivery study stated that Air Force distance learning requires technical, organizational, and managerial changes. A four-tier support structure is recommended.

3.1.6.1. A separate centralized AETC Program Office to provide *centralized management and support functions* for the ADLS overall planning,

programming, budgeting, policy, resourcing, acquisition, requirements identification, and warehousing of ADL.

- 3.1.6.2. *A centralized Air Force policy and guidance function* to provide policy, guidance, direction, execution of ADL education courses, and a consolidated POM to Air Staff for all Air Force MAJCOMs (AFIADL). Management of the Air Technology Network will remain at the Wright Patterson AFB AFIADL/DB.
- 3.1.6.3. Instructional Technology Elements (ITE) will provide centralized oversight and development for all courseware. They may be augmented by *decentralized design and development* of courseware at each schoolhouse that is responsible for education/training requirements; curriculum and instructional standards; instructional systems design, evaluation; production of reusable and shareable learning objects; programming services; and content management. Additionally, ITEs will provide contract oversight for courses not developed in-house. Functional commands will provide Subject Matter Experts for review quality assurance. Function control will remain at Training Group level.
- 3.1.6.4. Area or base-level *learning/conferencing centers ADL-enabled classrooms* where users can register for, enroll in, and complete courseware via Internet-based instruction, interactive courseware, or interactive television (CD ROM), or ITV.

3.2. Priority needs.

- 3.2.1. Advanced distributed learning cannot be part of the education and training solution if it is not appropriately funded, manned, equipped, trained, and organized for its functional tasks and responsibilities including managing, upgrading, troubleshooting, and maintaining software and hardware concurrency. AETC/XPM is developing new manpower standards for ADL. Additionally, AETC will need special identifiers and /or Air Force Specialty Codes to retain experienced personnel. This section identifies priority solutions for known DL deficiencies. A majority of the deficiencies can be remedied through funding the implementation plan. This paragraph summarizes the Mission Needs Analysis (MNA) process to identify key technologies and system modernization efforts required to correct known deficiencies. Once deficiencies are defined, guidance, policy, concept of operation, and training (non-materiel solutions) are examined to determine whether changes in these areas can solve the deficiencies. The products of this process are modernization roadmaps, mission area leveraging technology summaries, and recommended updates to procedures.
- 3.2.2. The following table shows the technical training and education priorities matrix. Each priority is listed on the left and shows the capability, tasks, sub-tasks, deficiencies, and solution. The following section links the matrix solutions with our constraints and funding baseline. Funding gaps are targeted in the AETC ADL FY02 POM disconnect. All course requirements and technology insertion requirements are listed on the FY02 POM submission.

TABLE: TECHNICAL TRAINING AND EDUCATION PRIORITIES MATRIX				
REQ	CAPABILITY FACTOR	TASK (S)	SUB-TASK (S)/DEFICIENCY	SOLUTION
1	C4I	All	Develop Courses: Analyze, Design, Develop, Implement, and Evaluate Advanced Distributed Learning courses (using Sharable Courseware Objects in the SCO Reference Model format). Sustain or convert legacy courseware and analyze intelligence courses for future requirement..	Fund conversions Appendix 2, in-house and POM
2	C4I	All	Comm/Computer Infrastructure: Lack adequate telecommunications systems and high speed/high capacity networks, limited local area networks, and global connectivity for curriculum development and delivery.	Fund Survey, POM, leverage ATN data-casting, install upgrades
3	C4I	All	Deliver Curriculum: Not able to deliver Web-based ICW over Internet (security firewall): Current security restrictions on non-resident course delivery methods do not allow enough network based collaborative interaction and feedback between students and instructors. Explore SIPRNET delivery requirements.	ATN, upgrade base nodes, OT&E, Enterprise Warehouse
4	C4I	TT, PME, ES	Managing Non-resident Students: Limited ability to effectively track student registration and instructional material distribution, (Need fully integrated 24/7 student assistance function to provide students help on administrative and technical issues).	Learning Management System (LMS)
5	C4I	All	Centralized Information Storage/Retrieval: Lack the capability to efficiently collect, store, distribute and maintain courseware information.	Enterprise Warehouse, ADL database
6	C4I	TT, AE, PME, S/PCE CE	Development Tools: Lack effective tools to develop, store, retrieve, and manipulate sharable courseware objects.	LMS, Metadata Tagger, Search Engine, and Interface
7	C4I	TT, PME	Information Management and Metrics: Lack effective, integrated ability to survey, test, capture and analyze data, and evaluate in-resident and non-resident student performance and advanced modeling tools for resource management. (Advanced Decision Support System (ADSS))	Query Tools, Databases, IMS, Graduate Evaluation,
8	C4I	TT, PME	Collaboration Tools: Chat room, threaded discussions, Internet voice, peer collaboration, knowledge databases, decision making, and gaming tools.	Standard AF applications, protocols, security policies, survey tools, POM, research projects
9	Other	All	All Tasks: No central management or long range planning for life cycle costs, replacements, or modernization of technologies supporting Education and Training. A centralized AETC Program Office and Operations Council to provide <i>management and support functions</i> for the ADLS systems which provide overall planning, programming, budgeting, policy, resources, and execution for AETC advanced distributed learning initiatives and warehousing. Program management of the Air Technology Network will remain at AFIT under the AFIADL.	CONOPS
<ul style="list-style-type: none"> Note 1: The task categories are: Accessions Education (AE), Education Support (ES), Professional Military Education (PME), Technical Training (TT), and Specialized/Professional Continuing Education (S/PCE). 				

