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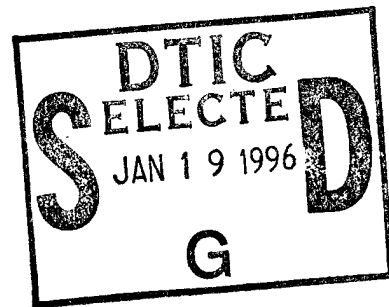
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AFIT/GIR/LAR/95D-10



AN INVESTIGATION OF A USAF INFORMATION  
RESOURCE MANAGEMENT COMMUNITY WORLD WIDE  
WEB SITE

THESIS

Kristin A. Waldner, Captain, USAF

AFIT/GIR/LAR/95D-10

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AFIT/GIR/LAR/95D-10

AN INVESTIGATION OF A USAF INFORMATION RESOURCE MANAGEMENT  
COMMUNITY WORLD WIDE WEB SITE

THESIS

Presented to the Faculty of the School of Logistics and  
Acquisition Management  
Air Education and Training Command  
In Partial Fulfillment of the  
Requirements for the Degree of  
Master of Science in Information Resource Management

Kristin A. Waldner, B.L.S.

Captain, USAF

December 1995

Approved for public release; distribution unlimited

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Kris Waldner

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Abstract

This research project investigated establishing a World Wide Web (WWW) site dedicated to the United States Air Force Information Resource Management (IRM) community. The project determined guidelines for successful, appropriate format and content for such a site. To discover what benefits the IRM community might achieve, the project explored those benefits achieved or expected to be achieved by the business community and by government agencies with established WWW sites. The project also attempted to define an average profile of active duty IRM community Internet and WWW users. The above objectives were accomplished through a literature review and through the use of a prototype WWW site. Guidelines uncovered through the literature review were used in establishing a prototype site. The prototype site offered a variety of features, including indices of links to IRM-relevant WWW sites and a WWW-based discussion forum. To obtain feedback from community members, the site provided both an embedded electronic mail link to the author and a WWW fill-in form.

AN INVESTIGATION OF A USAF INFORMATION RESOURCE MANAGEMENT  
COMMUNITY WORLD WIDE WEB SITE

I. Introduction

Problem Statement and General Issue

Members and leaders of the United States Air Force (USAF) Information Resource Management (IRM) community have expressed interest in creating a WWW site dedicated to the IRM community. This study investigates successful format and content for such a site; explores potential uses and benefits of the site; and attempts to define a profile of active duty USAF IRM community Internet and WWW users.

The Internet and the World Wide Web. Although many individuals are now using the Internet and the WWW on a regular basis, they may not be familiar with the origins of these technologies. Appendix A of this research paper describes the history of the Internet and the WWW.

The WWW now accounts for the largest volume of Internet traffic. Growth rates for each WWW domain increase during each period of measurement. Businesses, government agencies, private organizations, and individuals have all found reasons to establish sites on the WWW.

The military Internet domain (.mil), the eighth largest domain type worldwide, grew at a rate of 22% between 1 January and 30 June 1995 ("New Survey Better Maps the Internet"). The Air Force unveiled its official WWW site in March of this year, and all but one of its Major Commands are present on the WWW. In line with their counterparts in both business and military communities, IRM community members and leaders have expressed an interest in establishing a presence on the WWW.

Before implementation of a permanent Air Force IRM community WWW site, action must be taken to consult community members to determine appropriate format and content for the site. Community leaders also need to determine the benefits the community can expect to achieve through a dedicated IRM site. The IRM community also needs to determine who will use the site. To date, no study has undertaken this task. Recently some studies have attempted to determine profiles of WWW users, but none has targeted any portion of the military community.

The general issues described above are expressed as specific research objectives in the next section. Through a prototype Air Force IRM community WWW site, these issues can be examined.

## Research Objectives

The following issues must be studied before implementing a permanent Air Force IRM community WWW site:

1. Determine an appropriate and successful content and format for the Air Force Information Resource Management community World Wide Web site.
2. Determine those benefits achieved by the government and business communities' use of the WWW.
3. Determine the average profile of active duty Air Force IRM Internet and WWW users.

## Research Design

The Introduction to this research paper provides background information about research problem. The Literature Review, the second chapter, previews the possible uses and benefits of a WWW site for the Air Force IRM community, by researching the uses and benefits that United States business and government organizations have experienced. Guidance and pointers concerning proper WWW page creation and formatting are gathered from both online and printed sources. The chapter also relays the results of the few studies attempting to identify the characteristics of Internet and WWW participants. Finally, the Literature Review also includes guidance from government policy about what material may be provided to the public on the Internet.

A prototype Air Force IRM community WWW site will collect data to be used in determining appropriate content and

format for the permanent WWW site. Because a WWW site created for a specific community should, by definition, cater to that community's needs and desires, the comments and suggestions received from site visitors will provide the most useful input in determining appropriate and successful format and content.

Visitor comments will be collected primarily through a mail-to, fill-in form. World Wide Web fill-in forms look like paper forms, complete with questions and boxes in which to put answers. Mail-to, fill-in forms on the WWW use electronic mail (email) to forward the visitor's input to the email account specified in the fill-in form's source code. Details about the operation of mail-to, fill-in forms are presented in the Technical Details subsection of the Methodology chapter of this paper.

For those visitors whose WWW browsers will not allow the use of mail-to, fill-in forms, an electronic mail link to the author is embedded in the site. Additionally, a WWW discussion forum is available that will accommodate visitor comments and suggestions, as well as discussion of relevant IRM issues.

One measurement of a WWW site's value is the number of visitors to the site. The number of visits to the prototype

Air Force IRM community WWW site will be monitored, giving an indication of the potential usefulness of the site.

The mail-to, fill-in WWW form on the prototype WWW site welcome page also presents eight questions to be answered voluntarily by active duty Air Force IRM community members. These questions will determine an average profile of active duty Air Force IRM Internet users.

#### Facilities and Special Resources

This study requires the use of a Hypertext Markup Language (HTML) editor. Additionally, it requires access to an Internet-connected WWW server, access to an expert in Common Gateway Interface (CGI) programming, and availability of the necessary CGI programs (explained in the third chapter). To participate in the study, visitors to the prototype Air Force IRM community WWW site must have access to and use a WWW browser. If the browser is not mail-to, fill-in forms compatible, the user requires access to Internet-connected electronic mail.

#### Nature and Form of Results

The result of this exploratory study will be a research paper consisting of a literature review focusing on current uses of the WWW in business and government, government guidance on providing information on the WWW, results of studies

determining the characteristics of Internet and WWW users, and WWW site formatting guidance. Following the Literature Review, the research paper includes an analysis of the data gathered from the use of the prototype Air Force IRM community WWW site and a compilation of comments and suggestions from visitors to the site.

## II. Literature Review

### Overview

Members and leaders of the United States Air Force (USAF) Information Resource Management (IRM) community have expressed interest in creating an IRM community World Wide Web (WWW) site. This study investigates successful format and content for such a site; explores potential uses and benefits of the site; and defines an average profile of active duty USAF IRM community Internet and WWW users. This chapter of the research paper describes current uses and benefits of WWW sites reported by business and government communities, reviews WWW site guidelines published in print and online, and reports the most recent WWW demographic statistics recorded in the past year.

### Limitations

The issue of security for WWW sites connected to the Internet is beyond the scope of this research paper. The speed with which Internet and WWW technology advances makes that topic weighty enough for a separate research effort.

