

Foreword

Since the inception of the Air Force, publications and forms have been printed, distributed, and used by Air Force personnel for policy and guidance. Even though increasing advances in computer technology have created very powerful electronic capabilities, the process of creating, printing, and distributing Air Force policy and guidance has changed only slightly.

The Air Force Electronic Publishing Program has been designed to take full advantage of new information technology. By employing technologies like on-line, real-time, search-capable collections of electronic publications and electronic forms, the former paper-based products and distribution system will become much more functional and useful to Air Force members.

With the rapid changes in computer technology, we must be careful not to be driven and controlled by constantly changing applications. By adopting data standards and choosing applications that meet those standards, we are able to add stability and strategic direction to the program. This Master Program Guide was created to provide this standard approach and identify the groundwork required to transition from a paper-based to an electronic publishing system. The guide provides core planning guidance identifying the program goals and implementing documents necessary to a successful transition.

We are distributing the guide to all functional areas as we continue to work the transition. We will generate and staff follow-on implementing studies and plans as the program evolves and begins to impact how you do business. Please direct any feedback to HQ USAF/SCMV, 1250 Air Force Pentagon, Washington, DC 20330-1250.



JOHN S. FAIRFIELD, Lt Gen, USAF
DCS/Communications and Information

Executive Summary

The Air Force Electronic Publishing Program planning phase began in late 1993 with cooperation of every major command publisher. In July of 1994, the implementation of the program began with the release of the first Air Force Electronic Publications Library (AFEPL) on CD-ROM containing hundreds of electronic publications and forms. Since this initial release, the program has brought Air Force personnel a more advanced, search-capable CD-ROM containing hundreds more electronic publications and forms, on-line access to these publications and forms via the World Wide Web, and the transition of the Air Force Address Directory from a paper publication to an interactive database.

This is just the beginning. As the program continues, aggressive plans are being implemented to migrate every feasible paper product in the Air Force publishing inventory to a standard electronic product. As these products are converted, the central printing and distribution of these products will be discontinued and the electronic product will become the official version of the information. The concept is for Air Force personnel to abandon the printing of the entire publication when only a portion is needed. Instead, personnel will use the electronic product to search for the exact information required. Once the requested information is located, the user will either view the information on-screen or print the needed portion of the publication. While this approach should reduce Air Force printing, some printing requirements will exist for years to come. For these requirements, the electronic publication will be centrally-distributed, locally-printed, and reproduced.

This program is also a part of a larger effort directed by a DoD functional process improvement group, of which Air Force Publishing is a member, that is building a Year 2000 solution to include the electronic front end authoring and staffing process and employ end user fee-for-service charges.

The plans and implementation of the Air Force Electronic Publishing Program have been and remain a product of a corporate effort by SAF, HQ USAF, MAJCOM, and FOA publishing experts. To document this work and provide central program guidance, the Electronic Publishing Master Program Guide was created in 1995 and is now updated for 1996-1997. This guide is a living document providing central direction and strategic planning to the Air Force Electronic Publishing Program. It includes requirements from AF War Mobilization Plan (Vol. 1), and the publishing systems portion of various information and technical communications-computer architectures.

The working groups that created this document are still at work. They have proposed various methods of implementing the concepts outlined in the guide and in some cases, such as the integration of Standard Generalized Markup Language (SGML) into the publishing process, moved forward with actual solutions. However, much of what happens next will include working with all the functional areas--expanding beyond the publishing staffs to each of you who have a publication, form, or other published product. Those products will be looked at closely to find if there is an electronic solution for creating, distributing, or using them versus the centrally procured and warehoused inventory we currently maintain.

AIR FORCE ELECTRONIC PUBLISHING MASTER PROGRAM GUIDE 1996 - 1997

The purpose of this Guide is to provide the AF with the direction and organization required to plan and implement the Electronic Publishing Program. It is the baseline requirements document to develop an Air Force-wide capability for electronic publishing.

CHAPTER 1 THE AIR FORCE ELECTRONIC PUBLISHING PROGRAM **7**

SECTION A -- PROGRAM DESCRIPTION	7
1.1. THE REQUIREMENT.	7
1.2. SINGLE AIR FORCE PROGRAM.	8
1.3. WARTIME IMPLICATIONS.	8
1.4. CLIENTS AND CUSTOMERS.	8
1.5. INVENTORY/PRODUCT CONVERSION.	8
1.6. ELECTRONIC PUBLISHING INFRASTRUCTURE.	10
SECTION B -- ROLES AND RESPONSIBILITIES	10
1.7. PURPOSE.	10
1.8. APPLICABILITY.	11
FIGURE 1.1. DOCUMENTS AND THEIR FUNCTIONS.	11
1.9. MANAGEMENT STRUCTURE.	12
FIGURE 1.2. MANAGEMENT CHART.	12
SECTION C -- PROGRAM GUIDE ORGANIZATION	13
1.10. INITIATIVES.	13
1.11. TASKS.	13
1.12. DOCUMENTS.	13
1.13. MANAGEMENT AND WORKING GROUPS.	13
FIGURE 1.3. MASTER PROGRAM GUIDE ORGANIZATION.	14

CHAPTER 2 ELECTRONIC PUBLISHING PROJECT TEAM **15**

SECTION A -- OVERVIEW	15
2.1. EPPT ROLE.	15
2.2. RELATIONSHIP BETWEEN EPPT AND THE WORKING GROUPS.	15
2.3. COMPOSITION.	15
SECTION B -- INITIATIVES AND TASKS	15
2.4. INITIATIVE 1 - PROVIDE STRATEGIC GUIDANCE TO THE AF ELECTRONIC PUBLISHING PROGRAM.	15
2.5. INITIATIVE 2 - ADDRESS AF PERSONNEL ISSUES IMPACTED BY THE PROGRAM.	16
2.6. INITIATIVE 3 - IDENTIFY RESOURCES REQUIRED TO MANAGE AND TECHNICALLY SUPPORT THE AF ELECTRONIC PUBLISHING PROGRAM.	18
2.7. INITIATIVE 4 - OVERSEE THE CENTRAL DEVELOPMENT OF SOFTWARE APPLICATIONS.	18
2.8. INITIATIVE 5 - ESTABLISH INFORMATION SHARING AND MARKETING PLANS IN SUPPORT OF THE PROGRAM.	19

CHAPTER 3 STANDARDS, PRODUCTS, AND MEDIA **21**

SECTION A -- OVERVIEW	21
3.1. STANDARDS PHILOSOPHY.	21
3.2. RELATIONSHIP BETWEEN STANDARDS AND PRODUCTS.	21
3.3. PURPOSE.	21
SECTION B -- INITIATIVES AND TASKS	21
3.4. INITIATIVE 6 - IDENTIFY AND ADOPT STANDARDS APPLICABLE TO AIR FORCE ELECTRONIC PUBLISHING REQUIREMENTS.	21
FIGURE 3.1. STANDARDS PYRAMID.	22
3.5. INITIATIVE 7 - ESTABLISH A MECHANISM FOR STANDARDS ADOPTION.	23
3.6. INITIATIVE 8 - INTEGRATE DATA INTERCHANGE INTO ELECTRONIC PUBLISHING SYSTEM.	24
FIGURE 3.2. ELECTRONIC PUBLICATIONS SUPPLEMENTATION (SGML).	26
3.7. INITIATIVE 9 - DEVELOP A MIGRATION STRATEGY FOR ALL PRODUCTS IN THE AIR FORCE PUBLISHING INVENTORY.	27
FIGURE 3.1. PRODUCT MIGRATION CONCEPT.	28
3.8. INITIATIVE 10 - IMPLEMENT THE PRODUCT MIGRATION STRATEGY.	29

CHAPTER 4 INFRASTRUCTURE **31**

SECTION A -- OVERVIEW	31
4.1. INFRASTRUCTURE PHILOSOPHY.	31
4.2. PURPOSE.	31
SECTION B -- INITIATIVES AND TASKS	31
4.3. INITIATIVE 11 - DEVELOP AND DESCRIBE THE CATEGORIES OF THE SUPPORTING COMMUNICATIONS/COMPUTER INFRASTRUCTURE REQUIRED TO FIELD AN ELECTRONIC PUBLISHING SYSTEM, AND MATCH THE CATEGORIES TO ELECTRONIC PRODUCT DEVELOPMENT.	31
TABLE 4.1. INFRASTRUCTURE CATEGORIES MATCHED WITH PRODUCT EVOLUTION.	35
4.4. INITIATIVE 12 - PERFORM AN ASSESSMENT OF CURRENT INFRASTRUCTURE AIR FORCE-WIDE AND DEVISE AN APPROACH TO ESTABLISH AND MEET REQUIREMENTS FOR INTEGRATING ELECTRONIC PUBLISHING.	37
FIGURE 4.1. MODEL FOR ELECTRONIC PUBLISHING OFFICE.	39
FIGURE 4.2. SYSTEM MODEL INSTALLATION LEVEL PAPER-BASED PUBLISHING.	40
FIGURE 4.3. SYSTEM MODEL INSTALLATION LEVEL ELECTRONIC PUBLISHING.	41

ATTACHMENT 1 GLOSSARY OF ACRONYMS, TERMS, AND DEFINITIONS **43**

ATTACHMENT 2 STANDARDIZATION REQUIREMENTS **45**

A2.1. FUNCTIONAL/APPLICATION REQUIREMENTS.	45
A2.2. MANAGEMENT REQUIREMENTS.	48
A2.3. INTERIM PUBLISHING STANDARDS.	52
A2.4. SYSTEM REQUIREMENTS.	53

Chapter 1

THE AIR FORCE ELECTRONIC PUBLISHING PROGRAM

Section A -- Program Description

1.1. The Requirement.

1.1.1. To meet all the requirements of Air Force users, the Air Force must rapidly migrate from manual, paper-based published products toward a fully electronic environment. The target of this program is to build an electronic system organized to digitally meet all user requirements, both paper and digital, for administrative information. The new electronic system must be able to embrace technological solutions for advanced electronic products, satisfy limited requirements for paper, and be available and usable during both peacetime and war. The requirement addresses how customer needs--both current and future--will be met, what the electronic products are and how they will be produced, and what infrastructure or system changes are needed.

1.1.2. The publishing process involves hundreds of offices of primary responsibility (OPR) creating documents containing information for thousands of users. Once committed to paper, the information is no longer the focus -- publishing becomes a logistics management task; i.e., reproducing and shipping paper worldwide. By committing information to a digital file, we improve our ability to deliver documents; however, just as with paper, the information is not the focus. How can we make information the focus? Instead of converting a library full of books to a directory full of files, we can extract the information from the pages of our publications and digitally organize it for sophisticated processing to embrace today's technology and be prepared to meet tomorrow's demand for information. The goal is to create a perpetual, interactive, worldwide, on-line, real-time, source of official information.

1.1.3. The first step towards organizing information to meet the goal was taken by developing a structured data template for the single largest class of administrative information -- Air Force Publications. The power of this simple idea is that we can see a publication without looking at it with human eyes. Computers can now be used to organize, manipulate, query, and manage the data. With a central software programming effort, it is possible to take advantage of these capabilities:

- Extended life of data. Since the data is now in ASCII, we can centrally output all the data to any format (CD-ROM, Portable Document Format, World Wide Web, etc.) without requiring authors/publishers to manually convert each publication.
- Automated integration of supplements (no more posting!)
- True management of data. All the data can be queried by the computer to provide metrics that used to take many man-hours, i.e., how many and which publications were published in 1995.
- Data manipulation. The entire library of administrative publications can be easily updated without human intervention. If a global renumbering of publications were to be required, one programmer could make the data comply.

1.1.4. While all of the listed capabilities are planned to be implemented, available resources require a prioritization of projects. The conversion to CD-ROM and PDF is complete. The automated integration of supplements and the development of a World Wide Web solution are being implemented.

1.2. Single Air Force Program.

This entire program was developed as a corporate effort by publishing experts across the Air Force using quality precepts and tools. The consensus among the functional experts is that the Air Force must move toward the electronic environment in a coordinated, logical manner.

While there is virtually unanimous consensus the Air Force should migrate from paper to electronic publishing, there are many ways it could be accomplished. Some options include using the Internet and the World Wide Web as the medium of choice, contracting the service to a commercial publishing company, or using an on-line service such as CompuServe. This Guide considers those options and incorporates or eliminates them as appropriate to today's requirements for a single AF Electronic Publishing Program.

1.3. Wartime Implications.

Availability of information products directly impacts the Air Force's ability to perform in a wartime environment. Current requirements direct a 30 - 60 day supply of forms for day-to-day operations and a 90 day supply of necessary publications to support the War Mobilization Plan (WMP) and Emergency Mobilization Plan (EMP)--commonly referred to as "D-Day" stock. Electronic products (e.g., CD-ROM) will allow units to eventually perform in virtually a "paperless environment" yet have access to the majority of the inventory. While the technology exists today to support a paperless environment, the Air Force must continue to meet the paper output needs of the mobilized force until all deployable groups can access the products electronically.

1.4. Clients and Customers.

This document recognizes two categories of people who access the publishing system. The first category, clients, consists of the OPR who owns and creates the information. The second category, customers, is the end user of the "published" product (the field) and may consist of anyone needing the information. Instructions and standards will be established and provided to all participants in the creation, "publishing", and distribution of our electronic products. Training, based on these standards, will be provided at each infrastructure level to both communities. The training will cover product development for OPRs and product use for the end-user. Training will be tailored to the specific needs of each level and will be augmented by user guides and/or on-line assistance.

1.5. Inventory/Product Conversion.

The types of products in the inventory force an evolutionary process from paper to an electronic environment that will differ between the various categories. Analysis of the inventory showed four categories, some of which can be made available in electronic form today, while others may never become electronic due to their cost or perishable nature. Following is a description of each category and its evolutionary path toward the electronic world. Also shown is the percentage of the baseline that each category represents (it does not add up to 100% due to in-house work and miscellaneous delivery charges). *Note:* The baseline was established from budget expenses per category for HQ USAF during FY91-93.

1.5.1. Category I:

Air Force Origin--Easy. No evolution required (18.18%). Single sheet forms, printed on one or both sides.

1.5.2. Category II:

Air Force Origin--More Difficult. Must maintain paper version until creation standards are established (24.07%). Air Force Policy Directives, Instructions, Manuals, Pamphlets, Handbooks, Headquarters Operating Instructions, Indexes, many catalogs, etc.

1.5.3. Category III:

Non-Air Force Origin--Wide Range of Difficulty. Dependent on development and implementation of DOD (and Government) standards (21.75%). Military specifications and standards, job training standards, DOD publications without Air Force identifying numbers, etc.