3.3. Assumptions and constraints .

3.3.1. Requirements and matrix priorities are based on the requirements at Appendix 2.

3.3.2. AETC will convert 42 courses and apply technology insertion in 6 courses within a seven-year time-phased plan as recommended in the BAH contracted course delivery study. Shown below are delivery alternatives by base recommended for DL conversion, combined delivery, and technology insertion after the economic analysis. Specific courses and projected savings are listed in the Program Objective Memorandum. Specific funding profiles will be provided in yearly financial plans. Actual savings will be tracked and reported annually.

Delivery Alternatives by Base

Base	DL Conversion	Combined Delivery	Technology Insertion	Total
Keesler	16	2	11	29
Sheppard	25	2	17	44
Lackland	13	--	9	22
Goodfellow	1	1	2	4
Vandenberg	--	--	--	
Wright-Pat	6	1	--	7
Maxwell	2	8	12	22
Total	63	14	51	128

3.3.3. The current AETC POM baseline funds the design, development, and delivery of legacy paper, CD-ROM, ATN, and limited Intranet courses. New funding requirements for FY02-07 were identified without degradation to legacy or existing resident requirements. The recommended 128 course conversions from the BAH Study would cost \$83.894 million if they were completed in the FY00-07 time frame. This figure would include courseware development, refreshment, migration, and delivery (ATN, Intranet, or Internet). The costs were derived from FY00 dollars plus inflation. The yearly recurring and maintenance costs are derived based on 15 percent of conversion costs. Mission Ready Technician TDY savings will be reinvested into technology insertion to expand overall efficiency. As of this date, only 42 courses have been approved by the Command for conversion to DL.

3.3.4. The table below reflects the total AETC ADL program requirement, baseline, Mission Ready Training TDY reinvestment funding, and disconnect for FY00-07 as recommended by the BAH Study. Increases above the distance learning program baselines are a funding disconnect. Disconnects in FY00-01 will be submitted as unfinanced requirements. Disconnects in FY02 and out include course conversions, communications infrastructure, and recurring lifecycle costs. The additional manpower associated with conversions will be accomplished through the acquisition process.

Costs for FY 00-FY 07 (in millions plus inflation)

	FY 00	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	TOTAL
Total Requirement	\$3.514	\$3.694	\$20.754	\$14.943	\$10.744	\$10.618	\$10.357	\$9.255	\$83.894
ADL Baseline	\$3.500	\$3.525	\$5.351	\$3.010	\$4.498	\$4.647	\$4.647	\$4.647	\$33.825
MRT Reinvestment	\$0.000	\$0.000	\$0.689	\$1.126	\$2.953	\$3.767	\$5.188	\$7.225	\$20.948
Disconnect	\$0.014	\$0.170	\$14.714	\$10.807	\$3.293	\$2.204	\$.522	-\$2.617	\$29.107

3.3.5. Actions to date. 105 courses converted to distance learning media; FY00-07 technical training and education courses selected for conversion; development templates and tools in trials; classroom upgrades survey in-progress; 2AF and DO are working to develop content maintenance plan; AETC infrastructure capacity analysis is underway.

4. Future System. The actions listed below correspond with the prioritized sub-task deficiencies listed in the table entitled “Technical Training and Education Priorities Matrix.”