Literature on this topic is scant. In the past few months, some literature has become available regarding business and government use of the WWW. Often these



publications predict benefits expected to be achieved. Because these communities have only recently employed WWW technology, little information has been published about the benefits actually encountered.

#### Recent WWW User Survey Results

Several organizations have recently released statistics gathered from their surveys of Internet and WWW growth and of WWW user demographics. A selection of these statistics and corresponding interpretations are presented here. The results of some of the survey questions may help determine appropriate and successful content and format for WWW sites. Some of the information is also useful for comparison to the data gathered during this research project's study of active duty Air Force IRM Internet and WWW users.

Internet Growth. To obtain an overview of Internet and WWW growth, Mark Lottor's Domain Survey identifies the total number of host computers, by domain type, connected to the Internet (Network Wizards). As described in Appendix A to this paper, the domain type is the far right word in the domain name.

The most recent survey, conducted in July 1995, reports that the number of host computers connected to the Internet more than doubled during the past year, increasing from 3.2 million in July 1994 to 6.6 million in July 1995

(Bournellis, 1995:47). Figure 1 below illustrates the Internet's growth since 1989, the year the WWW came into existence.

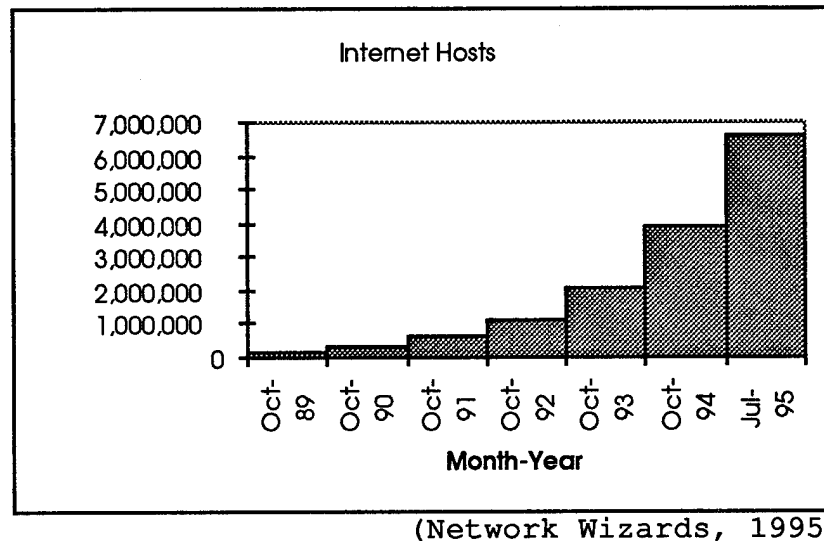


Figure 1 Internet Host Growth, 1989-1995

The Internet's commercial domain, *.com*, is now the largest and has been the most rapidly expanding domain for the past two years. The domain grew from 17,002 hosts in July 1994 to over 76,000 hosts in July 1995 (Bournellis, 1995:47). Formerly the largest domain, the education and research domain, *.edu*, has fallen behind the commercial domain to become the second largest.

The number of hosts and six month growth rates for domain types commonly used in the United States are shown in Table 1 below. While *.gov* and *.mil* are used exclusively by

the United States, the other domains listed in the table are shared by other countries.

TABLE 1

GROWTH OF INTERNET DOMAINS COMMON IN THE UNITED STATES

Domain	Number of Hosts	Growth Rate (2/95-7/95)
.com	1,743,390	24%
.edu	1,411,013	20%
.net	300,481	50%
.gov	273,855	24%
.mil	224,778	22%
.org	201,905	23%

("New Survey Better Maps the Internet")

Lottor's Domain Survey also reports the most popular names for Internet host computers. The host name, as explained in Appendix A to this paper, is the word farthest to the left in the computer's domain name. Since the January 1995 survey, *www* has been the most frequently used host name ("More Data on the Size of the Internet").

WWW User Demographics. While the Domain Survey highlighted the size and growth rate of the Internet, another recent survey reveals Internet and WWW user characteristics. The Graphics, Visualization, & Usability

(GVU) Center performs its WWW surveys as a public service. The first Gvu survey was conducted in January 1994. Results from the third survey, held in April 1995, are the most recent figures available. Another survey was conducted in October 1995, but results have not yet been released (Graphics, Visualization, & Usability Center, 1995). Although the more than 13,000 WWW users who responded to the third survey chose to participate, rather than having been randomly selected, the survey findings represent the most comprehensive statistics gathered to date. Gvu's surveys are endorsed by the World Wide Web Consortium and the National Center for Supercomputing Applications (Santo, 1995:1).

In attempting to discover who is using the WWW, Gvu offered profession categories of engineering, programmers, and computer specialists; education-related fields; professionals; management; and a miscellaneous category. Figure 2 below illustrates the results of this survey question. As can be seen, those employed in computer-related fields make up the largest portion of WWW users, coming in at 31.4 percent of all respondents. Educators and students are not far behind at 23.7 percent; professionals follow with 21.9 percent. Next are those employed as managers at 12.2 percent. Other occupations make up the

remaining 10.8 percent of responding WWW users (Santo, 1995:1). These figures are based on responses from WWW users worldwide; however the majority of responses originated from the United States.

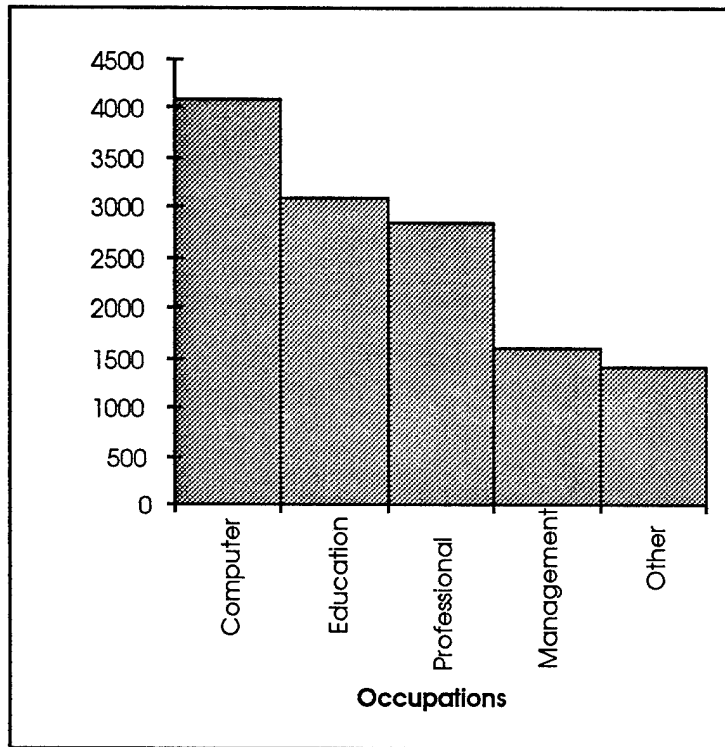


Figure 2 GUV's Third WWW Survey, Occupations

The following figure illustrates the results from two GUV survey questions regarding the number of hours each week WWW users spend computing for work and for personal applications. Considering that the largest segment of those responding are employed in computing-related fields (see Figure 2 above), the results may not be surprising. Over 50 percent of those responding are involved in computing for

more than 20 hours of their working hours each week. Sixty-nine percent are engaged in nonwork-related computing up to 10 hours per week (Graphics, Visualization, & Usability Center, 1995).