1.5.4. Category IV:

Air Force & Non-Air Force Origin--Low Potential. Evaluate and evolve if (and/or when) possible (30.18%). Personnel tests, recurring periodicals, visual aids, decals, and tabulating paper.

1.5.5. Special Consideration.

Forms are a special case since they support a process rather than another publishing product. The evolution of forms to electronic data collection tools will require an even closer relationship between OPRs, end-users, and the forms producers. In the interim, the Air Force can and should digitize paper forms for deployment purposes and only reproduce them in the field as necessary.

1.5.6. Need for Standards.

1.5.6.1. Unlike paper products where *paper* is the standard, electronic information must adhere to data standards to be truly effective. Otherwise, all data will have to be re-engineered to take advantage of new technology or be used in a different environment. For instance, if a publication was written using a word processor and printed, all the data captured in the word processor would have to be manually extracted and reformatted to place the information on the World Wide Web.

1.5.6.2. Standards for electronic products must be established and used Air Force-wide. Interim standards are also important and must be adopted immediately, but should be evaluated carefully before adoption so they don't lead us down a blind alley. Examples of interim standards include proprietary software temporarily adopted while more stable standards are being developed. For instance, there is currently no nationally or internationally recognized standard for electronic forms. In the place of a non-proprietary standard, the Air Force has adopted JetForm's FormFlow as the standard for electronic forms. For the long-term, we will implement all Federal Information Processing Standards (FIPS) on publishing since they are key to providing information sharing across the Air Force (including AFRES and the ANG) and joint communities.

1.6. Electronic Publishing Infrastructure.

For the purpose of this program, infrastructure is defined as: All resources needed to complete and support the conversion of the current paper-based publishing system to an electronic-based system. This infrastructure includes the people, training, hardware/software, and connectivity required for creating, publishing, distributing, and using electronic products. The program will analyze how well today's infrastructure supports the electronic publishing mission and identify shortfalls and the resources required to fix the shortfalls.

1.6.1. Delivery and Access.

1.6.1.1. Standards not important to paper products now will become critical for electronic delivery. Without standards for style sheets, formats, document tagging, and hyper-link protocols, effective delivery will not be possible. The goal is for products developed at any level to work electronically with any other product throughout the delivery system--for all users. The electronic delivery system should be based on providing customer access to any electronic product in the inventory.

1.6.1.2. The new electronic publishing infrastructure must address the requirement of Major Commands to supplement publications to fit their unique situations. The end-user should be able to read any basic publication and their Major Command supplement as a single document.

1.6.1.3. Even after the Air Force has connectivity to most end users, alternatives such as CD-ROM and diskettes will still be required.

1.6.1.4. A separate (from the paper product) electronic indexing/directory system for tracking all products and changes will need to be developed.

1.6.1.5. Maintenance and Support. Upgrade and maintenance of the electronic system will be required and should be planned for at all levels. Maintenance and support can take the form of updates, corrections, conflict resolutions, version tracking, and systematic monitoring of the standard system and the electronic information.

1.6.1.6. Libraries. The infrastructure will require electronic publishing libraries at each organizational level that has a publishing function: Air Force, each MAJCOM/FOA/ DRU, and each base. Electronic publishing libraries at these levels maintain master versions of their organizational products and become nodes in an Air Force-wide library directory. Customers will access the libraries at their organizational level and either download to their PC or arrange for a specifically needed product for delivery (diskette/CD-ROM/paper).

Section B -- Roles and Responsibilities

1.7. Purpose.

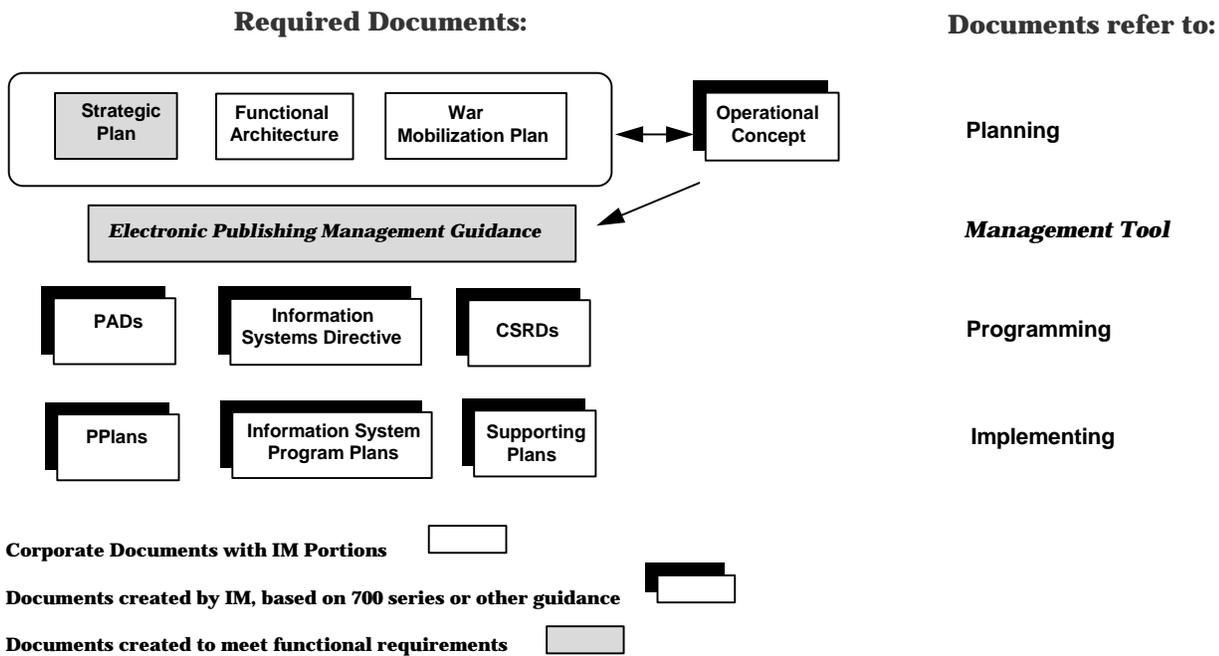
This section establishes the organizational structure and processes dedicated to the task of building an Air Force-wide electronic publishing capability. It also provides a link between the formal planning documents and the downstream programming and implementing documents--that link is fully described in Figure 1.1. While relying on Air Force Regulation 700-4, Vol 1 (**NOTE: Incorporated into 33 series AFIs**), for the baseline guidance regarding the transition to electronic publishing, this document is not specifically prescribed in the AFR 700 series or in any of the planning level documents outlined in

Figure 1.1. It is, however, a necessary tool for managing the total transition—which includes more than just communications and computer system implementation.

1.8. Applicability.

If the transition to electronic publishing were an acquisition program, this document would be its Program Management Directive (PMD). Since it is not an acquisition program this is not a PMD, but it has those attributes. It is a publishing community management tool that applies to all administrative publishing functions in the Air Force, Air Force Reserve, and Air National Guard. It is the single source for management of electronic publishing activities across all administrative publishing functions. Other publishing activities owning unique systems such as the Training and Technical Order communities may elect (and are encouraged) to participate in the transition effort.

Figure 1.1. Documents and their functions.



1.8.1. Planning documents.

These documents describe where we want to go and are prepared using a broad Air Force-wide perspective. The operational concept was created specifically to guide the transition to electronic publishing and integrates the relevant portions of the other planning documents.

1.8.2. Programming documents.

Programming documents translate plans into specific requirements and will be created "as required" throughout the transition period. It has not been determined if a single program document will be created for the transition. However, we have estimated that the top end for transition costs (including acquisitions) will be below \$5M, well within the threshold of an intermediate automated information system as described by AFR 700-4, Vol 1 (*NOTE: Incorporated into 33 series AFIs*).

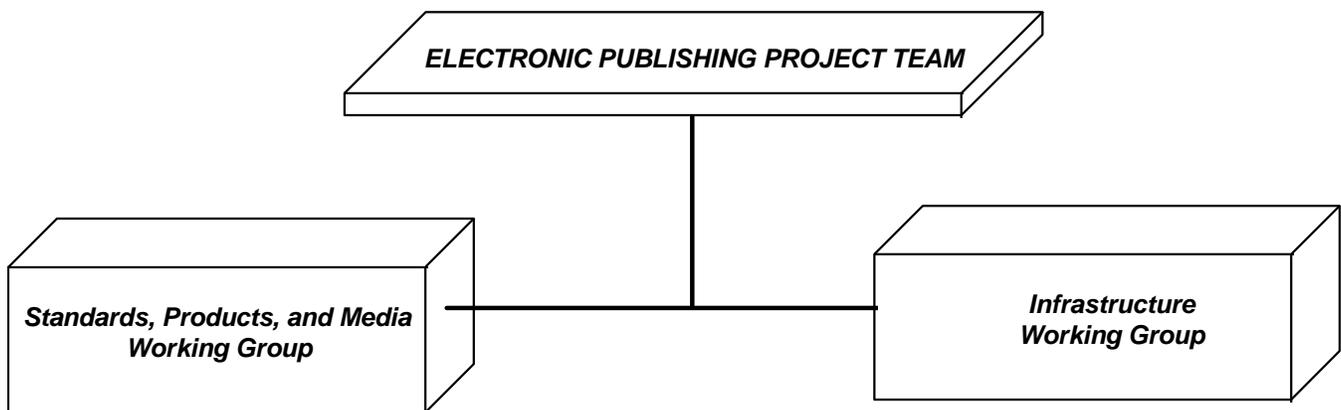
1.8.3. Implementing documents.

Setting the pace for the transition, implementing documents are action oriented. They include specific areas such as training, testing, security, configuration management and other areas deemed necessary for the effort. These documents will be created on an "as required" basis.

1.9. Management Structure.

Today there are numerous automation efforts underway throughout the publishing community. This management structure has been created to focus efforts, avoid duplication, and prevent possible system incompatibilities. Once the objectives of the operational concept are achieved, the structure will be dissolved or incorporated, as necessary, into publishing activities.

Figure 1.2. Management chart.



1.9.1. Air Force Electronic Publishing Project Team (EPPT).

While the office of Air Force Publishing Policy (AF/SCMV) maintains responsibility for the planning and implementation of the Electronic Publishing Program, input to this process is provided by the Project Team. This link provides a way to adjust priorities within the transition program and ensures AF senior publishing managers understand resource or other electronic publishing program impacts. The EPPT composition, roles, responsibilities, and related initiatives are presented in Chapter 2.

1.9.2. Working Groups (Structure and Responsibilities).

1.9.2.1. Primary members.

Each working group will be comprised of representatives from SAF/AAD each Major Command, FOA, DRU, and a member of AF/SCMV. Participant organizations will provide TDY funding to support their representatives.

1.9.2.2. Advisory members.

Advisory members include subject matter experts within SAF/AAD and AF/SC and volunteers from all MAJCOMs, HQ AFRES and the ANG. They will participate as needed and will coordinate on all work produced by the groups they advise.

1.9.2.3. Responsibilities.

1.9.2.3.1. There are two primary responsibilities of the working groups.

- Recommend initiatives to EPPT
- Implement approved initiatives

1.9.2.3.2. There are also additional administrative responsibilities to be performed by the working group chairpersons in conjunction with the Electronic Publishing Program Manager (AF/SCMV). These chairpersons will:

- Schedule meetings and set agendas
- Coordinate group information requests and reports with the Project Team
- Prepare and distribute meeting minutes
- Ensure issues are tasked and tracked to completion
- Represent their group at Project Team meetings

Section C -- Program Guide Organization

1.10. Initiatives.

From the initial design came the concept of initiatives to identify and track program efforts. As a result of adopting this concept, the entire program is broken into specific initiatives which become the basis for all program work. For example, one program initiative is to address AF personnel issues impacted by the program.

1.11. Tasks.

Each initiative is further broken into tasks which are more specific and require some type of output or result. These tasks are tracked as deliverables and can be assigned completion dates, while the initiatives are more general and could possibly exist for the life of the program. Using the personnel example above, a task under that initiative is to develop and implement an AF Electronic Publishing training course.

1.12. Documents.

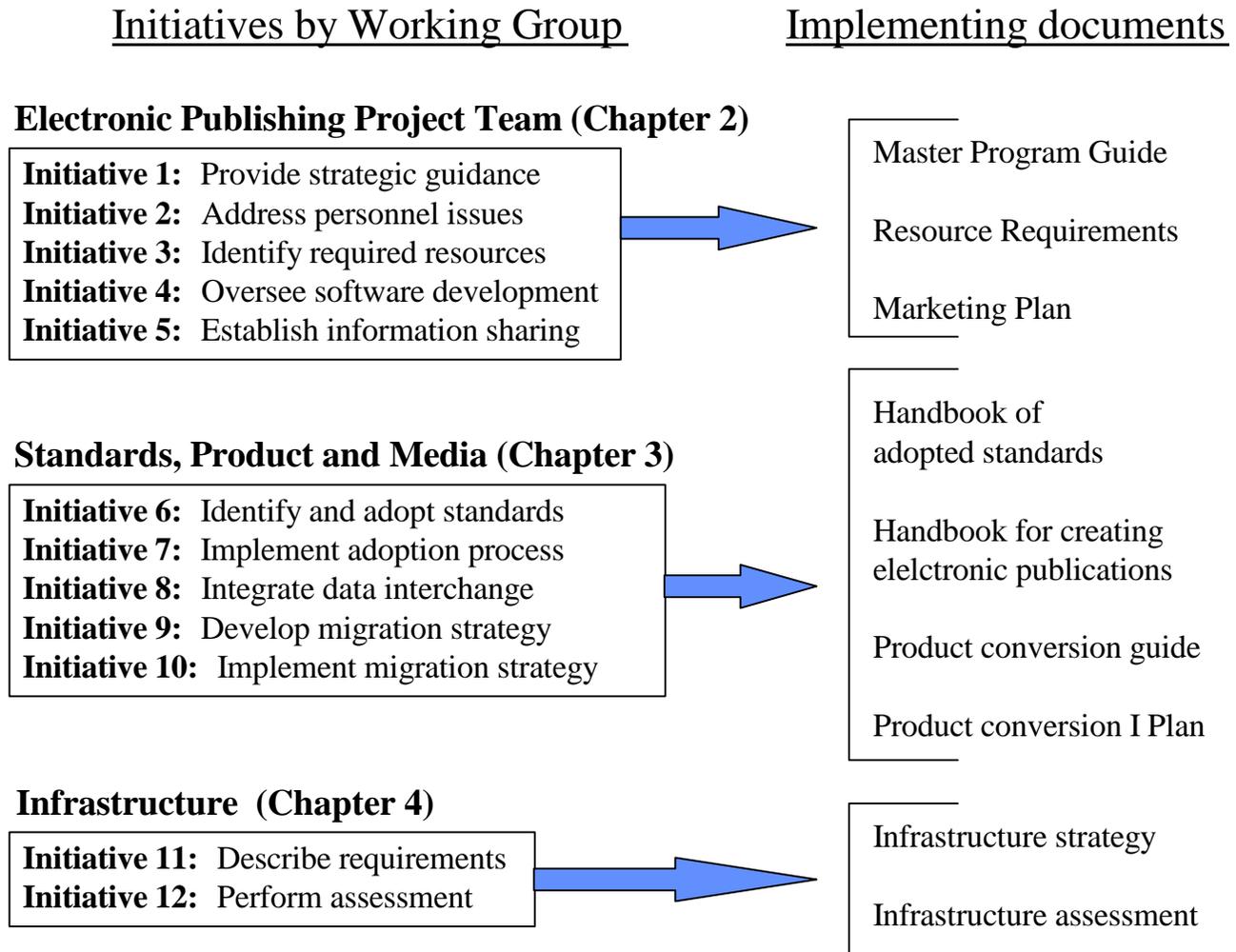
Throughout the life of the program, many planning, programming, and implementing documents (see Section B in this chapter) will be created. While these documents have significant impact on the program, their development are actually tasks and will be tracked as such.