4.1. The AETC ADLS will comprise a centralized learning management system (LMS) capable of managing student information and sharable courseware objects and delivering courses online (with possible restrictions to the .mil domain for some content). This plan allows AETC to leverage lessons learned and address availability, performance, interoperability and connectivity issues. The Chairman of the Joint Chief and Staff has directed USJFC to lead the development of a distributed training architecture that will enhance the training of U.S. forces in joint operations and other services. Our ADL system should have the capability to interoperate with their architectural framework and should follow the guidelines used by the C4I community. The vision of distributed joint training is to integrate and shape related DoD initiatives, programs, and operational requirements in order to link Service and joint programs for worldwide warfighter participation in joint training – on demand. The importance of this architecture to ADL cannot be overemphasized, since the Department of Defense must first establish the infrastructure that will allow it to deliver training applications, tools, and products. Requirements 1, 3, 5

4.2. Adopt Office of Secretary of Defense (OSD) ADL specification and standards for sharable courseware objects (SCOs) and LMSs. Amend Style Guides and policies for ADL compliance. Requirements 1, 5, 6

4.3. Select and procure ADL-compliant and eventually SCORM-compliant LMS and supporting design, development, and delivery products. Ensure procured ADL-compliant systems are capable of supporting SCORM technology (e.g., extensible markup language, XML) and enterprise requirements, provide a migration path to SCORM-compliance, and focus on interoperability, standards-based COTS products compliant with existing WAN and desktop security environment. Requirements 4, 6, 7

4.4. Select and procure ADL-compliant and eventually SCORM-compliant LMS and supporting design, development, and delivery products. Ensure procured ADL-

compliant systems are capable of supporting SCORM technology (e.g., extensible markup language, XML) and enterprise requirements, provide a migration path to SCORM-compliance, and focus on interoperability, standards-based COTS products compliant with existing WAN and desktop security environment. Requirements 4, 6, 7

- 4.5. Complete infrastructure analysis, upgrade computer infrastructure. Establish, upgrade and/or install servers (e.g., file, web, file/web,) for courseware development, storage, and Intranet delivery at each AETC base, as needed. Requirements 2, 3, 4, 6
 - 4.6. Centralize AETC ADLS management. Requirement 9
 - 4.7. Establish electronic classrooms at AETC/TRGs and AETC Education Centers. Requirements 2, 3
 - 4.8. Procure tools for gathering statistics on ADLS. Requirements 4, 6, 7
 - 4.9. Establish policy for metrics. Requirements 6, 7
 - 4.10. Acquire and install approved synchronous collaboration capability. Requirement 8
 - 4.11. Modify policy to establish a business process within AETC for registration and student tracking using a LMS. Requirements 5, 7
 - 4.12. Develop necessary interfaces to existing registration, content delivery, and management systems
5. Future system architecture The future system will be an open architecture capable of integration with existing systems (e.g., AETMS, JPATS, CV-22, etc.) and lays the foundation for future enhancements. The system provides workstations, Intra/Internet connections, messaging, and reporting capability for resident and non-resident students. The workstation gives the training coordinators and administrators the tools needed to manage and efficiently administer training at the corporate enterprise level through a centralized management system. All on-base and off-base connection will be secure and personalized interfaces that enable employees to view skill requirements and inventories, browse catalogs, register for instructor-led classes or launch course content. Adding workflow capabilities automates the correspondence related to skills and training initiatives by automatically sending e-mail notifications throughout the organization. The reports capability provides a centralized repository designed to distribute, secure and personalize reports across the command. All developers will have access to the system for storage and maintenance of courses.
6. Changes for users, instructors, or involved personnel.
 - 6.1. Manpower Standards may not exist or could change for the following: instructor, registrar, courseware developers, designers, training managers, administrative and technical base level POCs, Network Control Centers, and systems administration.
 - 6.2. Policy will be implemented to provide style guide requirements for designers and developers.