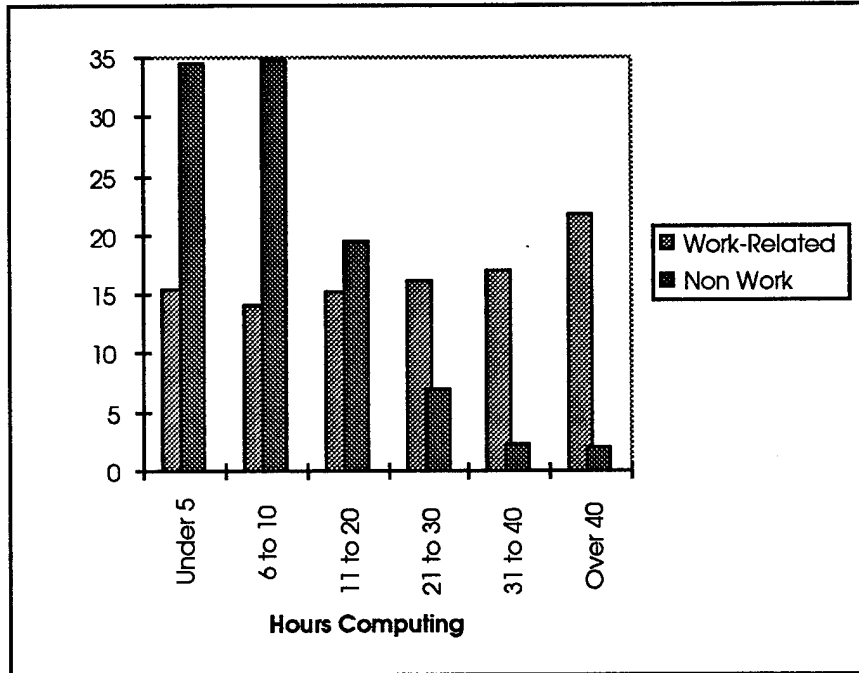


Figure 3 GUV's Third WWW Survey, Computing Hours

The information in Figure 3 may be compared to the data presented below in Figure 4. This chart illustrates the number of hours each week respondents spend using the WWW.

The majority of the WWW users who responded to this survey spend between 2 and 4 hours each week using their browsers. The next most populous category includes those who use the WWW between 10 to 20 hours each week. This survey question did not distinguish between work-related and

nonwork-related WWW use (Graphics, Visualization, & Usability Center, 1995).

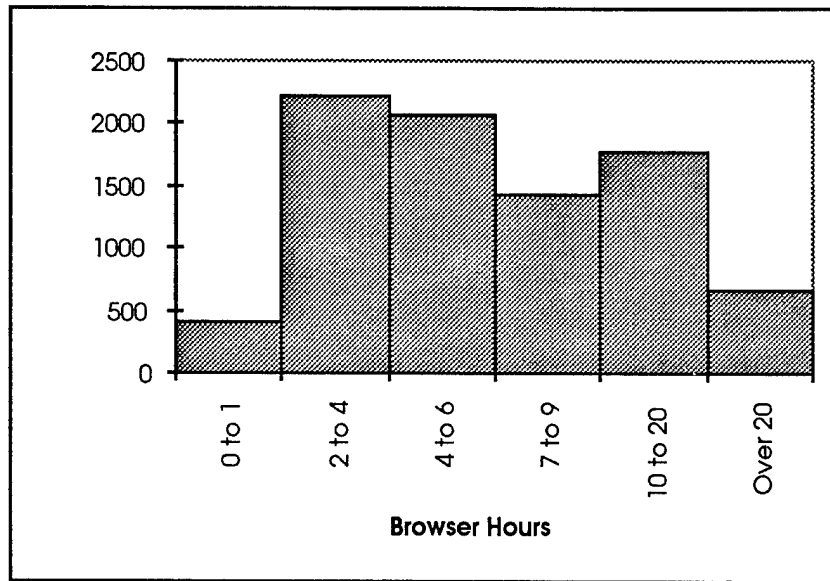


Figure 4 Gvu's Third WWW Survey, Hours of WWW Use

Results from a slightly different question are shown in Figure 5. This figure indicates that the majority of WWW users activate their browsers between one to four times each day. A minority of those responding use the WWW only once each month. The third Gvu survey was conducted for one full month, capturing at least some representation of those who use the WWW infrequently.

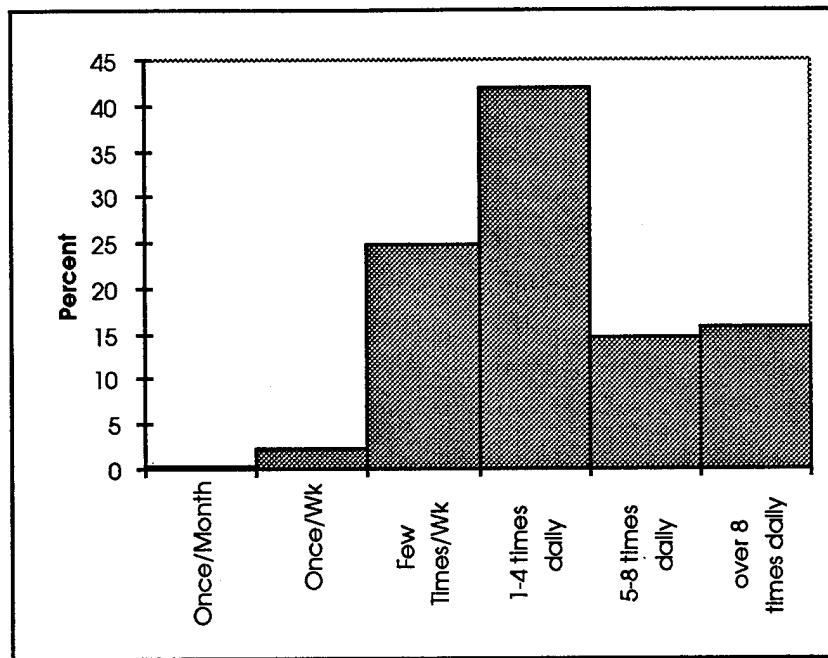


Figure 5 GJU's Third WWW Survey, Browser Use

A foundation of knowledge about who is using the WWW and for what purposes is needed to establish an effective WWW presence. The previous figures illustrate some personal characteristics of WWW users. The following data, also from GJU's Third WWW Survey, provide more information about the technical capabilities of WWW users, the reasons respondents to the survey give for using the WWW, how users find out about new pages, and what types of WWW page formats users prefer.

The speed of an individual's Internet connection directly relates to the time required to access WWW pages. The majority of WWW users responding to this survey, 58.21 percent, have an Internet connection of 14.4 kilobits per



second (Kbps) or less. At these speeds of connection, users may experience noticeable delays when attempting to access large WWW pages. The next highest number of respondents, 13.17 percent, use an Internet connection of 10 megabits per second (Mbps). This group is closely followed, at 12.07 percent, by those with a connection of 28.8 Kbps. This information is useful when determining the target sizes of individual WWW pages (Graphics, Visualization, & Usability Center, 1995).

The purpose behind the majority of WWW use, as determined by GVU's Third WWW Survey, is browsing, with 24.82 percent of respondents choosing this response. Entertainment takes second place at 17 percent. Work, education, business research, and academic research follow with responses ranging from 15.28 percent to 10.42 percent. An organization's initial decision to establish a WWW site may be influenced by this information. The information may also affect WWW page design and content issues (Graphics, Visualization, & Usability Center, 1995).

Knowledge of the kinds of information frequently accessed by WWW users is also valuable in determining WWW site content. Figure 6 displays how often WWW users seek different types of information. Survey respondents selected from a scale of (1) never to (9) frequently for each

information category. Beyond WWW browser software replacement, reference information and electronic news are the types of information most commonly sought on the WWW (Graphics, Visualization, & Usability Center, 1995).