1.13. Management and Working Groups.

In order to accomplish these initiatives and subordinate tasks in an organized manner, the initiatives are grouped into similar topics and assigned to the EPPT (management group) and the two working groups.

To enhance the usability of this document, the Program Guide is organized around these groups. Each chapter represents a separate group and contains the initiatives for which that group is responsible. A graphic depiction of this organization is provided in Figure 1.3.

Figure 1.3. Master Program Guide organization.



Chapter 2

ELECTRONIC PUBLISHING PROJECT TEAM

Section A -- Overview

2.1. EPPT Role.

The office of Air Force Publishing Policy (AF/SCMV) manages the AF Electronic Publishing Program with input from the the Electronic Publishing Project Team. This group helps develop the program guidance, strategically planning for the future of the program. The group also deals with specific issues that apply to the overall program like Air Force training and resource requirements.

2.2. Relationship between EPPT and the working groups.

2.2.1. The EPPT gives the working groups general guidance through initiatives and the working groups provide the technical solutions to meet that guidance.

2.2.2. The Electronic Publishing Program is guided through initiatives and tasks which are developed by both the EPPT and the working groups. Specifically, the working groups are responsible to recommend initiatives and tasks to meet the EPPT guidance. Once approved, those tasks are performed to meet the initiatives.

2.3. Composition.

The EPPT will be composed of representatives from the AF/SCMV, SAF/AAD, all MAJCOMs, HQ AFRES, HQ AFPC, HQ AIA, and ANG.

Section B -- Initiatives and tasks

2.4. INITIATIVE 1 - Provide strategic guidance to the AF Electronic Publishing Program.

2.4.1. Discussion.

2.4.1.1. The Air Force Electronic Publishing program is not only designed to address the immediate conversion of AF paper products to digital products, but it also addresses all the processes, resources, training, and technology for the short- and long term migration from a paper-based publishing system to on-line electronic access of all administrative information.

2.4.1.2. This program directly affects anyone in or out of the Air Force who has or will have a need to access AF administrative information. This sizable impact led to the determination that all Air Force Publishing managers must be included in the strategic management of the program. In this way, the program can benefit from many different perspectives and maximize the quality of strategic planning.

2.4.1.3. To document the core strategic vision and guidance, the Project Team is responsible for input to the creation and maintenance of this publication, the Electronic Publishing Master Program Guide.

2.4.1.4. In the search for the best long range plans, the Project Team must create strong liaisons with other government and private organizations who are on or have traveled a similar path. There are many examples of members of industry and government who have moved to an electronic based

publishing system (Caterpillar Corp., Library of Congress, CIA). The lessons learned from studying these programs can be invaluable to the success of the Air Force program. Similarly, the Air Force must take the time to help other organizations, both in and out of this service, who are planning to migrate to a digital environment. While often overlooked, a strong working relationship with outside organizations will alleviate the common occurrence of spending unnecessary resources to develop an application that already exists.

2.4.1.5. As the overall strategic guidance is further developed and refined, the Project Team must continue to rely on the technical expertise of the working groups. These groups are created to design and implement the technical solution called for by the core initiatives. The Project Team must continually ensure the working groups have the resources (usually technical expertise from the Major Commands) needed to implement the initiatives and their related tasks.

2.4.1.6. In addition to resource support, the Project Team is directly responsible for reviewing all recommended solutions proposed by the working groups. It is this review/approval process which provides the assurance the technical implementation is always on track with the long range goals.

2.4.2. Tasks.

2.4.2.1. **Task 1.** Provide input to the Air Force Electronic Master Program Guide.

2.4.2.2. **Task 2.** Review all program initiatives and subordinate tasks.

2.4.2.3. **Task 3.** Establish and maintain liaison with agencies in and out of the Air Force working to solve publishing issues. Some of these liaisons may include: SAF/AAD, CIPS, DISA, CALS, AFCA, DoD C3I (FPI issues).

2.4.2.4. **Task 4.** Support the working groups by ensuring they have the resources required to meet their specific initiatives and related tasks.

2.4.2.5. **Task 5.** Review and approve all technical solutions proposed by the working groups before implementation to ensure the solutions are supporting the long range publishing goals. Meet at least annually to perform this function.

2.5. INITIATIVE 2 - Address AF personnel issues impacted by the program.

2.5.1. Discussion.

2.5.1.1. Since the inception of the Air Force, the method of distributing administrative information to Air Force personnel was through a paper-based publications system. From the author, through the reviewer and approving official, into the publishing logistics system, to the end-user, the focus has been the printed publication. With the invention of computers and the extreme pace of advancing technology, the focus has remained the printed publication. Computers have been, before this program, used as very sophisticated typewriters, hastening the printing of paper publication.

2.5.1.2. The Air Force Electronic Publishing Program completely changes the focus from the printed publication to the information in that publication. Using electronic technologies such as the text-based Standard Generalized Markup Language (SGML) and databases, markup is added to the actual information, adding intelligence down past the paragraph level, down into the actual words. With this

intelligent data, the possibilities are almost endless: on-line, immediate, search-capable access to the entire library of administrative information. **Note:** The Standard Generalized Markup Language (SGML) was adopted by the International Standards Organization (ISO) as ISO 8879 in 1986. The language is an ASCII based structured text markup language adopted to provide for the portability of documents across computer platforms and applications.

2.5.1.3. With this new focus on the information, Air Force publishers can now do what they have never before been able--take advantage of the true power of computers. Instead of using a complex computer as a high priced typewriter, publishers can create an environment where the end-user is able to access all the information he/she needs in a quick, simple manner. Publishers can also use this new environment to better manage the information, being able to perform automatic queries and build metrics using data once trapped in paper.

2.5.1.4. Obviously, this new environment requires a different set of skills than the environment of just a few years ago. As the requirement for a centrally-managed paper logistic system diminishes, many of those currently performing the logistics tasks will have to be retrained. As the focus moves from editing and formatting paper publications to managing intelligent information to maximize the use of technology, editors and compositors will have to be retrained. As the manner in which the end-user accesses information changes from turning a piece of paper to accessing a global information center via computer, the end-user will have to be retrained.

2.5.1.5. Not only will the education of every person who comes into contact with this new information environment have to be addressed, but the distribution of resources in support of the publishing system will also have to be addressed. At first glance, the minimization of the logistics requirement to support an electronic distribution system would mean a significant reduction in the number of personnel required. But, as a more detailed analysis takes place, it becomes apparent many of those personnel are needed to support the electronic libraries, computer connectivity, CD-ROM development, and other technical duties.

2.5.1.6. To successfully migrate the Air Force from years of supporting a completely paper-based publishing system to on-line information access requires a very close look at the impact on all Air Force personnel. From the training and redistribution of publishing resources to the education of the average user, a complete personnel impact analysis must be performed.

2.5.2. Tasks.

2.5.2.1. **Task 1.** Identify skills used in publishing today and skills required for electronic publishing, determine the critical differences, and provide a course of actions to meet the changing skills requirements.

2.5.2.2. **Task 2.** Review publishing organizational structures.

2.5.2.3. **Task 3.** Address the resources, people, and organizational issues with appropriate agencies (AF/DP and AF/PE).

2.5.2.4. **Task 4.** Develop cadre of Air Force SGML experts.

2.5.2.5. **Task 5.** As the Air Force transitions from a paper-based system, through CD-ROM, and to an on-line system, involve base level publishers to aid in the identification of training requirements.

2.5.2.6. **Task 6.** Identify the training required for publication OPRs to use SGML for revisions.

2.6. INITIATIVE 3 - Identify resources required to manage and technically support the AF Electronic Publishing Program.

2.6.1. Discussion.

2.6.1.1. When the idea of an Air Force Electronic Publishing Program was conceived in the summer of 1993, there were no management personnel, no technical personnel, and no hardware--in short, no resources of any kind were allocated to its development and implementation.

2.6.1.2. Since then, the program has been built by redistributing existing resources, i.e., personnel, money, facilities. The first two years were primarily focused on analysis and planning, with only the conversion of MS Word based publications to a standard digital language and CD-ROM being implemented. During this phase of planning and partial implementation, the redistribution of resources provided satisfactory support.

2.6.1.3. Now that the entire program (inventory analysis, product conversion, training, etc.) is being implemented, the redistribution of existing resources is no longer sufficient. A prime example of resource shortfalls is in the area of product conversion and maintenance. As the Standard, Products, and Media working group identifies the migration path to the digital environment of the thousands of paper products throughout the Air Force (13,000 just at the PDC), the technical conversion must be accomplished and maintained. This conversion will require technical personnel, hardware, software and management. As product conversion addresses only two of the thirteen program initiatives, it becomes obvious that the program will require its own budgeted resources.

2.6.1.4. The only way for all the short- and long term goals of the program can be met is by identifying all the resources required to properly implement the initiatives. Once identified, these resource must be budgeted and allocated to program support.

2.6.2. Tasks.

2.6.2.1. **Task 1.** Identify the hardware, software, and personnel resources required to centrally implement and manage the Air Force Electronic Publishing Program.

2.6.2.2. **Task 2.** Publish and maintain a resource requirements document addressing two issues:

- Requirements to be used in the official Air Force budgeting process.
- Standard tools for field publishers to evaluate their resource redistribution issues.

2.7. INITIATIVE 4 - Oversee the central development of software applications.

2.7.1. Discussion.

2.7.1.1. To support AF Electronic Publishing, many of the software applications will be built and maintained at a central location, currently at SAF/AAD. This central development will be based on standard data functional requirements developed by the Standards, Products, and Media Working Group and approved by the EPPT.

2.7.1.2. In an effort to maximize global publishing resources, some of the development and/or testing of standard applications will take place at an off-site publishing office.

2.7.1.3. The implementation and testing of these software applications is the responsibility of SAF/AAD. However, to ensure the development of software applications is orchestrated with the entire Electronic Publishing effort, the EPPT will review the direction and progress of all software development.

2.7.2. Tasks.

2.7.2.1. **Task 1.** Provide direction and general priorities for the development of standard software application development and testing.

2.7.2.2. **Task 2.** Receive quarterly updates as to the status of all software development.

2.8. INITIATIVE 5 - Establish information sharing and marketing plans in support of the program.

2.8.1. Discussion.

2.8.1.1. The Air Force Electronic Publishing Program radically changes the way the Air Force handles administrative information at every level. The approach affects hardware/software requirements, position descriptions, information access, warehousing, distribution, and every aspect of the responsibilities of anyone who authors, publishes, supports, distributes, or accesses administrative information.

2.8.1.2. This degree of change is often accompanied by confusion, fear, misunderstanding, and a general resistance based on a lack of knowledge of what the program is and where it is going.

2.8.1.3. Since the beginning of the program, only the people directly involved in the program and senior officials who coordinate on mission planning have been briefed on the short- and long term planning.

2.8.1.4. As the program becomes more an integral part of the Air Force way of life, we must make a dedicated effort to provide more information to Air Force personnel at all levels.

2.8.1.5. There are several approaches to meeting this requirement. We could continue down our present path, disseminating information through the publishing work force and briefing other groups as the opportunity arises. Or, we could take a more focused approach and develop a marketing plan flexible enough to provide the right information to the right people at the right time. For instance, publication users who are only affected by the program in that they must access information electronically need different information than a group who is trying to digitize their paper environment. In this example, a focused marketing plan would provide different information for the two different groups, based on their information requirements. The users would receive a “here is what the program will do for you” briefing, while the group would receive a more technical “here is how to standardize information” briefing.

2.8.1.6. Considering the radical change this program is making to the process of publishing administrative information, the more focused marketing approach is necessary. We must identify the different groups of personnel affected by this program and work hard to provide them with timely, accurate information.

2.8.2. Tasks.

2.8.2.1. **Task 1.** Identify the different groups both in and out of the Air Force that are affected by this program.

2.8.2.2. **Task 2.** Identify the information requirements for each group.

2.8.2.3. **Task 3.** Develop and publish a living marketing plan detailing the groups, their information requirements, the method to used to meet their information requirements, and the timeline for meeting these requirements.

Chapter 3

STANDARDS, PRODUCTS, AND MEDIA

Section A -- Overview

3.1. Standards Philosophy.

Standards are the basis for information structure, the development of products, and the implementation of any type of distribution media. Without standards, the use of information is limited to only those who possess the proprietary software applications able to access that information. Whether the application is the program which houses the information or the software protocols used to transfer the information, the information's use is limited to the applications' capability. By employing standards everywhere possible, the information becomes the focus and the applications can come and go as technology advances with little impact on the information itself.

3.2. Relationship between standards and products.

Standards and products are so closely related, responsibility for both was placed in the same working group. Often times, the information standard becomes the requirements for software and hardware standards. For example, the World Wide Web is based on an information standard adopted by industry - HTML (Hypertext Markup Language). This standard drives the standard for Web viewer products, i.e., they must be able to read HTML tagged information. The complexity of the Web and the capability of many Web viewers created a de facto hardware standard, i.e., must operate on a 486 or compatibly rated machine. In this example, the information standard created a product (application) standard, which in turn, created a hardware standard.

3.3. Purpose.

To select and deploy the technical standards, standardized formats, and management procedures for use in Air Force Electronic Publishing processes and related electronic products.