- 6.3. Developers will initially store sharable courseware objects in the Enterprise Warehouse. The AETC ADLS architecture will be validated and tested.
- 6.4. New responsibility for database management.
- 6.5. New responsibilities for system management by MAJCOMs or regional, centralized management of ADLS.
- 6.6. Will need remote system administration (programmed in FY02 POM). A task order is required to provide these administrators through contract. AFI 33-115, Volume 1, Network Management and AFI 33-129, Transmission of Information Via the Internet, provide responsibilities of administration and workgroup administrators.
- 6.7. New responsibilities and procedures for non-resident student records.
- 6.8. New responsibilities for a central administrator for data retrieval from LMS and repository (programmed in FY02 POM).
- 6.9. New integration responsibilities for resident to non-resident LMS.
- 6.10. New management responsibilities for ADLS, coordinating integration with existing AETC registration and student tracking systems.
7. Goals and objectives for ADLS. The goal is to improve AETC's capability to deliver education and training while supporting the SECDEF initiative to reduce up to 30% of resident training classroom time and provide for increased use of resident computer based instruction and non-resident learning. Attainment of these goals is based on the assumption that the FY02 POM is approved, instructors are left in place through the validation process, adjustments are then made to ADL course instructor manning, and funds from TDY to school are reinvested for three years.
- 7.1. Near-Term Goals FY00-01:
- Identify education and training system requirements and complete in-house media analysis
 - Select and demonstrate Learning Management System
 - Identify return-on-investment criteria and strategy to reinvest savings
 - Identify ADL sharable content and convert initial TT and ED courses (partial or full)
 - Approve Infrastructure Architecture and build an enterprise framework to support development, delivery, sustainment and discovery of learning content
 - Build/convert appropriate courses to distributed media
 - Establish model electronic classrooms at AETC/TRGs and AETC Education Centers
 - Establish and implement ADL manpower standards
 - Formally establish Air Force cost accounting procedures for TDY savings
 - Establish agreements with Career Field Managers and MAJCOMs for Subject Matter Experts

- Prioritize technology insertion requirements and balance manpower with conversions, maintenance, and COR management.

7.2. Mid-Term Goals FY02-04:

- Support fielded system, monitor system performance, identify improvement opportunities
- Establish Initial Operating Capability for ADLS and any associated data warehouses to support design, development, storage, delivery, sustainment, and administration of learning content
- Begin implementation of BAH recommendations on technology insertion in resident learning: compress resident learning times
- Complete infrastructure analysis of AETC bases (need to be validated and funded based on a delta between existing capability and future architecture requirements).
- Fund infrastructure upgrades and sustainment costs
- Fund course sustainment costs with re-invested TDY savings
- Establish and fund searchable libraries or repositories for SCOs
- Fund ADSS aids
- Fund interface between selected LMS and student management systems (e.g. AETMS, TIMS, CV-22 CMI Shell, CDSAR, etc)
- Expand ADLS capabilities to the total force

7.3. Long-Term Goals FY05-07:

- Sustain ADL Infrastructure
- Identify requirements for an intelligent tutor capability
- Implement user profiles and continuum training
- Integrate multiple advanced decision support systems
- Establish and integrate career continuum student profiles
- Expand joint reuse
- Enable all AETC resident classrooms for content delivery under ADLS (need increased systems support).

8. Conclusion This ADL Implementation Plan as described herein supports the AETC ADL FY 02 POM. The approach taken by this plan to meet AETC education and training goals for ADL aimed at correcting a “disconnect.” Technical training and education sub-task deficiencies have been identified, and prioritized as requirements and solutions to execute the plan. The plan can serve as a model for all MAJCOMs to follow. The ADL implementation plan will be supplemented with Concept of Operations, and metrics to enhance our awareness of how this program has improved readiness.

Appendix 1

Glossary

ADL – ADL is an evolution of distributed learning [distance learning] that emphasizes collaboration on standards-based versions of reusable objects, networks and learning management systems, yet may include some legacy methods and media. DoD ADL I-Plan 19 May 00

Advanced Decision Support System (ADSS)- A database designed to meet the needs of end users for information and analysis to facilitate decision-making by enterprise management.

Application Service Provider (ASP)- Application Service Providers are third-party entities that manage and distribute software-based services and solutions to customers across a wide area network from a central data center.

Benefit to Cost Ratio (BCR) – A method of comparing cost of converting from classroom to distance learning with the savings derived from the conversion.

Combined Delivery – Courses delivered in combination of part resident and part Distance Learning. Resident instruction can be preceded or followed by a distance-learning segment of instruction.

Compression – When traditional classroom instruction is converted for distance learning delivery, the number of hours required to deliver the same content is compressed or shortened. Estimated compression ratios based on studies are:

Internet-Based Instruction (IBI)	35%
Interactive Courseware (ICW)	35%
Interactive Television (ITV)	30%

Enterprise Data Warehouse - A sophisticated database that comprises a complete repository of historical data for an organization. Its design emphasizes data storage efficiency and data reliability, rather than speed of extraction or currency of data.

Distance Learning – Structured Learning that takes place without the physical presence of an instructor.