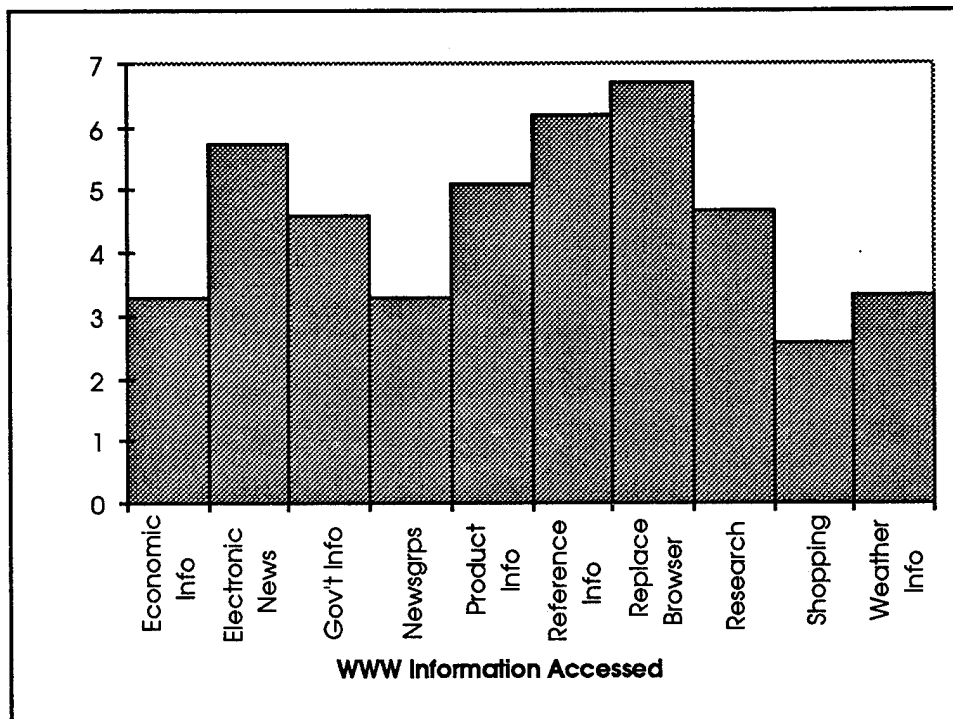


Figure 6 GVU's Third WWW Survey, WWW Information Accessed

When asked how they discovered new WWW sites, respondents to GVU's Third WWW Survey indicated their most frequent methods of discovery include recommendations from colleagues and from other WWW pages. The next most frequently encountered source is magazines, followed by newsgroups. The medium least frequently used in finding new

WWW sites is the printed newspaper (Graphics, Visualization, & Usability Center, 1995).

A final piece of useful information can be gleaned from the Gvu WWW survey. Respondents indicated on a scale from (1) dislike to (9) like their preferences for sites containing images, indices, movies, and searchable information. Figure 7 illustrates the results. Indices and searchability are highly rated. Images are of moderate importance and movies are less so (Graphics, Visualization, & Usability Center, 1995).

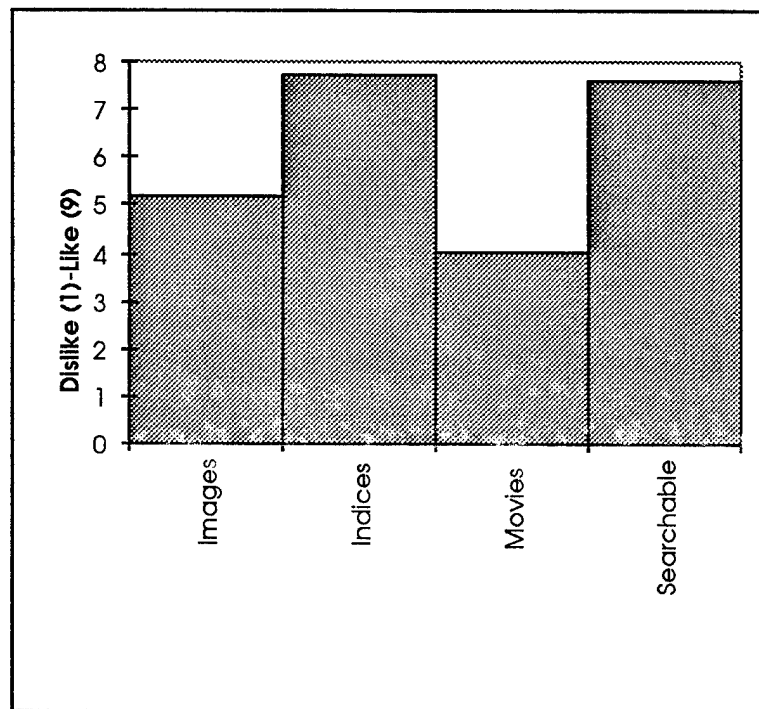


Figure 7 Gvu's Third WWW Survey, WWW Page Characteristics

The information gathered by the GJU WWW Surveys is valuable to anyone with a stake in the WWW. WWW site creators (or administrators) may especially benefit from this data. With knowledge of WWW user capabilities, interests, and preferences, WWW site creators can develop sites designed specifically to meet their audience's needs.

#### Web Site Creation Guidelines

The WWW survey provides some information about WWW user preferences. Long before surveys of WWW users were conducted, however, experienced WWW site creators began publishing their lessons-learned to guide others in establishing successful WWW sites. The do's and don'ts of WWW site design are now frequently available in both online and printed formats.

A welcome page to orient new visitors to an organization's WWW site is highly recommended. This initial page should contain a description of the organization sponsoring the site, offer an overview of site contents available to visitors, explain the purpose for the site, and describe its status. To indicate the site's status, each document within a site should indicate the date it was last updated and the degree of its completeness. Documents in a WWW site should also include the names and email addresses of the author and administrator (Berners-Lee, 1995a).

One of the most frequently repeated guidelines directs WWW site creators to limit the number and size of image files. To accomplish this reduction in image file size, an author may reduce the number of colors used in an image and offer a thumbnail image as a link to the full image. Style guidelines also suggest labeling an image file link with its format, size, and approximate download time. Providing this information helps users determine whether to access the image based on the time they are willing to spend to view the image and on whether they have the necessary software for displaying the image (Gray and Richard, 1995:26-27; Macworld Online Staff, 1995:47).

According to style guideline authors, WWW site visitors require clear, consistent navigational aids. Links to and from the overview on the welcome page and individual documents should be clearly labeled and used in a consistent manner throughout the WWW site. These internal links and links to external WWW sites should be tested often. Due to the dynamic nature of the WWW, sites frequently move or are discontinued. Frequent updates to the site should be the norm (Berners-Lee, 1995a; Macworld Online Staff, 1995).

Links are not the only testing requirement for WWW sites. The appearance of the WWW site's documents should also be tested using several browsers. Because individual

browsers display the same hypertext documents differently, authors need to evaluate the features of their documents on more than one browser. Additionally, browsers allow individuals to personalize their displays. WWW users may alter the fonts used or may alter the screen display size. Taking this into consideration, WWW document authors cannot depend on variable formatting features, such as word wrap, to create a particular appearance (Gray and Richard, 1995:26-27; Macworld Online Staff, 1995:47).