Section B -- Initiatives and tasks

3.4. INITIATIVE 6 - Identify and adopt standards applicable to Air Force electronic publishing requirements.

3.4.1. Discussion.

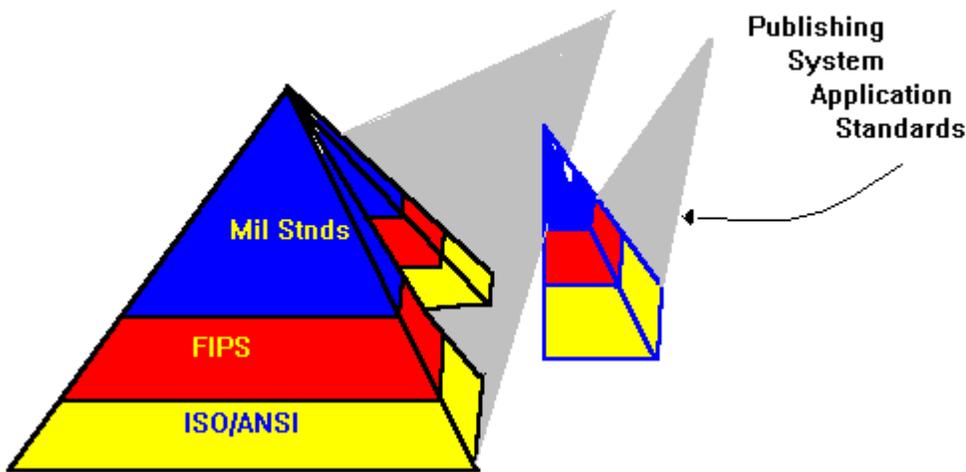
3.4.1.1. Although the paper-based system has worked reasonably well to this point, mounting costs, decreasing manpower, and increasing expectations force the re-engineering of Air Force Publishing processes. With the help of current and emerging technology, the Air Force can adapt these new products to better meet future publishing needs while avoiding the previous practice of purchasing commercial off-the-shelf (COTS) software without evaluating all the implications (i.e., open systems and text interchange).

3.4.1.2. The practice of acquiring publishing tools because they were readily available, easy-to-use, or met some instant need has created a series of incompatibility problems (both intra- and inter-command). This situation was made more serious by the advent of electronic environments, such as local and wide-area networks. The lack of interoperability and portability becomes a more critical problem in deployed and combat situations.

3.4.1.3. The alternative to the practice described above is to first establish functional requirements (i.e., how we want any particular product to function--in contrast to system-oriented interoperability/portability requirements) for electronic publishing products. We then select standards to support those requirements and use the standards as the basis for purchasing publishing tools. Many military and civilian organizations currently develop standards applicable to the Air Force electronic publishing effort. From the Defense Information Systems Agency (DISA) and the National Institute for Standards and Technology (NIST) to the International Standards Organization (ISO), considerable advances are being made in standardizing the world of information.

3.4.1.4. The entire Air Force Publishing community agrees the creation of new standards is futile in view of the many standardization efforts currently underway. Out of the sea of existing and evolving international, national, and governmental standards, Air Force Publishing must review, select, and adopt the appropriate standards to meet our specific needs. A conceptual view on how Air Force Publishing will enter the standards world is presented in Figure 3.1.

Figure 3.1. Standards Pyramid.



ISO -International Standards Organization	ANSI -American National Standards Institute
FIPS -Federal Information Processing Standards	MILSTDS -Military Standards

3.4.1.5. Before these existing standards can enter the adoption process, areas of Air Force electronic publishing in need of standardization must be identified. For example, once the Air Force identified text-based administrative publications as an area in need of standardization, we were able to research the available standards and adopt Federal Information Processing Standard (FIPS) 152, which requires the ISO Standard Generalized Markup Language (SGML) to be used as the data standard for information processing systems. As the Air Force begins to use video or sound in administrative publications, standardization in these areas will be critical. Once these areas are isolated, the suite of existing standards will be researched and applicable standards will be extracted for Air Force review, testing, and adoption.

3.4.1.6. There are also levels of standardization associated with procedures, processes, and the specific hardware needed within the publishing and user populations. Procedures and processes represent management requirements that can be codified in an Air Force Handbook to include such items as how we deal with changes, version control, or the activities associated with electronic file repositories. Hardware specific system requirements will only be standardized in the context of being minimum requirements for publishers and users to be able to access electronically published products.

3.4.2. Tasks.

3.4.2.3. **Task 1.** Review the Congressional Joint Committee on Printing ramifications for standards and publishing systems.

3.4.2.4. **Task 2.** Identify areas in need of standardization (initial identification in Attachment 2)

3.4.2.5. **Task 3.** Identify and submit appropriate standards through standards adoption process.

3.4.2.6. **Task 4.** Analyze wartime issues and impact of standards.

3.4.2.7. **Task 5.** Disseminate guidance (Handbook, system guide, manual, pamphlets) on all approved standards needed for Air Force electronic publishing to include:

- Standards: SGML, ISO 9660 (CD-ROM standard), GUI, data elements, World Wide Web.
- Standardized system procedures: hyper-linking, search and retrieval protocol, file/version control, supplementation.
- Interim standards approved for current use: word processing, graphics, forms (explicitly identify them as limited life software tools).

3.4.2.8. **Task 6.** Integrate Air Force electronic publishing standards efforts with other working groups (DoD and/or other federal agencies).

3.5. INITIATIVE 7 - Establish a mechanism for standards adoption.

Create and implement a process which provides coordination with field and technical experts to ensure the standards meet publishing functional requirements and achieve the objectives for interoperability and portability.

3.5.1. Discussion.

3.5.1.1. Today, there are countless sources of information systems standardization. For example, Volume 7 of the Technical Architecture Framework for Information Management, Information Technology Standards Guidance for An Open System Environment, published by DISA, consists of approximately 600 pages of information standards. This example is a small fraction of existing guidance in the standards world.

3.5.1.2. With the amount of information concerning standardization available, Air Force Publishing needs to create and implement a formal process to handle the review, testing, and adoption of suitable standards. This process needs to include MAJCOM publishing staffs and Air Force computer system technical experts to ensure the selected standards meet all publishing functional requirements and achieve the objectives for interoperability and portability.

3.5.1.3. While individual standards are approved by standards organizations only after rigorous review and testing, the testing of a combination of standards into a unique publishing application will be up to the Air Force. As the publishing system application grows and evolves, it will become very important to test all associated standards together.

3.5.1.4. Testing is critical to the publishing system; however, it is difficult to accomplish centrally within today's resource constraints. To ease these constraints, different standards and standard applications will be tested by the Air Force publishing organization most prepared to implement the standard if and/or when it is approved. While this plan will most likely be effective, a more consistent and structured test environment is preferred. If and when possible, a single site with sufficient resources should be chosen for the test and evaluation of Air Force Publishing standards.

3.5.2. Tasks.

3.5.2.1. **Task 1.** Design an efficient process to review, test, and adopt standards isolated by the first initiative.

3.5.2.2. **Task 2.** Select a formal process for the testing phase of the above process.

3.5.2.3. **Task 3.** Identify an official test site for standards testing.

3.6. INITIATIVE 8 - Integrate data interchange into electronic publishing system.

With ISO 8879, Standard Generalized Markup Language (SGML) as a tool, create an environment where documents are created, edited, and supplemented in a standard data interchange format.

3.6.1. Discussion.

3.6.1.1. Background. The Air Force adopted the SGML standard as a tool to meet the Continuous Acquisition Life-cycle Support (CALs) mission. Since initial adoption, SGML has proved to be a powerful data interchange standard able to meet many of the needs of Air Force Publishing.

3.6.1.1.1. To implement SGML for administrative publications, the Air Force had the Government Printing Office (GPO) award a contract titled 910-S to provide Document Type Definitions (DTD), the structure of SGML applications. FIPS 152 and Military Standards (MIL-STD) have been used in

establishing the Air Force DTDs. In particular, Military Standard 28001-B was used to ensure the DoD standard tag definition set will be used for all Air Force Publishing applications.

3.6.1.1.2. The DTD provides a set of rules defining the tags which provide structure to the SGML document. The tags provide intelligence to the document file by creating an environment where, combined with the DTDs, the document becomes machine parsable (the parser verifies the document structure and syntax). These tags are simply a string of ASCII characters whose function is defined by the DTD. *Note:* A full description of SGML and DTDs is outside the scope of this report, but can be acquired by contacting AF/SCMV.

3.6.1.1.3. An Air Force administrative publication SGML Tag Library has been developed to provide the definitions and usage of SGML elements and attributes. It will be used as the base for further documentation unique to each SGML DTD. Presently the library is maintained at Bolling AFB, but will eventually become a part of the CALS Shared Library and SGML Registry.

3.6.1.2. Conversion. The use of DTDs and SGML is not a common function of most word processing tools in the COTS software environment; however, most major vendors are developing SGML "modules" for their current products. Until publication authors have easy access to SGML tools, the publishing staff at SAF/AAD and the MAJCOMs will need to deal with file conversion. A strategy to capture SGML tags at the authoring level will minimize conversion in the future.

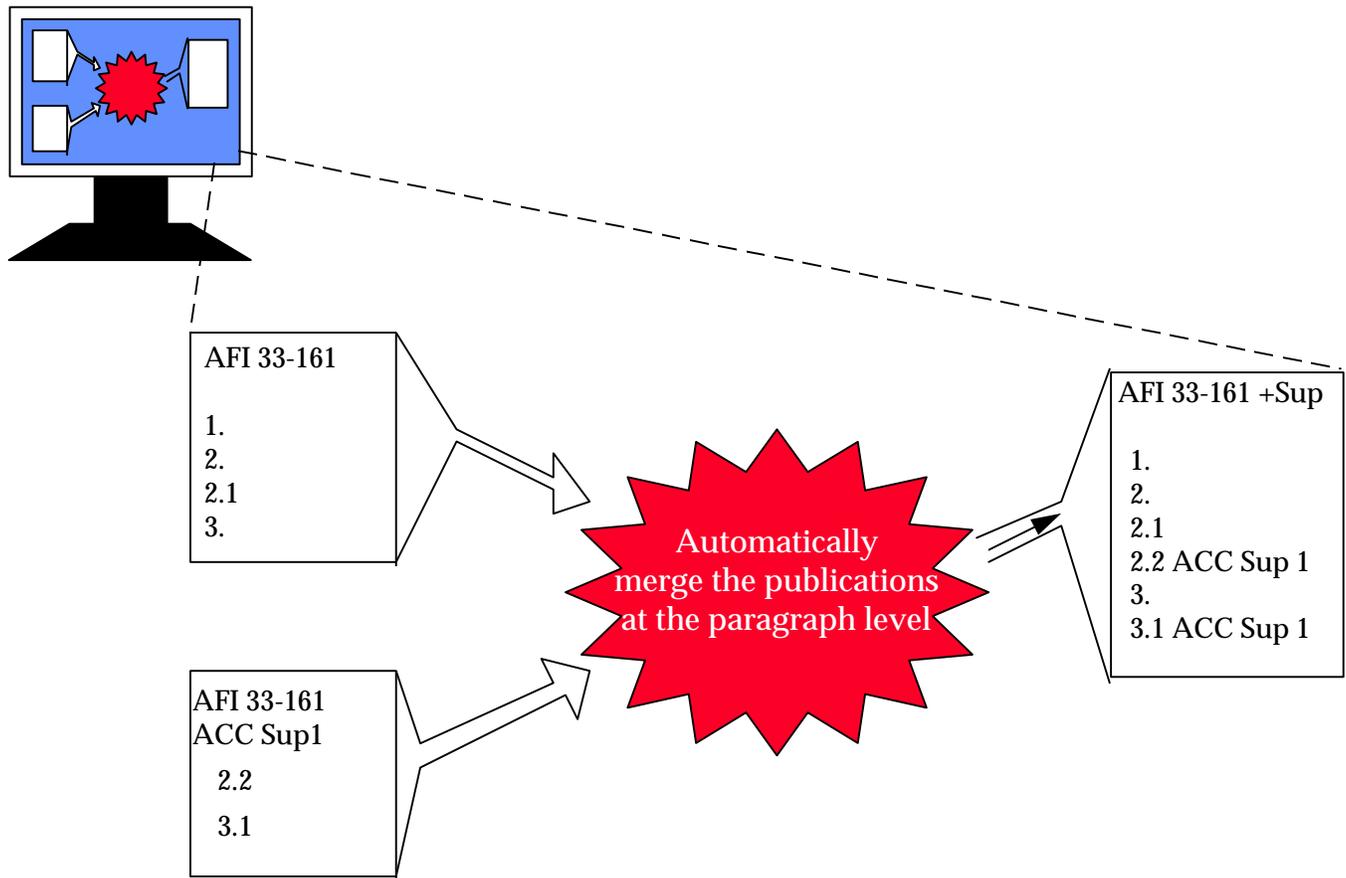
3.6.1.2.1. Initial conversion. When SGML was first implemented in Air Force Publishing, the Air Force documents identified to become electronic in SGML format were contained in MS Word 2.0 format. From this format, the bulk of these publications were converted en mass to SGML.

3.6.1.2.2. Interim conversion. After the initial mass conversion but before field authors are creating document in SGML format, documents created in MicroSoft Word will have to be converted as they are published.

3.6.1.2.3. Final authoring. Once the field authors have been trained and equipped with the proper tools, they will create documents in an SGML format. The intent is to provide user-friendly, windows-based authoring software separating the document author as far away from handling SGML tags as possible. Armed with simple-to-use software, the document authoring community will not be subjected to extensive, time-consuming training.

3.6.1.3. Supplementation. In the current AFI process, major commands and base level publishers add to printed material in higher headquarters documents by inserting the supplement references in ink/pencil. In the electronic world, these supplementing publishers will create their additions as SGML-tagged documents and electronically link those documents to the SGML tagged originals (reference Figure 3.2.). The DTDs specifically address supplementation issues and allow this automated integration.

Figure 3.2. Electronic publications supplementation (SGML).



3.6.2. Tasks.

3.6.2.1. **Task 1.** Continue DTD and development, include MAJCOM participation.

3.6.2.2. **Task 2.** Research the CALS SGML tag library to be prepared to include the Air Force Publishing tags.

3.6.2.3. **Task 3.** Develop and implement a comprehensive plan for all three stages of document conversion.

3.6.2.4. **Task 4.** Develop and implement electronic and paper DTD solutions to the supplement issues.

3.6.2.5. **Task 5.** Develop and publish an Air Force Handbook detailing the Air Force SGML application and the processes of document conversion, supplement integration, and electronic tables of contents.

3.6.2.6. **Task 6.** Outline electronic record set standards requirement.

3.6.2.7. **Task 7.** Further develop Air Force SGML tag library convention and interface with DoD library.

3.6.2.8. **Task 8.** Develop requirements for software applications capable of supporting the life cycle of SGML based information.