Internet Based Instruction (IBI) – Training materials, which use the Internet as the primary means of delivery.

Interactive Courseware (ICW) – Courseware that relies on trainee input to determine the pace, sequence, and content of training delivery using more than one type medium to convey the content of instruction. ICW can link a combination of media, to include but not be limited to: programmed instruction, video tapes, slides, film, television, text, graphics, digital audio, animation, and up to full motion video, to enhance the learning process.

Interactive Television (ITV) - Synchronous instruction is one-way video, two-way audio. ITV is compressed video that uses satellite technology for broadcasting directly into a classroom or it can then be routed over a local area network (LAN) to reach other classrooms and desktops.

Learning Management System (LMS) – a system that provides anytime/anywhere connectivity to skill and training knowledge resources across the enterprise.

Learning objects - Any entity, digital or non-digital, which can be used, reused, or referenced during technology supported learning.

Metadata Tags – Descriptive labels (data about data) used to index resources for use in resource management, discovery, and delivery.

Shareable Courseware Object—Reference Model (SCO-RM) – See web site adl.net.org

Synchronous Instruction – Real-time interaction and transmission of instruction and requires simultaneous participation of all students and the instructor.

Technology Insertion (TI) - "Instructional technology can be inserted into the classroom to support traditional instruction (technology insertion)." AFH 36-2235, Vol. 5, page i "While the instructor may or may not be present at the time the student is actually using the instructional technology, technology insertion applies only to the use of technology to support training [educational] programs conducted at the schoolhouse. That is, instructional technologies can be integrated directly into a traditional classroom or laboratory course of instruction, can be used for remediation and self-study to reinforce learning in a resident course, or can be used to augment or refresh training [education] received through a resident program" AFH 36-2235, Vol 5, Sec B, page 6 (30 May 98).

Appendix 2 Requirements

Fiscal Year 2000

<u>Course No.</u>	<u>Requirement/Course Title</u>	<u>Total DL = T</u> <u>Partial DL = P</u> <u>Tech Insertion = TI</u>	<u>AFB</u>
E3ACR1C371-000	Command Post Craftsman	T	Keesler
E3ACR3U071-001	Manpower Craftsman	T	Keesler
E3AIR3S200-015	Technical Writer (Non-resident)	T	Keesler
AT-M-03	Air Traffic Control Operations Craftsman	T	Keesler
L3ACR3M071-000	Services Craftsman	T	Lackland
L3OBRPP1-004	Basic Security Forces Officer's Course	P	Lackland
New Course	Information Security Managers	T	Lackland
J3AIR3S200-069	Basic Instructor Course	TI (complete)	Sheppard
J3ACR3S271-000	Education & Training Craftsman	T	Sheppard
J3ACP2T171-004	Vehicle Operations Craftsman	T	Sheppard
J6ANU3E271-000	Pavements Maintenance, Inspect, & Repair	P	Sheppard
	Deployed Air Reserve Comp Opns & Law		Maxwell
	AF SNCOA		Maxwell
	Airman Leadership School		Maxwell
	Hazmat Mgt Program 99A		Maxwell
	Teaming for Production Mgt		Maxwell
	IW Applications		Maxwell
	SOS Resident		Maxwell

Classroom Configuration Plan TRGs

Lackland,
Sheppard,
Maxwell, Keesler,
Goodfellow,
Vandenberg

Classroom Configuration Plan Ed Centers

Altus, Columbus,
Goodfellow, Keesler,
Lackland, Laughlin,
Little Rock, Luke,
Maxwell, Randolph,
Sheppard, Tyndall,
Vance

GCCS Management Plan

Keesler

Fiscal Year 2001

E3ACR3S071-002	Personnel Craftsman	T	Keesler
E4AST1C351-000	Status of Operational Res. (SORTS) (USAF)	T	Keesler
L3OZR34M3-001	Activity Manager	T	Lackland
	Sustainment of courses and ADL baseline		See POM
	LAN Upgrades for Technical /Ed Bases		

Fiscal Year 2002

<u>Course No.</u>	<u>Requirement/Course Title</u>	Total DL = T Partial DL = P <u>Tech Insertion = TI</u>	<u>AFB</u>
L3AIR3S200-400	Security Forces Craftsman (CDC)		Lackland
J3ACR3E070-000	Internet/HTML Familiarization	T	Lackland
J3AIR3S200-025	Civil Engineering Mgt Craftsman	T	Sheppard
	Technical Writer Principles	T	
	Enterprise Warehouse		See POM
	Education Center Classrooms		See POM
	Infrastructure Acquisition		See POM
	Sustainment of courses and ADL baseline		See POM