In summary, WWW site authors must consider the Internet connection speeds and browser capabilities of their intended audience when designing documents (Gray and Richard, 1995:28). Authors should avoid including extraneous image files in their documents. The sizes of relevant image files should be minimized using the techniques described above and should be labeled with their sizes, formats, and approximate download times. Finally, links offered in a WWW document and the overall appearance of the document should be tested frequently, using more than one browser.

#### Current Uses of the WWW in Business

In a recent interview, WWW co-creator Tim Berners-Lee stated that "...the Web is moving from appearing as a neat application to being the underlying information space in which we communicate, learn, compute, and do business"

(Lange, 1995:32). This section of the research paper focuses on the last part of his statement, commercial business on the WWW.

The business community's involvement with the WWW had been hesitant, but it increased dramatically during 1995. Businesses venturing onto the WWW have specific goals in mind. The WWW provides new opportunities for the business community, including new methods to disseminate corporate information internally and externally, to collaborate on research and development projects, to market their products, and to support customers.

Dissemination of Information. Attempting to cut down on its use of paper, Sun Microsystems is putting its corporate documentation on its internal WWW server. Employee manuals, the company's stock plan, its health care program, and expense reporting are all available online (Lange, 1995:33).

As another example of disseminating internal information, Symbol Technologies, Inc. uses its WWW site as its primary form of communication with its products' resellers. The organization places updated company and product information on the WWW site for downloading by resellers. The site also lists the names and addresses of each of the 240 resellers handling their products. The company sees the WWW

as a valuable tool in getting timely information to its geographically distant resellers and to potential customers (Grace, 1995:129).

Federal Express Corp. distributed copies of its tracking software package through its WWW site. Customers downloaded 300,000 copies of the software within six months. Previously, the organization had taken two years to ship the same number of copies of software on disks. The WWW allows Federal Express customers to obtain upgrades online as well. Using the WWW, the company can distribute valuable information to its customers faster than ever before possible.

Collaboration. The current business environment, with fewer dollars available for research, produces the need for organizations to collaborate on projects. Collaboration promises reduced costs to individual companies and increased speed of product development. According to one author, to be successful in research and development today requires "bringing the resources of many organizations together to work on a seminal problem, in the hope that a solution will create new opportunities for all participants" (Cronin, 1995:149).

Currently no published examples of the business community working together on projects using the WWW exist.



The topic is being studied. Researchers at the University of Texas at Austin's Center for Information Systems Management involved in studying methods of employing the WWW to benefit the business community have put forth the idea of an electronic collaboratory. They envision a newsgroup-like form of communicating on the WWW, using fill-in forms. The collaboratory would allow dissemination of information, but more importantly it would encourage dedicated discussion of business issues. Inclusion of an annotation system offers geographically dispersed business community members the ability to collaborate on research projects, adding their contributions to the work in progress. An annotation system allows users to add their comments or input to a topic of discussion. These comments are then available to the public or only to selected individuals, according to the program's design (Barua and others, 1994:1).

Other collaboration developments may include conducting computer aided design (CAD) sessions on the WWW. During the 1995 Design Automation Conference, researchers at the Computer Science division of the University of California at Berkeley proposed "a hypermedia organization for a new generation of CAD systems" (Mokhoff, 1995:33). The researchers suggest that the electronic design industry can

easily modify existing WWW software to efficiently and accurately transfer CAD files (Mokhoff, 1995:34).

Marketing. Conditions in the business community necessitate changes in marketing strategies. With shorter product lifecycles, demanding customers, and aggressive competition, businesses need to find a new way to market and sell their wares (Cronin, 1995:119). The WWW has become the chosen medium for an exponentially increasing number of companies.

Many businesses have placed product brochures on the WWW; some are complete while others provide a smaller selection than their printed brochures (December and Randall, 1994:464). Millipore Corporation, a manufacturer of filtration equipment, created a complete online version of its product catalog. Producing the online version of the catalog proved to be 10 times less expensive as producing the printed version and 3 times less costly than producing its CD version. In response to increased customer inquiries, the company plans to offer online ordering over the WWW later in the year (Cronin, 1995:318-319).

In Fall 1993 Digital Equipment Corporation (DEC) became the first Fortune 500 company to create a WWW site. The DEC site offers a unique opportunity to "test-drive" one of its product lines by promoting free telnet access and software

emulation through its WWW site (Cronin, 1995:314).

Customers are able to test software performance and to run their own data. This example demonstrates both innovative marketing and customer focus, the topic of the next subsection.

Customer Support. To be competitive in the marketplace, businesses must focus on customer satisfaction. With an Internet-connected customer population, businesses need to offer Internet access to customer support functions (Cronin, 1995:138). The WWW provides businesses the capability of disseminating the information customers need, in a customer controlled format, faster than previously possible.

Because customers choose which WWW page hyperlinks to follow, they retrieve precisely the information they require. With one WWW site, the business satisfies a myriad of different customers, with each customer receiving information tailored to his or her needs (Cronin, 1995:288).

Using WWW fill-in forms, customers are able to give instant feedback to businesses, affording the company another opportunity to earn the loyalty of its customers. The WWW has become the focal point of customer interaction for many businesses (Cronin, 1995:286).

Although a lack of security initially kept businesses away from the WWW, new technology has since been developed to address those security issues. Business involvement on the WWW is predicted to dramatically increase in the next few years. Using the WWW, a company can create an integrated plan for information delivery, marketing, and customer interaction (Cronin, 1995:293-294). An organization can gain its greatest advantage by matching WWW capabilities with the company's priorities and with opportunities to add value to the company's core functions (Cronin, 1995:ix, 249).

#### Current Uses of the WWW in Government

During the past year, many government agencies, both military and civilian, have established WWW sites. Previously, the government had begun providing information electronically through other Internet applications, such as gopher, ftp and, of course, email. While these Internet applications are still in use, the focus in 1995 has been on releasing information on the WWW. Government agencies primarily use the WWW for disseminating information. Current uses also include collaboration and marketing.

Dissemination of Information. Most government agencies are using the WWW as an information delivery vehicle. For example, the Library of Congress offers the WWW site THOMAS.

THOMAS provides information on bills, including the full texts, supporters, and status; access to the Congressional Record; and fundamental information about how Congress operates (Noack, 1995:30).

The House of Representatives also maintains a WWW site aimed at providing information to the public. The House site offers information about the status of bills and amendments, up-to-the-hour summaries of House debate, schedules, House member and committee member directories, full texts of bills, and access to the Congressional Record. The site also provides a fill-in form for visitor feedback (Noack, 1995:31; House of Representatives WWW Site).

The executive branch provides images of the first family, press releases, speeches, audio files of the President and Vice President, and tutorials on the workings of the US government through its Interactive Citizens' Handbook WWW page. Among the many other established sites are the National Information Infrastructure Virtual Library and the National Performance Review WWW page. Each of these sites delivers current and archived information about these government initiatives (Noack, 1995:31-32).

The US Information Service (USIS) provides another example of information dissemination. The USIS established a WWW site in Manila, Philippines to operate as the agency's

central means for providing information. Included on the site are links to other government agencies and to files of up-to-the-minute stories from the Wireless services. Also included are embassy press releases, speech transcripts, and links to information resources outside the Philippines (Brewin, 1995:22-23).

The DOD and each service operate WWW sites with the primary purpose of providing information to the public and to its members. DefenseLINK, the DOD WWW site created in September 1994, offers basic information about the organization, indexed links to WWW sites of interest, and a search engine (DefenseLINK). AirForceLINK, ArmyLINK, NavyOnLine, and the US Marine Corps WWW sites also offer searchable, indexed formats. The sites include material ranging from fact sheets and transcripts of speeches to images and lists of answers to frequently asked questions (DefenseLINK).