3.7. INITIATIVE 9 - Develop a migration strategy for all products in the Air Force Publishing inventory.

The initial concept for electronic publishing identified the requirement to migrate as many paper products as possible to digital products. This initiative directly addresses the strategy for product migration. An additional initiative describes the implementation of the strategy. *Note:* A digital product is defined as any item that could be created and distributed electronically, regardless of whether it was used electronically or printed and used by a customer.

3.7.1. Discussion.

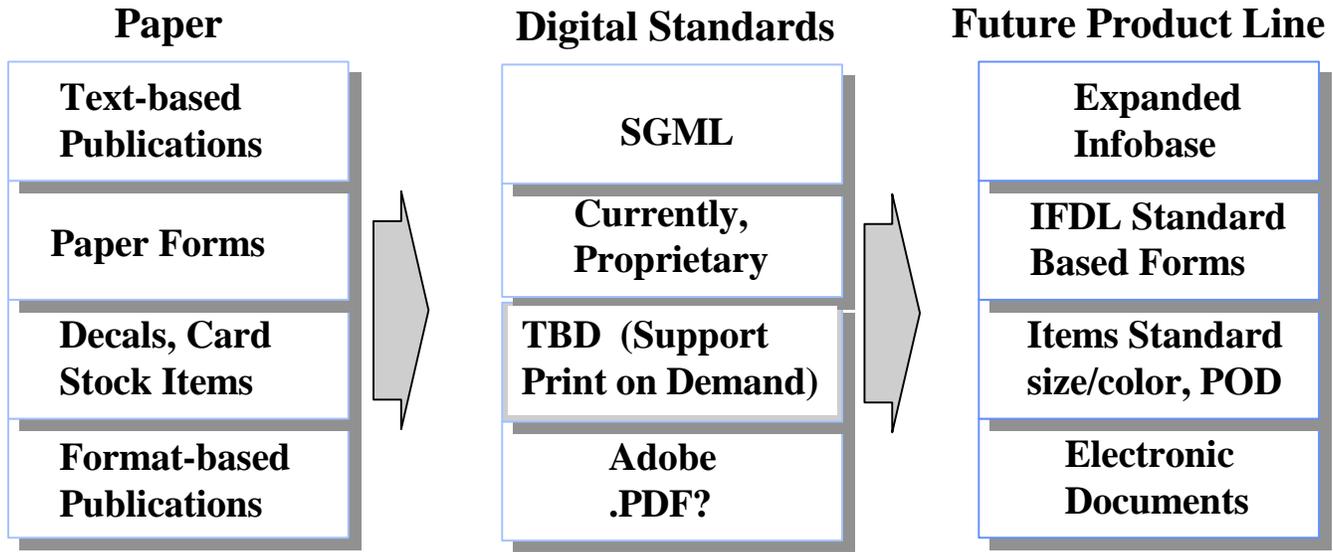
3.7.1.1. The first step in developing a product migration strategy was the inventory analysis. The inventory contains a wide spectrum of products the Air Force publishes and items obtained outside the Air Force but distributed through the established Air Force Publishing Distribution Center's (AFPDC) process. This inventory includes single sheet paper products, hard bound books, single cut-sheet forms, paper tags with wire or string, padded carbon or carbonless form sets, and oversize (larger than 8- by 11 inch) forms. It also includes mylar engineering forms, compact-disk read-only-memory (CD-ROM) products, and microfiche publications.

3.7.1.2. Inventory analysis, according to the present packaging methods and techniques, helps to determine how critical packaging is to product utility. As products are categorized according to their packaging (i.e., binders, mylar paper, non-standard size, folders, envelopes, tags, labels, decals, visual aids, cards, pads, cut sheets, pamphlets, books, specialty products, and certificates), variables such as use, type, size, format, material, and source can be determined. From these categories, general assumptions can be made concerning how and when the products could be converted to electronic media. While nearly all these items could feasibly be converted to electronic media, it would not be practical since many products have unique construction (i.e., mylar forms, oversize products) or are used in specific circumstances (i.e., history books, study guides, promotional material), and are not well-suited for electronic distribution or use.

3.7.1.3. The inventory analysis documented a high percentage of "outside" products issued by DoD, Office of Personnel Management (OPM), and various other agencies. Some of those are implemented by Air Force documents and therefore, used only by Headquarters OPRs, but many enter the user base directly. The office of Air Force Publishing Policy (AF/SCMV) can work directly with the publishers of these other agencies to produce and procure electronic versions of these products.

3.7.1.4. Three common product migration paths have been constructed to provide broad product migration guidance, yet still set some specific parameters within product categories. Figure 3.1. describes the migration paths.

Figure 3.1. Product Migration Concept.



TBD=To be determined **PDF**=Portable Document Format **POD**=Print on Demand
IFDL=Integrated Form Definition Language

3.7.1.5. While general statements about migrating product categories can provide a conceptual framework, the task of describing migration strategies for each individual product is the task at hand. With over 2,000 current types of products in the inventory, this task appears impossible. To meet the challenge, a new approach was adopted. Instead of trying to figure out how to migrate 2,000 types of items to digital products, we should work the problem from the other direction, i.e., determine what kind/how many digital products we could support and then redesign the existing items to meet the new product line. This new approach categorizes the products into 30 to 40 different standard product types, depending on their functional requirements. For example, some printed publications are truly best suited for electronic databases (Address Directory, Indices). As products are standardized into the database category, a standard database solution can be developed and used by all database products, thus minimizing development and implementation costs for each “unique” product. By creating these categories and applying more broad solutions, we could design and furnish a very large percentage of products digitally.

3.7.1.6. This approach highlights the requirements to closely coordinate any product migration with the OPR and provide specific direction to review the end-user environment. Air Force personnel need to think through the changes they may require to use electronic publications and forms instead of paper publications and forms in their everyday processes. This is not a trivial issue, as the impact on both day-to-day operations and wartime activity will be substantial.

3.7.1.7. In addition to product migration paths, cutoff dates for the central printing and distribution of paper and other products will provide the impetus needed to begin and finish migration activities. Once the central printing and distribution is cutoff for these products, any field requirement for paper will be met by electronic distribution to local publishing personnel who will print, duplicate, and distribute the required paper products. The recommended cutoff date for the central printing and distribution of paper publications (only those that have been converted to electronic products) and single sheet forms is

31 Dec 96. Though somewhat arbitrary, the cutoff date attempts to balance the need to migrate beyond paper production and distribution and the need to allow users to prepare.

3.7.1.8. This electronic capability will provide warfighters with easy-to-transport information, greatly reducing the weight requirement for a logistics detail (LOGDET) categorized as D+1 deployment. Normally, each LOGDET has with it a 60-day supply of forms and a set of publications (departmental and local) that will sustain the deployed activity.

3.7.1.9. Development of migration paths and targets also impacts the role of forms management in Year "2000" products. These Year "2000" products are integral parts of an automated system, such as the forms now integrated into Personnel Concept- (PC) III. Data management begun at the paper form level will make it much easier for OPRs when their product finally evolves into a data collection tool at the systems level. It is at the data collection tool level of evolution that a gap exists between the concept and reality.

3.7.1.10. A bridge (policy and procedures) must be developed between the electronic forms developer in publishing and the data collection tool developer at the Standard Systems Center (or with the commercial developer). There are currently software tools able to fill both roles, so electronic forms could be easily adapted for use in automated systems. In any case, the forms analyst and the data collection tool developer are two different people in two different areas who must interact at some level to be determined.

3.7.2. Tasks.

3.7.2.1. **Task 1.** Categorize the Air Force inventory into standard product types and outline a migration strategy for each product.

3.7.2.2. **Task 2.** Fully develop the customer-focus approach for product migration (See next initiative for outline of the approach).

3.7.2.3. **Task 3.** Develop and publish an Air Force handbook to provide OPRs and publishers the initial guidance and tools to determine the proper format and media for their publishing products.

3.7.2.4. **Task 4.** Research the need for a "sanctioned" data dictionary and integrate data element standardization into the forms management function.

3.7.2.5. **Task 5.** Review the need for a registry of electronic products.

3.7.2.6. **Task 6.** Work with the Standard Systems Center to determine the appropriate level of interaction between forms analysts and data collection tool developers.

3.8. INITIATIVE 10 - Implement the product migration strategy.

The implementation plan will establish the pace and amount of effort to be exerted performing the product conversion. The implementation plan should include all information and activities required to manage the conversion of as many products as practicable to electronic media. Because this effort will be very resource intensive, a draft plan will be developed to provide a starting point for discussions with senior management concerning how far and how fast.

3.8.1. Discussion:

3.8.1.1. Implementing the product migration strategy is one of the most daunting tasks in the entire electronic publishing program. To standardize the approach for product migration, an implementing plan will be created identifying a planned set of product categories to meet the majority of the product requirements in the Air Force inventory. As the paper products in the inventory are selected for conversion to a digital format, they will be analyzed and converted to an existing product line.

3.8.1.2. For this approach to be successful, it must be divided into three distinct processes.

3.8.1.2.1. First, we must review the current inventory and determine the types of digital products capable of supporting the existing paper products. For instance, once the database standard was identified and a process was created to convert database type information from paper to a database product, all paper products that fit this product line will be converted to database products.

3.8.1.2.2. After the review and determination of digital products is complete, paper products must be identified, selected, and converted to the digital product. This portion of the approach will require close coordination with the OPRs who control the information contained in the paper product. Included in the review and coordination with the OPRs will be a determination whether converting the paper product is the most cost effective and sensible approach. This portion of the analysis will ensure we do not take a functional paper process and replace it with a cumbersome electronic process. Since there is not an endless quantity of programming resources to convert paper products to digital, the existing products will have to be prioritized and scheduled according to allocated resources.

3.8.1.2.3. If a paper product is discovered not to have a corresponding electronic product line, a new product line will have to be developed and implemented. This process is the third in the cyclical product migration strategy addressing every product in the current Air Force inventory and any product entering the inventory in years to come.

3.8.2. Tasks.

3.8.2.1. **Task 1.** Based on the above strategy, develop and test an implementation plan (I-Plan) for converting paper to digital products.

3.8.2.2. **Task 2.** Once plan is proven, staff throughout the Secretariat, Air Staff, and affected agencies and begin product migration.

Chapter 4 INFRASTRUCTURE

Section A -- Overview

4.1. Infrastructure Philosophy.

To accomplish the distribution of Air Force Electronic products, Air Force Publishing will take advantage of the existing and planned Air Force computer infrastructure. Instead of centrally purchasing new computers and communication lines for every desktop or every squadron in the Air Force, the Infrastructure Working Group will develop the core computer specifications required to use Air Force electronic products. These requirements will then be published, provided to all MAJCOM/SCs and the STEM-B office, and be included in the Air Force-wide infrastructure requirements for desktop connectivity. As the natural migration to computer connectivity across the Air Force takes place, the infrastructure for the distribution of Air Force electronic products will be complete. *Note:* Infrastructure is defined as: the basic hardware, software, communications, and resources required for functional computer connectivity.

4.2. Purpose.

To identify infrastructure necessary for production and delivery of electronic publishing products.

Section B -- Initiatives and tasks

4.3. INITIATIVE 11 - Develop and describe the categories of the supporting communications/computer infrastructure required to field an electronic publishing system, and match the categories to electronic product development.

4.3.1. Discussion.

A key premise of the Air Force Operational Concept for electronic publishing was to take advantage of existing and planned communication/computer infrastructure, rather than build a dedicated system. To implement such an approach, a variety of migration issues needs to be addressed. First, the electronic products must be identified, as the infrastructure requirements are based on the ability to transmit, store, and display those products. Secondly, the approach needs to provide Air Force-wide support to varying levels of infrastructure capabilities for implementation to begin now and continue through to infrastructure completion. Finally, the total system requirement should be directly transportable to the infrastructure concept being developed under the DoD Publishing Functional Process Improvement (FPI-also called Business Process Re-engineering) project to avoid unnecessary development and transition costs.

4.3.2. Infrastructure Requirement.

The Standards, Products, and Media Working Group analysis session concluded a very high percentage of publications would eventually migrate from being document (file) oriented to info base (database)

oriented, strongly supporting the requirement of an info base being the primary electronic publishing product.

4.3.2.1. The AFPDL, for example, is currently a file oriented bulletin board system providing Air Force-wide access to AFPDs, AFIs, and other publications. While we can electronically distribute these files, their limited functionality (word processing documents for view and print) has not made them valid replacements for paper--most MAJCOMs are using the files for ancillary purposes rather than as their primary product. Limiting factors include the indexing system, the DOS-based directory with its eight character limit, and no ability to search across the multiple publications. Even so, the file oriented approach does have advantages over paper in the distribution arena and should be used as the preferred alternative over paper where possible.

4.3.2.2. In contrast to the file oriented product, an info base is considered to be a superior, value-added replacement for paper. It will give the user easy access to the entire Air Force library and the ability to find needed information much more quickly and efficiently than the paper or file based system. An info base also relieves individual users from the time consuming chores associated with ordering, posting, and maintaining publications.

4.3.2.3. The described info base is a value-added replacement for paper for all users who are able to take advantage of the electronic environment. However, the foreseeable future still holds the requirement for the production and distribution of paper products. These products may originate, be stored, distributed and printed from an info base, but the end product provided to some users will have to be paper.

4.3.3. Infrastructure Capabilities.

Since every person in the Air Force has a requirement for Air Force Publishing products, the required format of and access to those products will vary depending on the product and the mission of the individuals using the product. A cook, for example, would probably prefer to have the official recipes on paper cards rather than be forced to access those recipes on a computer while cooking. Similarly, a forward operating team on mobility unable to access a computer may prefer a paper product over on-line access. With the countless combinations of products, requirements and access capabilities across the Air Force, publishers need to be prepared to support every contingency. A look at the products and the possible infrastructure capabilities led to the identification of three phases of infrastructure capabilities. These phases can be used as a guide to the migration of current infrastructure to more robust capabilities. The end goal is to support each phase, thus providing for the most comprehensive coverage of the varying Air Force requirements for publishing products.

4.3.3.1. **Phase I, File Oriented.** This phase represents electronic “anything” (automating paper), it remains a 99% paper-based system, particularly at the user end. This first phase, however, is seen as a necessary introduction to the most important issues in the electronic arena. Primarily those issues are establishing and understanding communication capabilities and limitations, the need for product and process standards in practically every aspect of the electronic system, and the need to provide users with value-added products.