Fiscal Year 2003

E3OAR33SO-005	GCCS UNIX (KAFB)	TI	Keesler
E3OAP33SO-005	GCCS UNIX (Det 1)	TI	Keesler
E4OST33SO-005	GCCS UNIX (MTT)	TI	Keesler
L3ACR2S071-004	Supply Management Craftsman	P	Lackland
L3AZP2T371-000	Vehicle Maintenance Craftsman	T	Lackland
L3AZR2T000-007	Cargo Movement Operations System	T	Lackland
L3ACR2T071-003	Traffic Management Craftsman	T	Lackland
J3AIR3S200-006	Training Supervisor	T	Sheppard
J3AZR3S200-010	Instructional Systems Designer	P	Sheppard
J3AZR3S200-003	Computer Based Instructional Designer	P	Sheppard
	Reserve Forces Judge Advocate Course		Maxwell
	Mortuary Affairs Course		Maxwell
	Acquisition Excellence		Maxwell
	ACSC (Res) Nature of War		Maxwell
	Aerospace Operations		Maxwell
	Conflict Resolution		Maxwell
	Leadership and Command Course		Maxwell
	Operational Forces		Maxwell
	ACSC War Theory		Maxwell
	Joint Opns and Campaign Concepts		Maxwell
	Classroom Equipment Ed Centers		See POM
	Classroom Equipment TRGs		See POM
	Infrastructure Acquisition		See POM
	Sustainment of courses and ADL Baseline		See POM
	Infrastructure Surveys		Lackland, Sheppard, Maxwell, Keesler, Goodfellow, Vandenberg

Fiscal Year 2004

<u>Course No.</u>	<u>Requirement/Course Title</u>	Total DL = T Partial DL = P <u>Tech Insertion = TI</u>	<u>AFB</u>
L3OLR21L1-000	Advanced Logistics Officer Course	T	Lackland
New Course	TEMPEST Fundamentals	T	Lackland
J3ARR3E453-002	Pest Management Re-certification	T	Sheppard
J3AZR3E453-003	Pest Management Certification	T	Sheppard
J4ART3E453-000	Pest Management Specialist (Re-certification)	T	Sheppard
J4AST2E066-054	Quality Assurance – Aircraft (ACC)	T	Sheppard
	TRG/Ed Cntr Maintenance and Sustainment		Sheppard
	First Sgt Academy Add'l Duty Symposium		Maxwell
	Contingency Warplanning Course		Maxwell
	AF On-Scene Commander's Course		Maxwell
	Teaming Environment for Acq Managers		Maxwell
	Infrastructure Acquisition		See POM
	Sustainment of courses and ADL Baseline		See POM

Fiscal Year 2005

J3ACR2W071-002	Munitions Systems Craftsman	P	Sheppard
SYS 110	Fundamentals of Data Management		Maxwell
	Air National Guard Annual Surv of the Law		Maxwell
	Infrastructure Acquisition		See POM
	Sustainment of courses and ADL Baseline		See POM

Fiscal Year 2006

E3ACR1C072-000	Operations Resource Management Craftsman	T	Keesler
E3AZR3C051-024	Defense Message System Administration	TI	Keesler
L3ACR2T271-005	Air Transportation Craftsman	T	Lackland
J3ACR2W171-000	Aircraft Armament System Craftsman	P	Sheppard
	AF On-Scene Commander's Course		Maxwell
MCADRE003	Joint Doctrine Air Campaign Course		Maxwell
	Infrastructure Acquisition		See POM
	Sustainment of courses and ADL Baseline		See POM

Fiscal Year 2007

<u>Course No.</u>	<u>Requirement/Course Title</u>	Total DL = T Partial DL = P <u>Tech Insertion = TI</u>	<u>AFB</u>
E3ACR3C371-000	Advanced Comm-Computer Systems Planning & Implementation Mgt Specialist	T	Keesler
E6ADL2A5X1X000	C-130 Self-Contained Navigation System	TI	Sheppard
E3ACR1C071-000	Airfield Management Craftsman	T	Keesler
	PCE – Chaplain		Maxwell
	Infrastructure Acquisition		See POM
	Sustainment of courses and ADL Baseline		See POM

NOTE: The requirements/course listing is dependent upon available funding and career field requirements and coordination.