Collaboration. In addition to presenting information, some WWW sites seek to encourage collaboration among members of their intended audiences. A new WWW site, the Acquisition Reform Network, grants acquisition officials access to online policy, legal, and educational resources; and provides links to acquisition-oriented electronic bulletin boards. The site also provides moderated chat

rooms for the discussion of procurement-related issues. The project grew out of the need for geographically dispersed acquisition personnel "to talk with one another and to exchange information" (Varon, 1995:11).

Air University's 2025 WWW site illustrates another example of collaboration using the WWW. The page is intended to gather input for a "major study on air and space concepts applicable around the year 2025." Visitors, after registering, may have their ideas included in the final report by completing fill-in WWW forms (Air University WWW Site).

Marketing. Congressional candidates see the WWW as a public relations tool for their reelection campaigns. In August 1995, 16 members of Congress had established WWW sites (Carl, 1995:56-57). As of October 20th of the same year, 116 members of Congress had done so ("Contacting the 104th Congress"). Political parties are also present on the WWW (Carl, 1995:56-57).

WWW Research. Future applications for the WWW are being researched. The Naval Postgraduate School's WWW site offers its visitors an opportunity to test various decision support systems (DSS) through the WWW. The project, DecisionNet, is in alpha testing ("Navy Web Site Helps in Decision-Making"). It provides access to a distributed

network of modeling and DSS systems and allows providers of these systems to have their technologies publicized, browsed, and executed over the WWW (DecisionNet Home Page).

One of the most successful military-sponsored WWW projects, the Planet Earth WWW site, is also one of the earliest. Funded by the Office of Naval Research, the success or failure of Planet Earth was to determine how future projects would use the WWW. The site, a vast, searchable, subject-oriented library of information, is so successful that commercial vendors have made offers (Brewin, 1995:22-23).

With government agencies offering new WWW sites each month, the need for policy arises. The next section of this chapter reviews the DOD and Air Force policies for releasing information electronically.

#### Government Policy on Providing Information on the Internet

Department of Defense and Air Force guidelines for providing electronic information on the Internet and the WWW were published in the first half of 1995. Department of Defense policy guidelines on "Clearance Procedures for Making Electronic Information Available to the Public" were expressed in a 17 Feb 1995 memorandum from the Office of the Deputy Secretary of Defense. The memorandum directed that electronic information be cleared prior to public release



following the same standards as those established for "hard" copy information (Office of the Deputy Secretary of Defense, 1995).

In June 1995, an electronic message announced an Air Force policy letter on the same subject signed by the Secretary of the Air Force. The Air Force policy outlines types of electronic information that may not be placed on a system connected to the Internet without any security controls, and provides content selection guidelines for home page administrators.

The first content guideline directs that a home page administrator is not to maintain online copies of files for which the administrator is not the office of primary responsibility (OPR). This avoids the problem of WWW sites offering outdated versions of files. A second guideline indicates that only the Air Force and MAJCOM home pages are to maintain indexes of links to other Air Force and DOD WWW home pages. Instead, local home pages should link to these higher level lists (Office of the Secretary of the Air Force, 1995).

### Conclusion

The Air Force IRM community may reasonably expect to achieve benefits similar to those sought by the business community and other government agencies using the WWW. By

following the guidelines suggested by accomplished WWW site creators and maintainers, the IRM community may institute a promising communication tool of notable impact. The next chapter describes the methodology used in this research project to create the prototype Air Force IRM community WWW site.

### III. Methodology

#### Overview

The Literature Review chapter of this paper, the implementation and operation of a prototype Air Force WWW IRM community WWW site, and the data gathered from that site address the following research objectives:

1. Determine an appropriate and successful content and format for the Air Force Information Resource Management community World Wide Web site.
2. Determine those benefits achieved by the government and business communities' use of the WWW.
3. Determine the average profile of active duty Air Force IRM Internet and WWW users.

#### Instrument and Data Collection Plan

This study accomplishes the three objectives listed above through a Literature Review and through the use of the prototype Air Force IRM community WWW site. Each of these tools is discussed in separate subsections below.

The Literature Review. To accomplish the first research objective, this study reviews the available literature describing content selection and format guidelines for WWW sites. When this study began in late 1994, little such literature was available. During the past year, a limited number of journals, books, and online sources have emerged,

dedicating issues, chapters, and pages to the topic. The Literature Review presents information from each of these sources.

The Literature Review also introduces the benefits achieved by the business community from using the WWW, as reported in journals, books, and online sources. The Air Force IRM community may reasonably expect to achieve similar benefits through establishing a dedicated WWW site. Because the technology is relatively new and businesses have only recently begun to use the WWW, literature on the topic is scarce.

The Prototype Air Force IRM Community WWW Site. The prototype Air Force IRM community WWW site serves as a single point of embarkation to WWW sites of interest to the community. It provides indices for the following categories: General Business, Government, Information Technology, Internet and WWW, IRM-related Professional Societies, and Meta-Indices and Search Engines.

The prototype IRM WWW site also serves as a feedback gathering mechanism. The site will gather comments and specific suggestions for content and format from visitors to the site. Visitor input may be automatically submitted using embedded email links or using WWW fill-in forms available on the prototype site. Input may also be submitted

using the WWW-based IRM Discussion Forum, reached through a hyperlink on the prototype IRM site welcome page.

A questionnaire made available as a mail-to, fill-in form on the prototype WWW site will determine an average profile of active duty IRM Internet users. These input methods and the questionnaire are discussed thoroughly in the Technical Details subsection below.

An email message to publicize the opening of the prototype IRM WWW site was sent to the Internet email connected portion of the Air Force IRM community that graduated from AFIT. The message requested that these members spread the word among colleagues in the community. A follow up message, sent out one month later over the same Internet email list, reminded IRM community members of the site and again requested their suggestions and comments.

The prototype Air Force IRM community WWW site included a welcome page consisting of information about the Air Force IRM community; an index of links to relevant WWW sites and documents; and embedded email links and mail-to, fill-in forms for gathering visitor input. To reduce the amount of time visitors spend downloading the page, the page did not contain graphics.

In addition to the welcome page, the prototype site also included a WWW-based IRM community discussion forum.

Visitors were able to submit questions, announcements, issues for discussion, or other comments using a WWW fill-in form. Later visitors could reply to previous submissions or submit new topics for discussion. All submissions were available for viewing to all visitors, unless the messages were removed by the site administrator. The technical details of this forum's operation are discussed in the following subsection.

The prototype WWW site remained operational for 45 days for data collection. The site began operation on September 6, 1995 and ceased operation on October 20, 1995. A printed version of the site is attached as Appendix B. The source code is attached as Appendix C.

Technical Details. As described in Appendix A to this paper, hypermedia documents are created using HTML. To create the prototype Air Force IRM community WWW welcome page, the author used HTML Writer version 0.9 beta 4a, a free-ware HTML document editor (Nosack, 1995). HTML Writer was selected because it was available at no cost, was relatively easy to learn, and operated on the computer platform available at AFIT.

Learning the basics of HTML is not difficult or time-consuming. In Gvu's Third WWW User Survey, respondents indicated they spent an average of three to six hours

learning HTML (Graphics, Visualization, & Usability Center, 1995). Online and printed resources are available to introduce novices to HTML tags and standard usage. The help function of HTML Writer also proved valuable in teaching some HTML fundamentals.