4.3.3.1.1. Key Attributes of Phase I.

- File oriented
- Based on proprietary software solutions

- Electronic access is ad hoc
- Supplemental information not integrated
- Version control is a manual process
- Dial-in and download for electronic updates
- Paper centrally printed and distributed

A more descriptive discussion of current Phase I infrastructure includes:

4.3.3.1.1.1. **Publishing Method.** The publishing office prints MS Word (AFPDs, AFIs, AFMANs, etc.) for central reproduction and then posts these and PerForm/FormFlow files on Bulletin Board Systems (BBS) for downloading. The systems contain “zipped” and normal MS Word and PerForm files with the bulletin board software providing access and distribution. Version control is handled via a history file. Only MS-DOS products are supported.

4.3.3.1.1.2. **Distribution Scheme.** BBS access is very limited when considering the Air Force-wide audience. The number and locations of all users--and those without access--is unknown. The BBS systems in-place are not organized into overall distribution nets. Command and wing organizations have their own distribution schemes and if there is interaction between nets, it is not widely known. Alternatives to electronic distribution, particularly CD-ROM, will soon provide the capability to distribute the entire Air Force library. The main distribution system in this phase is the central printing and distribution of products, even if they exist electronically.

4.3.3.1.1.3. **Use.** In this phase, most users retain their paper requirements. Electronically, the user is generally at the point of familiarization rather than dedicated user. The primary reason is while electronic Air Force level documents are widely available, the mixed formats (electronic/paper) between Air Force, MAJCOMs, and wings limit their utility. For example, a user would have difficulty accessing Air Force word processing documents and then cross-referencing to paper MAJCOM and lower supplements, particularly at the paragraph level. Therefore, the first phase, at the user level, is more focused on electronic distribution than electronic use.

4.3.3.1.1.4. **Wartime/Contingency.** Because infrastructure capabilities in Phase I are not documented (other than the AFPDL node) and not capable of providing the warfighter with a consolidated electronic info base, paper is the only wartime solution. As long as there are requirements for non-electronic products or paper versions of electronic products during a contingency, this phase will be supported.

4.3.3.2. **Phase II, Info Base Oriented.** CD-ROM can meet the requirement to produce an info base (versus the file oriented product) and can be distributed to both network and stand-alone users. By its very nature, CD-ROM overcomes near-term infrastructure shortfalls, i.e., the current system doesn't provide Air Force wide connectivity or distributed mass storage. On the other hand, CD-ROM is seen to be a temporary solution for distributing an info base because publications are ever-changing and dynamic--so much so that a CD-ROM will not be totally current the day it is issued.

4.3.3.2.1. **Key Attributes of Phase II.**

- Info base (CD-ROM)
- Standards based (SGML) requirements for information in-use
- Access throughout the Air Force is documented

- Links to supplements possible
- Version control is still a manual process
- Dial-in and download for updates
- Paper available

A more descriptive discussion of current Phase II infrastructure includes:

4.3.3.2.2. **Publishing Method.** Central and localized printing and reproduction is still available to meet paper requirements. For the electronic user, CD-ROM becomes the primary delivery media for the independent info bases created at Air Force and the MAJCOMs. On the CDs, the independent info bases may link to each other, but are search-capable only one disk at a time. The option to download the info bases onto a LAN or onto another CD-ROM and create a new, integrated database is also available. Changes to the info bases can be individual file updates available on the AFPDL (or MAJCOM node). The entire Air Force info base will be updated for each monthly issue. The use of physical media becomes more problematic at installation level, where CD-ROM creation for wing publications is probably not practical. Wing publishing offices can produce quantities of floppy disks economically, and will have the capability to produce a local info base.

4.3.3.2.3. **Distribution Scheme.** Since the info bases reside on CD-ROMs and CD-ROMs are physical media, they can be distributed via normal mail processes. Electronic paper products will be locally printed and distributed for customers who don't have the infrastructure in place to support the use of CD-ROM requirements.

4.3.3.2.4. **Use.** The info base(s) provide a real option for transitioning to an electronic environment. The ideal case is a Local Area Network (LAN) with capabilities for downloading the info bases from the CD-ROMs and integrating the AF/MAJCOM/wing publications into one seamless info base. A large percentage of users in this phase, however, will remain in the stand-alone mode. For them to transition to the electronic environment, the capability to view the three independent databases supplied by the AF/MAJCOM/Wing will be required--which is possible using physical media, i.e., two CD-ROMs and floppy disks.

4.3.3.2.5. **Wartime/Contingency.** CD-ROMs are highly portable and should prove to be valuable in mobility and contingency scenarios (this value continues even in Phase III). Once Phase II is achieved, there are both economic and practical requirements for a unit, which must now maintain and ship 90-day supplies of publications and forms, to convert to CD-ROMs and/or floppy disks. Implementation planning should include coordination with unit LOGDET managers to ensure CD-ROM drives are required in their LOGDETs. Wartime requirements that include paper products will be met by local or central printing and distributing, depending on the product.

4.3.3.3. **Phase III: Perpetual Info Bases.** The final phase integrates all electronic products into perpetual info bases. The term *perpetual* is defined as a permanent collection of electronic information products that are continually refreshed and maintained using automatic update processes. The requirement for perpetual info bases exists at every location in the Air Force Publishing hierarchy. These info bases serve both the Air Force and any outside customers requiring access to published material. For products contained in the perpetual info base, the paper requirement will be met by the local publishing office.

4.3.3.3.1. **Key Attributes.** In Phase III, the information and intelligence contained in a product (standard publications in SGML or databases, forms, etc.) should be, when possible, created and maintained by the author of the information. Info bases provide for vertical integration of DoD, Air Force, MAJCOM, and installation level publications into a product the user perceives as a singular source of information. To meet the paper requirement, the electronic product will be printed from the electronic source file wherever and whenever it is needed.

4.3.3.3.1.1. **Publishing Method.** Automatic updates to the info bases keep DoD and Air Force products continually up-to-date.

4.3.3.3.1.2. **Distribution Scheme.** Info bases are dynamically refreshed and maintained via electronic transmission. On-line users directly access the source of the information. This can be accomplished via base LAN/WANs on local servers or by using the Internet and the World Wide Web (WWW). The ability to produce CD-ROM or other electronic media at the point of need is provided. All printing and reproduction is done locally.

4.3.3.3.1.3. **Use.** Proliferation of LAN, WAN, and WWW infrastructure allows immediate and easy access for all users. Users no longer have to maintain indexes, order publications or forms, or search in multiple locations for publications. Electronic publications' ease of access and "no maintenance" features should significantly reduce the need for paper.

4.3.3.3.1.4. **Wartime/Contingency.** Connectivity for deployed users may support most requirements; however, the need for CD-ROMs (or similar media) and paper may persist for the foreseeable future.

Table 4.1. Infrastructure categories matched with product evolution.

	Phase 1-File Oriented	Phase II-Info Base Oriented	Phase III-Perpetual Info Base
Key Attributes	Electronic documents, proprietary format, pull type BBS system. Paper the main focus.	Files indexed into an Info base (CD-ROM). Use open SGML standard. Some local printing possible.	Info base information, including supplements, automatically integrated, no user maintenance. Local printing prevalent.
Publishing Method	Printed product and source MS Word files posted electronically on Bulletin Board System (BBS) for download.	Electronic pubs on CD-ROM. Supplements not integrated. BBS supplements CD.	Distributed info bases provide DoD and AF products to all users, world-wide.

Distribution Scheme	Paper based distribution scheme. Electronically, independent BBSs, no coordinated distribution scheme.	Central and localized printing. CD-ROMs updated and mailed on monthly basis. Some large LANs provide on-line access services.	Info bases refreshed via automatic updates, no user maintenance required. (LAN, WAN, WWW)
Use	Paper the only trusted method. Electronic access mostly used by more sophisticated computer users.	LANs begin to integrate info base, still large percentage of stand-alone users. Many still requiring paper.	Immediate access to on-line information reduces need for paper.
Wartime/Contingency	Cannot support wartime or contingency operations with electronic publications.	CD-ROMs used for mobility. CDs made to order provide excellent alternative to paper for those who have mobility computers.	Connectivity supports even deployed users and multiple media options are available to meet any user wartime need. Local printing meets wartime paper requirement.

4.3.4. Tasks.

4.3.4.1. **Task 1.** Define infrastructure requirements based on products and customer need, addressing capacity, storage, and wartime delivery issues.

4.3.4.2. **Task 2.** Identify software requirements for an SGML-based publishing system.

4.3.4.3. **Task 3.** Analyze the role of CD-ROM, LAN, WAN, and WWW distribution media and their ability to meet distribution requirements.

4.3.4.4. **Task 4.** Identify impacts on Air Force personnel and recommend options.

4.3.4.5. **Task 5.** Identify impacts of the functional (within the publishing system) placement of projected new production processes and responsibilities, e.g., SGML tagging, CD-ROM production, database maintenance.

4.4. INITIATIVE 12 - Perform an assessment of current infrastructure Air Force-wide and devise an approach to establish and meet requirements for integrating electronic publishing.

4.4.1. Discussion.

4.4.1.1. The infrastructure assessment should provide a snapshot of current Air Force capabilities and establish overall requirements for meeting all the categories of the migration plan outlined above. This report prepares for the assessment by providing a description of the activities in the electronic infrastructure and who those activities include. A model has also been prepared to assist in determining the information needs for performing an analysis. Once the assessment is complete and the scope of the requirement is understood, the recommended approach for meeting all requirements can be implemented.

4.4.1.2. As outlined in earlier Air Force documents (and in the DoD FPI effort), there are three major business process activities in publishing which the infrastructure analysis can logically follow. While dependent on one another, the requirements within each activity can be looked at and assessed separately. The major activities include:

- authoring, staffing, and approval,
- the electronic publishing function, and
- distribution to include the end user.

Each of the major activities are discussed using the outline **Activity--Duties--Who Performs**. As a prelude to the actual assessment, a review of each activity has also been added to compare how hard/easy it will be to implement electronic publishing and what the resulting impact on the overall effort would be. Under the heading General Assessment are **Ability to Implement--Impact on Effort**. Also, to provide an explanation of why the review will not be assessing the authoring, staffing and approval activity, the General Assessment for that activity has been completed.

4.4.1.3. **Activity 1.** Authoring, staffing, and approval.

4.4.1.3.1. **Duties.** As previously discussed, the authoring activity infrastructure will be re-engineered during the DoD FPI and will not be addressed in this effort.

4.4.1.3.2. **Who Performs.** For publications at any level, virtually anyone in the Air Force could be an author at one time or another.

4.4.1.3.3. **General Assessment.**

4.4.1.3.3.1. **Ability to Implement.** Requires an infrastructure that includes software and electronic processes capable of paperless authoring (generation of a publication), staffing, (including coordination with all offices, updating changes, resolving differences, electronic signatures) and final approval (electronic signature again). That kind of requirement will be difficult to implement across staffs at HQ USAF and in the field which have myriad systems and software. Some MAJCOMs may have a greater ability to meet these requirements and can continue to pursue solutions. On the other hand, for this planning effort, the Air Force approach will be to await the DoD FPI effort for publications, which is establishing the requirements necessary to support the authoring, staffing, and approval processes.

4.4.1.3.3.2. **Impact on Electronic Publishing Effort.** The ideal authoring process would not only provide the publishing function with a fully tagged, hyperlinked publication, it would also support the author by providing electronic research, staffing, suspending, etc. However, so long as the publishing

function receives an electronic document from the author, the impact of not meeting all the electronic authoring, staffing, and approval requirements is minimal. An initial focus in this area should be to work closely with the authors to increase consistency in the electronic files they produce.

4.4.1.4. **Activity 2.** Electronic Publishing Function.

4.4.1.4.1. **Duties.** Production of electronic publications for the entire Air Force including supplemental material generated at subordinate levels. The activity may also collect, supplement, and distribute publications from DoD, other military Services, and other federal agencies. The production process for electronic publications includes data conversion, SGML editing/tagging, preparation of the info base and, if required, preparation of the CD-ROM. Electronic forms are prepared on PCs and are provided as separate items, but linked to the publications.

4.4.1.4.2. **Who Performs.** Publishers of standard publications at every level in the organization to include:

4.4.1.4.2.1. **HQ Air Force.** This level contains all publishing functions performed at the highest level of the organization.

4.4.1.4.2.2. **Subordinate Headquarters.** This level includes publishing functions performed at headquarters below Air Force, but above wing/base level. Organizations at this level include MAJCOMs, FOAs, DRUs, and other similar agencies.

4.4.1.4.2.3. **Wing/Base.** Publishing organizations are those assigned to Functional Account Code 16g1, within SC squadrons, supporting wing HQ publishing requirements.

4.4.1.4.3. **General Assessment.**

4.4.1.4.3.1. **Ability to Implement.** All publishing activities throughout the Air Force now use computers to produce paper publications, so the change from paper to electronic processes is within reach. Once the electronic publishing standards are established and all requirements identified, publishing activities should be able to (within current resources) independently acquire the upgrades to their current systems.

4.4.1.4.3.2. **Impact on Electronic Publishing Effort.** The Air Force Publishing function must provide the core electronic publication to enable MAJCOMs and field units to integrate their supplements and other publications. The publishing function is obviously the most critical link in the infrastructure chain.

4.4.1.5. **Activity 3.** Distribution, to include the end user.

4.4.1.5.1. **Duties.** Once the electronic network is established, the primary tasks of the distribution activity will be to ensure the info base is kept current and users are notified of any changes. Normal system administrator activities like keeping user lists current and performing other system maintenance functions will also be needed, but not necessarily duplicated by the distribution activity.

4.4.1.5.2. **Who Performs.** Distribution activities at each organizational level, now expanded to include LAN administrators and the end user. These include PDC/PDO personnel who may be either the master repository or the entry control point for electronic products populating LANs. End users will now be directly connected to the distribution system. These are the people within the organization who require publications to perform duties, and their access must be as good or better than the paper system provides for.

4.4.1.5.3. **General Assessment.**

4.4.1.5.3.1. **Ability to Implement.** Most of the distribution infrastructure for electronic publishing is not publishing unique, but instead is an additional requirement on existing or planned WANs and LANs and World Wide Web systems. Therefore, the ability to implement will hinge on how well the electronic publishing requirement is communicated to the builders and owners of those systems.

4.4.1.5.3.2. **Impact on Electronic Publishing Effort.** A fully operational distribution system is the key to a successful migration from paper to electronic publications.

4.4.1.5.3.3. **System Modeling.** Three system models have been prepared to provide a common understanding of the assessment data collection requirements and to illustrate the difference in the infrastructure between paper and electronic based publishing.

Figure 4.1. Model for electronic publishing office.

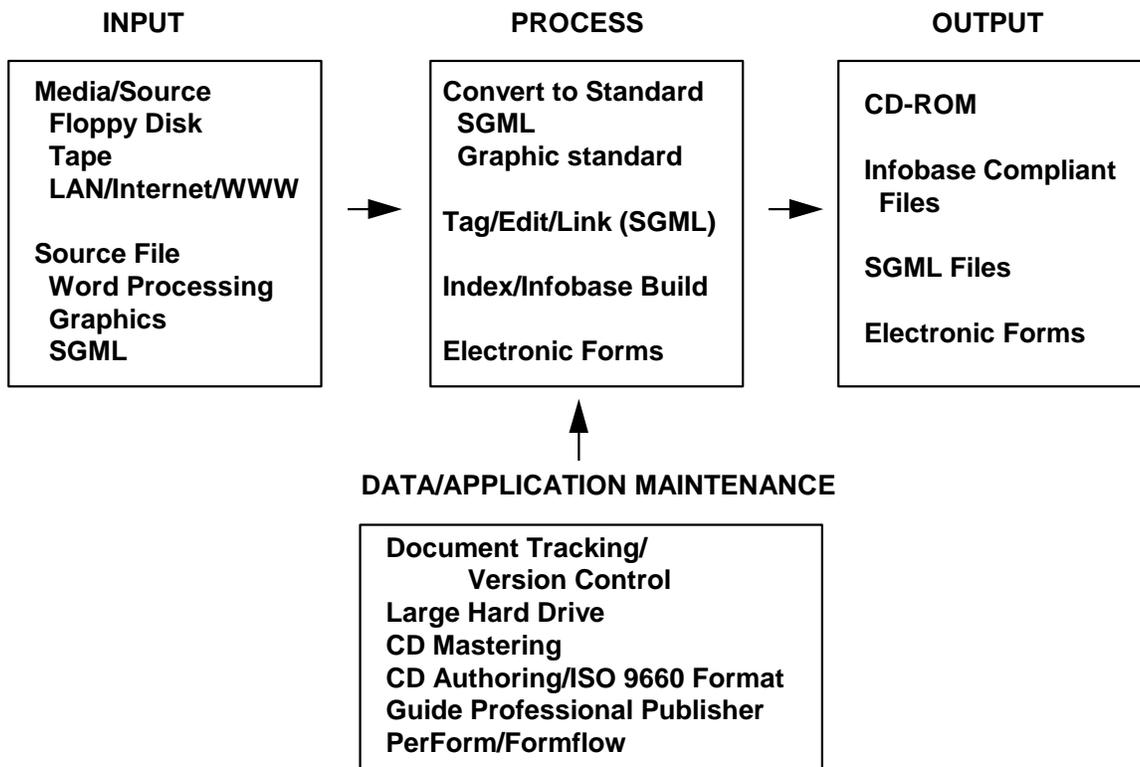


Figure 4.2. System model installation level paper-based publishing.

The paper distribution model focuses on current user requirements to ensure the assessment provides for each current user.

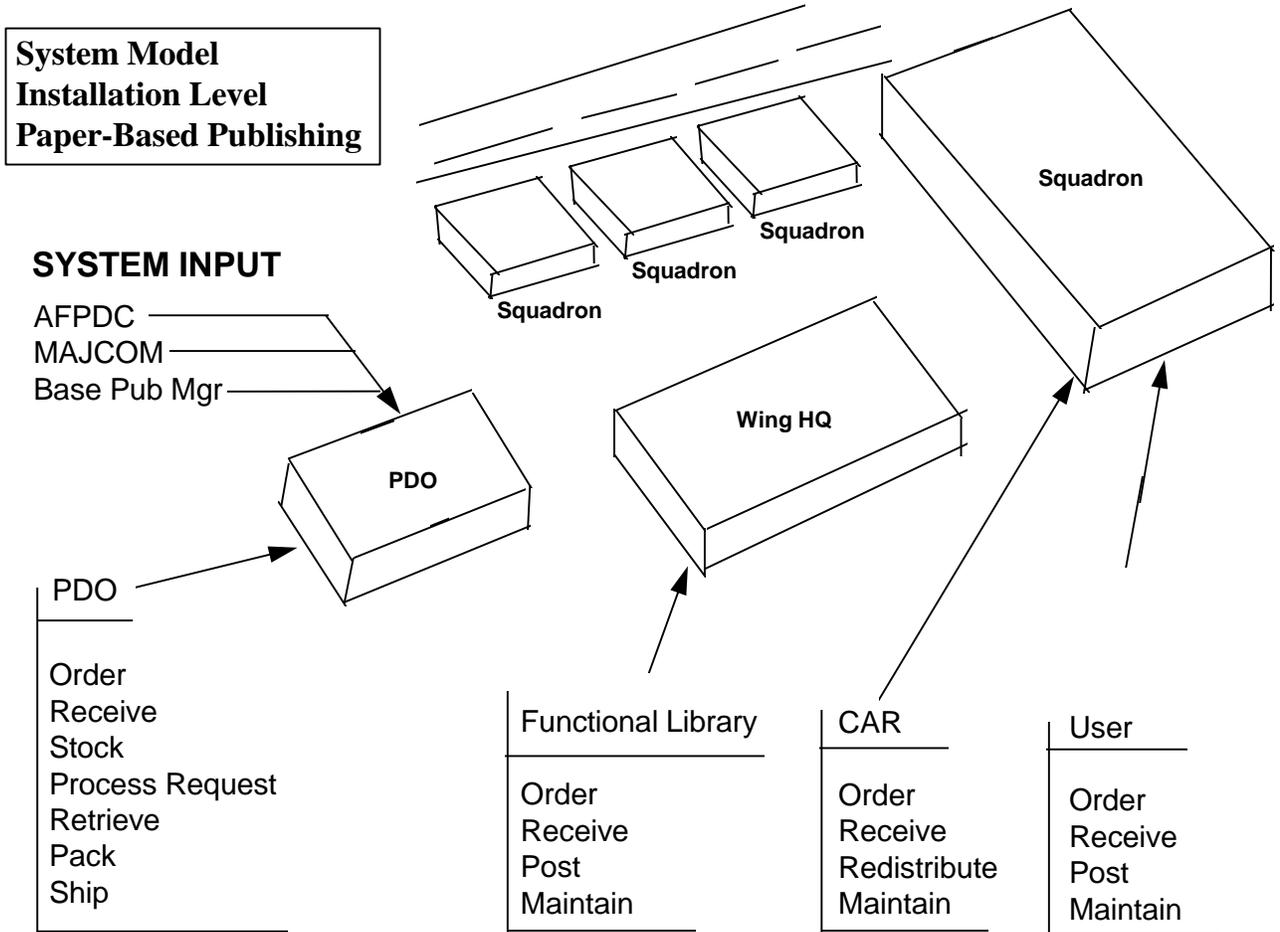
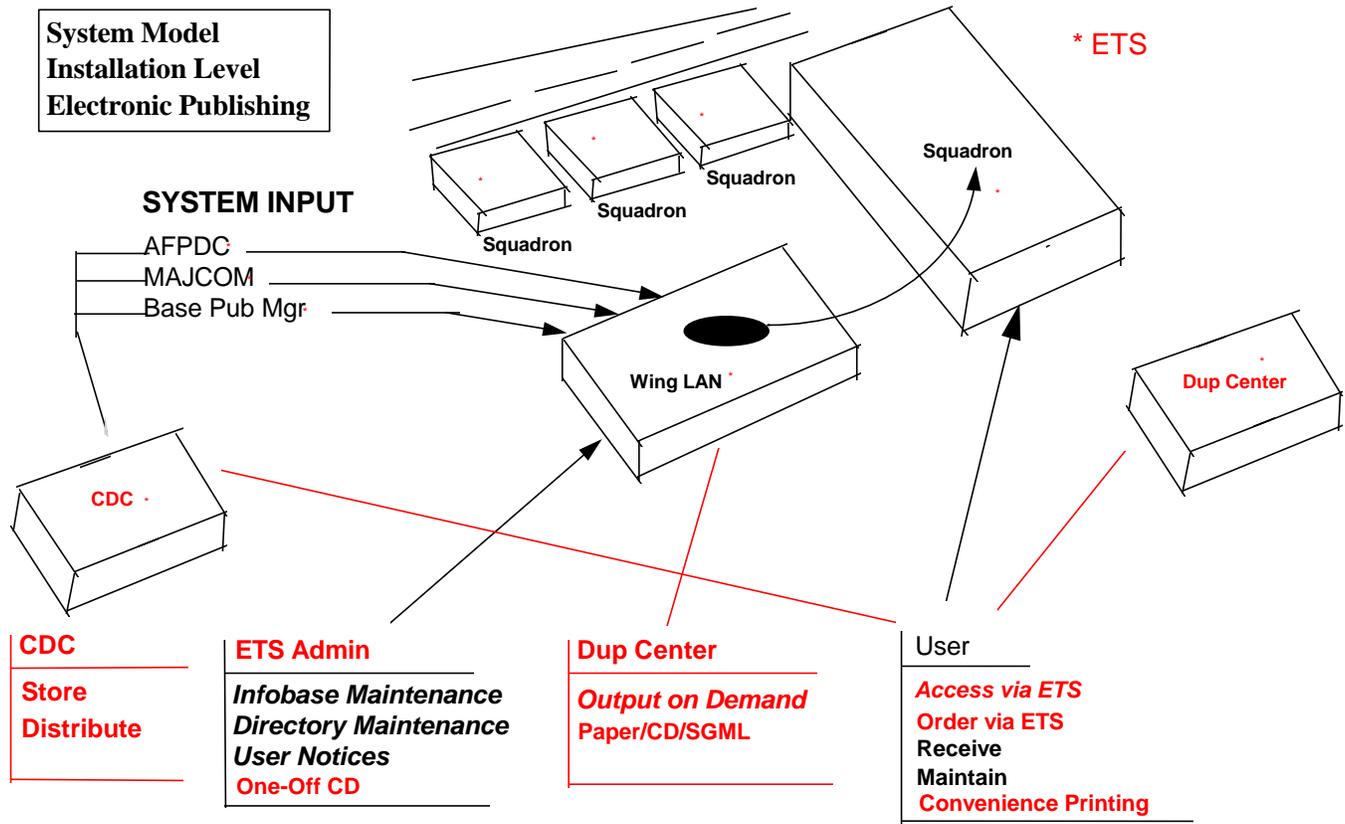


Figure 4.3. System model installation level electronic publishing.

The electronic model assumes Phase III connectivity. Until Phase III is achieved, the distribution office and CAR will likely be required. The Electronic Transaction System (ETS) identified in this graphic represents the concept of a single digital interface for all on-line viewing, downloading, and ordering of administrative information.



4.5.2. Tasks.

4.5.2.1. **Task 1.** Based on the defined infrastructure requirements, build a conceptual schematic for electronic delivery.

4.5.2.2. **Task 2.** Define all electronic publishing activities, including what will be analyzed and what will be excluded, prior to performing an infrastructure assessment.

4.5.2.3. **Task 3.** Design and publish an implementing document establishing the necessary infrastructure assessment metrics and outlining the Air Force transition strategy to a worldwide electronic publishing infrastructure. This task is complete. The infrastructure document has been fielded and the metrics are being tracked.

4.5.2.4. **Task 4.** With the results of the metrics from the implementing document, annually publish a report detailing the following:

- Infrastructure Assessment - to inform Air Force members concerning the current status of the infrastructure supporting Air Force electronic publishing.
- Progress report - to present statistical data, metrics, and analyses to provide a feel for our progress toward electronic publishing and distribution.

4.5.2.4. **Task 5.** Logically prioritize infrastructure improvement requirements in the following sequence:

- The publishing function
- The distribution function
- The authoring, staffing, and approval activity.

4.5.2.5. **Task 6.** Provide the assessment results to the appropriate communications-computer system requirements offices as the Air Force electronic publishing infrastructure requirement document.

4.5.2.7. **Task 7.** Review resource tradeoffs between traditional and electronic publishing (printing, postage, transportation and handling, storage) and determine possible impacts on manpower.

4.5.2.8. **Task 8.** Estimate required resources (dollars, people, training, etc.) to meet conceptual requirements.

Attachment 1

GLOSSARY OF ACRONYMS, TERMS, AND DEFINITIONS

A1.1. Acronyms

AFCA	Air Force Communications Agency
AFI	Air Force Instruction
AFPC	Air Force Personnel Center
AFPDL	Air Force Publications Distribution Library
AFR	Air Force Regulation
AFRES	Air Force Reserve
AF/SC	Deputy Chief of Staff for Communications and Information
AIA	Air Intelligence Agency
ANG	Air National Guard
ANSI	American National Standards Institute
BBS	Bulletin Board System
CALS	Continuous Acquisition Life-cycle Support
CAR	Customer Account Representative
CD-ROM	Compact Disk - Read Only Memory
CIPS	Combined Intelligence Publishing Service
COTS	Commercial Off The Shelf
C3I	Command, Control, Communications, and Intelligence
DDN	Defense Digital Network
DISA	Defense Information Systems Agency
DoD	Department of Defense
DRU	Direct Reporting Unit
DTD	Document Type Definition
EMP	Emergency Mobilization Plan
EPPT	Electronic Publishing Project Team
ETS	Electronic Transaction System
FAR	Federal Acquisition Regulation
FIPS	Federal Information Processing Standards
FOA	Field Operating Agency
FOSI	Formatting Output Specification Instance

FPI	Functional Process Improvement
GPO	Government Printing Office
HTML	Hypertext Markup Language
ISO	International Standards Organization
LAN	Local Area Network
LOGDET	Logistic Detail
LRA	Local Reproductions Authorized
MAJCOM	Major Command
MILSTDS	Military Standards
NIST	National Institute for Standards and Technology
OPM	Office of Personnel Management
OPR	Office of Primary Responsibility
PC	Personal Computer
PDF	Portable Document Format
PDC	Publications Distribution Center
POC	Point of Contact
PMD	Program Management Directive
SAF/AAD	Secretary of the Air Force/Administrative Assistant, Office of Departmental Publishing
SGML	Standard Generalized Markup Language
STEM-B	Systems Telecommunications Engineering Manager - Base
WAN	Wide Area Network
WMP	War Mobilization Plan
WWW	World Wide Web

Attachment 2

STANDARDIZATION REQUIREMENTS

A2.1. Functional/Application Requirements.

A2.1.1. The identification process for functional/application requirements answered three basic questions:

- What requirements must be identified for standardization?
- Why those particular requirements?
- Why do they need to be standardized?

A2.1.2. Using this guidance, the following functional/application requirements were chosen for standardization. Each of these requirements will be presented individually and in alphabetic order. For each, a brief definition will be given, followed by a separate bullet answering questions two and three above.

A2.1.2.1. Audio:

- Definition: The inclusion of sound in electronic documents.
- Reason selected: It is technically possible to include audio files within computer-generated multimedia publications. Some publishers may eventually be required to include audio files in future products.
- Need to standardize: If audio becomes a part of Air Force publications, its format must be standardized to facilitate universal access to this audio information.