Version 2.0 of HTML, the version supported by HTML Writer, permits the creation of fill-in forms and embedded email links. World Wide Web fill-in forms look like paper forms, complete with questions and boxes in which to enter answers. For the prototype WWW site project, two fill-in forms constitute the primary data gathering devices used to solicit input from IRM community members. These forms are included as part of the printout of the prototype site in Appendix B.

At the bottom of the WWW form, the user usually finds a button labeled with "submit" or with another appropriate verb. Choosing that button causes the information entered by the visitor to be sent to the WWW site's host computer. The host computer then processes the information according to the instructions in the program called by the form. All of this processing is hidden from the WWW site visitor.

The program called by a form is known as a Common Gateway Interface (CGI) program. CGI programs are frequently written in PERL, C, or other high-level programming lan-

guages. Although some CGI programs are available in the public domain, they require expert modification to function with individual forms.

CGI program functions vary with the purpose of the form they are called to interpret. A program is often used to place data neatly from a form into a file with labeled rows and columns. CGI programs can be used to perform much more complex actions, as will be discussed later.

For those WWW site creators without knowledge of PERL or other programming languages, another form processing option is the mail-to form. Mail-to, fill-in forms on the WWW use email to forward the visitor's input to the email account specified in the fill-in form's source code. When a visitor chooses the "submit" button on a mail-to form, the information is sent to the email address specified in the form's source code. This author chose mail-to, fill-in forms as the main data-gathering devices for the project because CGI programming expertise was unavailable.

One disadvantage of the mail-to form is the resulting format of the input. Spaces and carriage returns are replaced by ampersands and various numbers take the places of apostrophes, commas, and other punctuation marks. The input is nearly incomprehensible without time-consuming interpretation. Figure 8 illustrates a typical result of



using a mail-to, fill-in form. This sample was created using one of the mail-to, fill-in forms on the prototype IRM WWW welcome page.

```
name=Kris+Waldner&ename=kwaldner@afit.af.mil&anon=
ANON_YES&comment=These+are+sample+comments+to+illu
strate+the+mail-to%2C+%0D%0Afill-
in+form%27s+confusing+output.++Note+the+%22bizzare
%22+%0D%0Areplacements+of+numbers+for+punctuation+
marks.
```

Figure 8 Sample WWW Mail-to Fill-in Form Data

For this research project, this obstacle was overcome by creating a macro in a word processing programming and running it for each message received from the mail-to, fill-in forms. The macro seeks out the substituted characters and numbers and replaces them with the intended punctuation markings. The macro was redesigned each time new substitute characters were discovered.

Encoded data is not the primary drawback to mail-to forms. The primary drawback is the lack of support for this method of fill-in form processing among currently popular WWW browsers. The author was not aware that many Air Force IRM community members explore the WWW using browsers incapable of submitting information through mail-to, fill-in forms.

In consideration of this problem, an email link to the author is available. An email link is created using the

appropriate HTML tags and the email address of the person designated to receive the input. When the visitor selects the email link, his browser responds with a typical email input screen. The user may enter his comments and mail them to the author, all through his WWW browser. Comments received by the author in this manner are not encoded, avoiding the decoding problem of the mail-to, fill-in forms.

The lack of support for mail-to forms created another obstacle for this research project. Eight questions included at the beginning of the first mail-to, fill-in form were intended to create an average profile of active duty Air Force IRM Internet users. Submission of responses to the eight questions depends on the mail-to technique for form processing. As a result, only visitors with browsers capable of performing the mail-to function were able to respond to the questions.

The two mail-to, fill-in forms used in the prototype Air Force IRM community WWW site welcome page began with two optional spaces for the visitor's name and email address. These fill-in boxes were followed by a checkbox. Checkboxes allow a visitor to select the box if the phrase beside the box applies to him or her. On the prototype IRM WWW site, the checkbox requested the visitor's preference for anonymity.

Apart from the features described above, the two forms differed. The first form contained another checkbox asking whether the visitor is an AFIT IRM graduate. The form next included eight questions designed to determine an average profile of active duty Air Force IRM Internet and WWW users. These questions used "radio buttons" to determine the average characteristics of visitors to the prototype WWW site. Radio buttons allow a respondent to choose only one response among several offered.

Completion of these questions was restricted by the Paperwork Reduction Act to active duty Air Force personnel. Notices to this effect were placed in the introductory section of the first form, at the beginning of the form, and above the "submit" button that visitors used to forward their responses.

The eight questions were followed by two comment boxes. The first box requested the visitor to submit comments on the benefits or problems that he experienced or that he foresaw with using the Internet and the WWW for work-related duties. The second box requested suggestions for the format and content of the Air Force IRM community WWW site.

The second form was a comments only form, leaving out the eight profile-determination questions. It simply supplied a box for visitor comments.

The prototype Air Force IRM community WWW site provided a link to an IRM WWW discussion forum. This forum used fill-in forms to accept visitor comments, questions, and suggestions. The discussion forum operated with Matt Wright's freeware CGI programs (Wright, 1995). These CGI programs performed much more intricate functions than those described earlier. The programs appended the information submitted by the visitor to the appropriate WWW page, for viewing by all visitors.

The initial discussion forum fill-in form displayed a list of all previously submitted topic titles. The visitor could initiate a new topic by completing the boxes below the index of topics on the first page of the forum and by choosing the "submit" button. To read any of the listed messages, the visitor selected the title. The original message was displayed, followed by a list of any follow-up posting titles. To submit a response to a message, the visitor selected the appropriately marked button.

Within a message, a visitor could include hyperlinks to WWW documents and sites or email links to themselves or others. In this way, IRM community members could direct their colleagues to relevant WWW-based information. Because the messages remain, unless removed by the site administrator, the information was available to those

currently part of the community, and to those who join the community later.

In addition to visitor comments, the prototype WWW site monitored the number of visits to the site, as a measure of the interest of community members in the site. To monitor the number of visitors, a freeware CGI program was used. The number of visitors was displayed as an image at the top of the prototype IRM community WWW welcome page. The program began with the value zero, and increased the value each time a visitor requested the page from the host computer. This method of counting visitors to a site may not be entirely accurate due to a new trend in browsers--WWW page caching.

Some of the current WWW browsers, particularly those offered by online services, use WWW page caching. When first requested, the browser contacts the host computer to transfer the WWW page and then saves the page. For subsequent visits to the same address, the browser does not contact the host computer, but displays the previously saved document. As a result, the WWW site's statistics are not updated accurately and the visitor may be viewing outdated material (Rinzel and Zelnick, 1995).

In creating the prototype Air Force IRM community WWW site, the author considered the style guidelines reviewed in

the second chapter of this research paper. As a result, the prototype site included a welcome page, describing the IRM community and the purpose of the site. The site excluded images to reduce visitors' access time. To alert visitors to the welcome page's status, the date of the most recent update, the author's name, and an email link to the author were also included. DOD guidelines, also reviewed in the second chapter, required that a link to an already existing index of other DOD WWW sites replace individual links to each service's official WWW site. Links included in the site's indices were tested thoroughly and the site's appearance was previewed using three different WWW browsers. The prototype site was advertised only through the established Air Force IRM community email list. Because it is a temporary site, the address was not provided to the Air Force home page or to any of the WWW meta-indices.

#### Data Analysis and Conclusion

Data in this study includes information from the Literature Review in the form of guidelines for WWW site format and content selection. The Literature Review also examined the benefits the Air Force IRM community may expect to achieve from a dedicated WWW site. This information, initially presented in the Literature Review, provides a portion of the data used to devise recommendations for the

content and format of a permanent Air Force IRM community WWW site. Those recommendations appear in the final chapter of this research study.