A2.1.2.2. Authentication:

- Definition: A method of verifying distributed documents as official Air Force publications. This verification also includes the need for an application addressing version control.
- Reason selected: The authentication process will validate electronically disseminated publications as current, legally sufficient, and official Air Force documents. This process will also validate the document release authority.
- Need to standardize: Standard, reliable authentication procedures for electronic publications will satisfy both legal requirements and facilitate public trust in electronic data interchange.

A2.1.2.3. Authoring:

- Definition: To electronically create, capture, and modify information.
- Reason selected: The authoring of information in a readily transportable and reproducible format will be adopted to enhance information flexibility.

- Need to standardize: A standard authoring method will allow easy integration with standardized information bases. A positive byproduct of standardizing the information authoring will be the reduction in training overhead when people move between organizations.

A2.1.2.4. **Bibliographic:**

- Definition: A method of indexing documents contained within a particular information base; makes browsing extensive publications libraries faster and easier by using abstracts to help identify subject areas and topics. Basically, a bibliographic is a complex table of contents containing document abstracts. Users can access these abstracts electronically and read about particular documents without having to download and read the entire document.
- Reason selected: This could become a method of prefacing information contained on an electronic bulletin board to save users from having to download entire files just to examine the contents of the documents contained in the system.
- Need to standardize: If employed, users will find the exchange format of publications and other information base catalogues familiar no matter where in the Air Force they happen to be working.

A2.1.2.5. **CD-ROM:**

- Definition: Compact disk-read only memory. A computer memory device capable of storing very large quantities of information and providing a secure, stable, portable delivery media.
- Reason selected: A large portion of Air Force publishers and users of Air Force publications have access to CD-ROM drives. Some publishers have gained the capability of writing information to and producing their own compact disks.
- Need to standardize: CD-ROM technology will become a useful tool in making Air Force publications available. Without standard configurations established, such as the use of ISO 9660, the information contained on the compact disks will not be universally available.

A2.1.2.6. **Compression:**

- Definition: Using compression software to reduce the size of text and graphic files.
- Reason selected: Compression will expedite transfer of information by reducing file size.
- Need to standardize: With many different types of compression software available on the market, a standard is required to ensure information compressed by anyone may be used by everyone.

A2.1.2.7. **Graphics Interchange:**

- Definition: Creating graphics in such a manner that they can be accessed and used with many different software and hardware configurations.

- Reason selected: Many Air Force publications contain graphics. Created in one proprietary format, many times these graphics cannot be used in any other format, thus limiting their use.
- Need to standardize: Much like text interchange, if graphics are created in many non-standard formats, the problem of non-interoperability is compounded.

A2.1.2.8. **Graphical User Interface:**

- Definition: The point and click, pull down menu, mouse driven computer interface often found in windows applications.
- Reason selected: The Department of Defense has identified the need to move towards a standard graphical user interface for all applications. This environment increases computer usability and decreases training time.
- Need to standardize: To create a standard look and feel for computer interfaces. Once established, personnel moving from one organization to another will not be forced to learn a new interface.

A2.1.2.9. **Independent Forms Definition Language ISO/IEC DIS 11730:**

- Definition: The independent forms definition language (IFDL) is used to define and standardize data collection formats to support standardized databases.
- Reason selected: Part of the Air Force Publishing effort includes the creation and dissemination of electronic forms.
- Need to standardize: As electronic forms become more commonly used throughout the Air Force, adopting an IFDL will facilitate the interchange of forms and forms data.

A2.1.2.10. **Multimedia:**

- Definition: The combination of audio and video integrated into document and used alone used most often in training applications. Sometimes referred to as Hypermedia.
- Reason selected: Will eventually be required for training and other applications
- Need to standardize: Will define requirements for applications based on the suite of standards that compose the elements of the information base presented by the multimedia application

A2.1.2.11. **Page Description Language:**

- Definition: A text/printer interface which tells the printer how the page is to appear as a printed output.
- Reason selected: Computer print drivers require some form of page description for printing; without this, the text cannot be printed.

- Need to standardize: If standardized text is to be output to a printer with the same result all across the Air Force, some page description standards must be established. This is the only way to avoid printing document with unwanted or no results.

A2.1.2.12. **Text Interchange:**

- Definition: Creating text in such a manner that it can be accessed and utilized with many different software and hardware configurations. An attempt to elevate problems such as attempting to use an Microsoft Word document in a WordPerfect environment.
- Reason selected: Air Force administrative publications will be disseminated through many different media.
- Need to standardize: If text is created or converted to many different text interchange formats, the problem of interoperability is compounded, not solved. With the use of standard document type definitions and tags, official Air Force documents can become, to a large extent, software and hardware independent.

A2.1.2.13. **Video:**

- Definition: The inclusion of motion pictures in electronic documents.
- Reason selected: It is technically possible to include video files within computer-generated multimedia publications. Some publishers may eventually be required to include video files in future products.
- Need to standardize: If video becomes a part of Air Force publications, its format must be standardized to facilitate universal access to this video information.

A2.1.2.14. **Viewing Application:**

- Definition: Software designed to gather and present information contained in the information base in computer screen format coherent to a human user.
- Reason selected: Many Air Force publications will be disseminated electronically and will be access by the users through computer screens.
- Need to standardize: To create a standard look and feel for users across the Air Force, thus elevating the need to constantly retrain rotating personnel.

A2.2. **Management Requirements.**

A2.2.1. These address the procedures, processes, and specific hardware needed within the publishing and user populations.

The identification process for management requirements answered three basic questions:

- What requirements must be identified for standardization?

- Why those particular requirements?
- Why do they need to be standardized?

A2.2.2. Using this guidance, the following management requirements were chosen for standardization. Each of these requirements will be presented individually in alphabetical order. For each, a brief definition will be given, followed by a separate bullet answering questions two and three above.

A2.2.2.1. **Approval/Coordination:**

- Definition: The process of electronically distributing documents for the purpose of review and/or approval.
- Reason selected: As the entire publishing process becomes electronic, document review and approval will also become electronic.
- Need to standardize: Will allow electronic documents to be subjected to officially approved review and approval processes, thus eliminating any question to their validity.

A2.2.2.2. **Data Elements:**

- Definition: A basic unit of information having a name, meaning, and subcategories (data items) of distinct units and values. Through its name and definition, a data element must convey a single informational concept.
- Reason selected: Data must be consistent, accurate, reliable, and timely to enable effective and efficient planning, scheduling, and maintenance of data. In order to ensure the process is effective in supporting interoperability among systems, physical databases must be maintained consistent with the associated logical data models.
- Need to standardize: Data element standardization provides the means to define, maintain, and control a single, common, agreed upon set of attributes for each item of data.

A2.2.2.3. **Database Management.**

Considering the following definition: Database administration is oriented toward technical support for databases and the effective and efficient use of information technology resources, this item should be removed from the management requirements due to lack of justification to standardize database management techniques across the Air Force. This activity is left to the discretion of the system users.

A2.2.2.4. **Data Management:**

- Definition: The function of controlling the acquisition, analysis, storage, retrieval, and distribution of data.
- Reason selected: As Air Force publishers produce and distribute greater amounts of electronic information, methods of handling that information need to be established.

- Need to standardize: Standard data management techniques will ensure the integrity of the distributed data throughout the Air Force.

A2.2.2.5. **Document Changes:**

- Definition: Issued from document originating source to alter the original document in cases where a supplement is not appropriate. These cases include the following types of changes:
 - Emergency Message Change (EMC)
 - Procedural Instruction Messages (PIM)
 - Interim Letter Change (ILC)
- Reason selected: While supplements have been determined to be a special SGML issue, the process of changing SGML tagged documents has not been addressed. Even though the topic of document changes truly belongs under the heading of document life cycle, the need to specifically address the isolated issue justified individual attention.
- Need to standardize: Since changes will inevitably be required, selecting a standard method will aid in the maintenance of data integrity and version control.

A2.2.2.6. **Document Life Cycle:**

- Definition: Managing an official document from creation to destruction.
- Reason selected: There exist many issues concerning the management of documents for as long as they are useful and in no matter what technological environment they reside.
- Need to standardize: The development of a standard approach to document life cycle management will play a large role in elevating the need to constantly choose product based solutions to meet document publishing needs.

A2.2.2.7. **Electronic Data Distribution:**

- Definition: The distribution of electronic documents using both computer compatible hardware connections (i.e. computer networks, phone lines, satellite, etc.), and hardware distribution methods (i.e. CD-ROM, disk).
- Reason selected: Electronic information will be distributed in many different way depending on the information and user requirements.
- Need to standardize: Selecting standard methods to distribute electronic data is integral to the success of the electronic publishing initiative. If standards are lacking in this area, the usage of the interoperable documents created for distribution could be limited.

A2.2.2.8. **HELP Screens**: The working group nominated HELP screens as an item for possible standardization. Further study is required.

A2.2.2.9. **Holdover Supplements:** The working group nominated Holdover Supplements as an item needing a standard approach that may differ from the paper based system. Further study is required.

A2.2.2.10. **Operating Procedures.** In reality, this item should contain all the standard information outlined in the standards document. For example, the standards related to data management or system security could be presented in an operating procedures document.

A2.2.2.11. **Repository:**

- Definition: A master electronic archival of any electronic information in support of Air Force administrative publications, such as SGML structured databases, MS word databases, graphics, software, DTDs, tag library, etc.
- Reason selected: A master repository must exist that contains all the tools and guidance to electronically publish documents in a standard format.
- Need to standardize: The repository will become the central reference point for all Air Force Publishing. If the tools and information in this location are not standardized, the entire standardization effort will fail.

A2.2.2.12. **Security:**

- Definition: The physical and electronic protection of the information system and its contents.
- Reason selected: Many Air Force publications will only be created and edited by a small number of authorized personnel. Unauthorized access to these documents could compromise data integrity and document validity.
- Need to standardize: Consistent procedures for access and protection will reduce the chance of a breach of data integrity (i.e. a virus entering the distribution network). Standard security formats will also reduce the administrative overhead associated with linking information bases from disparate organizations.

A2.2.2.13. **Supplements:**

- Definition: Adding information to a higher headquarters published document.
- Reason selected: Supplementing official Air Force documents is an integral part of the publishing system. While this topic is discussed in the SGML section (para) of this document, specific management issues exist which warrant special attention in this section. For this same reasoning, the supplements issue was treated separate from document life cycle. In reality, supplements is a sub-topic of document life cycle.
- Need to standardize: With the use of standard text interchange (SGML), standard supplement and document altering methods must exist for the documents to retain their original functionality.

A2.2.2.14. **Version Control:**

- Definition: Ensuring the most current document in existence is the document being used as an information source.
- Reason selected: This issue also appears in the authentication section of functional/application requirements. With respect to management issues, version control is more focused on ensuring the most current document, once disseminated, is adopted for use. In the above section, version control is more focused in creating updated documents containing a version control mechanism (i.e. time, date stamp).
- Need to standardize: A standard method of meeting this need must be developed to guarantee updated documents are being properly used throughout the Air Force.

A2.3. Interim Publishing Standards.

A2.3.1. Background.

A2.3.1.1. Electronic publishing is in its infancy in the Air Force. In recent years, the explosive development of electronic publishing technology has led to selection of proprietary, non-standard commercial products for the task of publishing Air Force administrative documents electronically. This adoption of different technological solutions to similar publishing needs across the Air Force led to stovepipe systems that couldn't communicate.

A2.3.1.2. In an attempt to quickly solve the interoperability problems, the Air Force was compelled to standardize on products of the day rather than information standards. Unfortunately, when these products become obsolete, the data authored in this format and is often restricted to this format. For example, documents saved in MS Word 6.0 cannot be accessed using Word 2.0. The problem is similar with macros written in WordPerfect 5.1 that cannot be access using any other version of WordPerfect.

A2.3.2. The Present.

With product based standards widely used in the current publishing process, these products must be classified as interim standards and dealt with accordingly. Even though Air Force document exist in a limiting format, the publishing community must discourage the choosing of new product standards used to provide "quick fixes" to address new technological advances.

A2.3.2.1. The following are some of the commercial products chosen in the past in an attempt to solve the interoperability problem. In the short term, these products were able to standardize document format and provide an environment conducive to electronic publishing.

- | | |
|----------------------------|------------------------|
| - PerFORM PRO | - FormFLOW |
| - MS Word 2.0 and 6.0 | - MS Power Point |
| - Word Perfect 5.2 and 5.2 | - MS DOS 5.0 and above |
| - MS Windows 3.1 | |

A2.3.2.2. Even from the above listing, it is evident there are problems with adopting these products as Air Force electronic publishing standard tools. Often, different versions of the same product are not capable of fully interchanging formatted data.

A2.3.3. The Future.

A2.3.3.1. As long as products are chosen for document authoring and formatting, the ability to interchange this information will be limited to both product sophistication and availability. The goal is to choose standards that will not hinder migration to more sophisticated means of creating, manipulating, and retrieving objective publications as new technologies emerge. To accomplish this, Air Force Publishing must evolve to the point where the standards drive product selection and away from products driving the standards.

A2.3.3.2. Once documents are prepared in a non-proprietary format, the information will not be bound by specific information authoring software. Instead, a variety of authoring and editing standard tools will be available to the publishing community. These standards will ensure the information is flexible in the current and future technological environments.

A2.4. System Requirements.

A.2.4.1. Platform.

A2.4.1.1. Establishing a baseline platform defines minimum system requirements for access to digitized information and will drive development, acquisition, and implementation of new standards compliant systems. The following are the platform items in need of standardization.

- Operating System
- CPU
- Monitor/Screen
- Drives (Internal & external)
- Memory (RAM)
- Peripherals (Printers, modem, etc.)
- Mass Storage Systems (total IB concept)
- Other

A2.4.1.2. Minimum system platform requirements will be identified for different systems connected to the information base, i.e. UNIX, DOS, Macintosh, etc., depending upon what systems are in use. If, for example, a user operates on a UNIX machine, the standards group will provide minimum system requirements necessary to access, download, and make use of publishing products. These standards will also be defined for users at different levels in the process (user, publisher, database manager, etc.).

A2.4.2. Network.

Many Air Force publishers will make use of local and wide area networks (LAN/WAN) to access and disseminate published documents. Standardizing these connections will facilitate data interchange between different organizational networks with a functional requirement to share data.

A2.4.3. Stand-alone Communication.

There are, however, users of the publishing system who do not have LAN/WAN access to networks containing the publishing information they need. Armed with a set of viable standards, each site not connected through some active network could be assured of successful access to all Air Force publishing information.