The Data Analysis chapter provides information about the average number of visitors to the prototype Air Force IRM community WWW site during its temporary operation. This data may be interpreted to predict the usefulness of a permanent site to the Air Force IRM community.

The chapter also presents the results of a WWW fill-in form questionnaire created to determine an average profile of active duty Air Force IRM Internet users. For each of the questions in the questionnaire, all possible answers and the percentage of respondents choosing each answer is shown. The results from this questionnaire are compared to recently reported results of surveys asking similar questions of Internet and WWW users.

Additional data collected in this study includes comments and suggestions for the format and content of an Air Force IRM community WWW site. This input, gathered through electronic mail and through fill-in forms on the prototype Air Force IRM community WWW site, is summarized and reported in the Data Analysis chapter of this paper.

## IV. Data Analysis

### Overview

This study investigated the successful format and content for an Air Force IRM community WWW site; explored potential uses and benefits of the site through the Literature Review; and attempted to define an average profile of active duty USAF IRM community Internet and WWW users. A prototype Air Force IRM community WWW site, available from September 6 through October 20, 1995, allowed visitors to the site to make suggestions for content and format through fill-in forms and through a discussion forum. A questionnaire on the site's welcome page requested visitors to answer eight questions to be used in identifying an average profile of active duty Air Force IRM personnel who use the WWW. This portion of the research paper presents the data gathered through the prototype IRM community WWW site.

### Limitations

The study encountered several problems with the chosen data gathering method. As explained in the chapter titled Methodology, the prototype Air Force IRM community WWW site used mail-to, fill-in forms to collect questionnaire answers and comments from visitors. Lack of availability of



programming expertise necessitated the use of mail-to forms. Before the prototype site was made available, the author was not aware that some WWW browsers do not have the capability to process these forms. The author was also not aware that many Air Force IRM community members use these browsers. As a result, only current AFIT IRM students provided inputs to the questionnaire.

The second problem with the WWW site involved the request for volunteers among the visitors to the WWW site to complete the eight questions on the fill-in form. Under the Paperwork Reduction Act, publishing the questionnaire on the WWW required permission from the OMB. The addition of a clause restricting completion of the questionnaire to active duty US Air Force members brought the prototype Air Force IRM community WWW site into compliance.

The initial difficulty with the WWW site, that of WWW browsers not supporting mail-to forms, invalidated the first two questions on the questionnaire. The first question asked whether the respondent held an IRM-related job. The second questioned the respondent's frequency of use of his or her home computer. Because all respondents are current AFIT IRM students, all provided identical answers.

That initial problem also led to one final problem with the research objective of identifying an average profile for

active duty Air Force IRM community members. Because only current AFIT IRM students were able to respond, the number of total possible responses was limited to 20. The actual number of responses collected was 13. This sample size is completely non-random and too small to be statistically useful.

One final limitation involves the use of the number of comments and the number of visitors to the site to indicate community interest in the site. These numbers may have been restricted by the publicity method chosen and by the problems encountered with the mail-to, fill-in WWW forms used to gather comments.

To publicize the opening of the prototype WWW site, the author sent a message to graduates of the AFIT IRM program using an existing mail list. Advertising to a wider audience may have resulted in a higher participation rate.

Despite problems with the sample size and the data-gathering method, the results of the questionnaire may be of interest to the Air Force IRM community. Some of the results from this study may be compared with results from the Graphics, Visualization & Utilization (GVU) Center's Third WWW User Survey. Those statistics were presented in the Literature Review. The results from this study are presented in the following subsection.

## Data Analysis

Data gathered through the WWW site included visitor statistics, questionnaire responses, and comments and suggestions. Each of these sets of data are treated in separate subsections below.

Visitor Statistics. The prototype Air Force IRM community WWW site received 77 visits in its 45 days of operation. The site opened on September 6, 1995 and ceased operation on October 20, 1995. In Figure 9 below, the 45 day time period is split into 3 equal periods of 15 days each. During the first period of operation, the site registered 38 visits. The middle time period saw 19 visits, and the final period received 20 visits. The overall average was 1.7 visits per day.

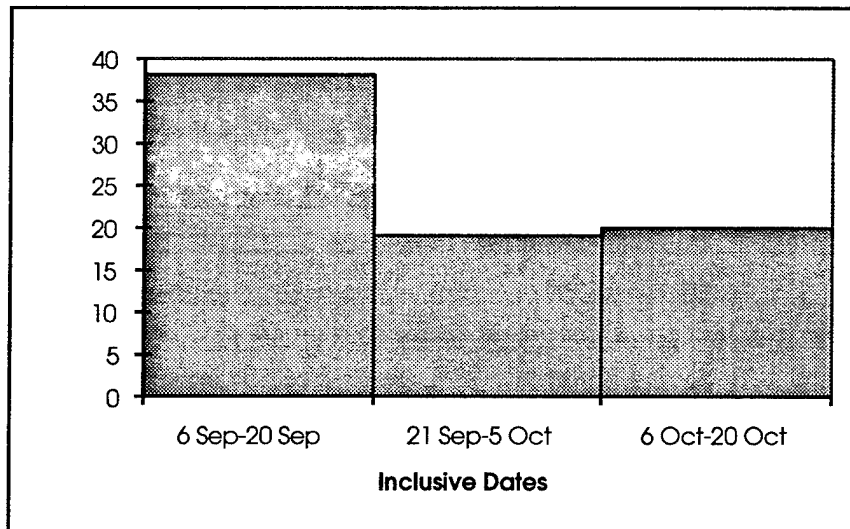


Figure 9 Prototype WWW Site Visitors

Accurate collection of this data required careful monitoring of administrative visits to the site. Administrative visits included those visits made to monitor the total count of visitors registered by the counter program. Other purposes included displaying the site to have its content approved for public release, reviewing changes made to the site, and verifying proper operation of the site's features.

Each administrative visit was noted and subtracted from the total number of visitors displayed by the site's visitor-counter program. The data shown in Figure 9 does not include the 44 administrative visits made to the site during the 45 days of operation. It is not possible to distinguish, using this type of counter, between repeated visits to the page by a single visitor and separate visits from different individuals. The type of program used on this site is described in the Methodology chapter.

Results from the Questionnaire. As explained above, the data gathering method restricted the pool of possible respondents. All respondents were current AFIT IRM students, thus invalidating the first two questions of the questionnaire. The remaining six questions and their corresponding choices are listed below.

1. Choose a response describing your familiarity with computers:
  - Almost totally unfamiliar;
  - I use them occasionally;
  - I use computers frequently;

I use computers frequently and have great knowledge of how they work.

2. Choose a response describing your level of comfort with computers:

I feel anxiety when using computers;  
I feel comfortable when no problems occur;  
I feel confident that I can handle problems that occur with normal computer use.

Each of the four questions below provided the following possible responses:

Never;  
Once per month;  
Once per week;  
Daily.

3. Choose a response describing how often you use the Internet specifically for your job.

4. Choose a response describing how often you use the WWW specifically for your job.

5. Choose a response describing how often you use the Internet (from a non-government computer) for your personal use.

6. Choose a response describing how often you use the WWW (from a non-government computer) for your personal use.

The results from the first of these questions, describing the respondent's level of familiarity with computers, are not graphically represented. From the four choices provided, only two were selected. Six of the respondents indicated using computers frequently. The remaining seven replied that they held great knowledge of how computers work.

The second question's results, regarding the level of comfort experienced during computer use, is graphically

illustrated in Figure 10 below. Only one of the thirteen respondents indicated feeling anxious when using computers. Five felt comfortable, while six were confident of their ability to handle problems occurring with normal computer use.

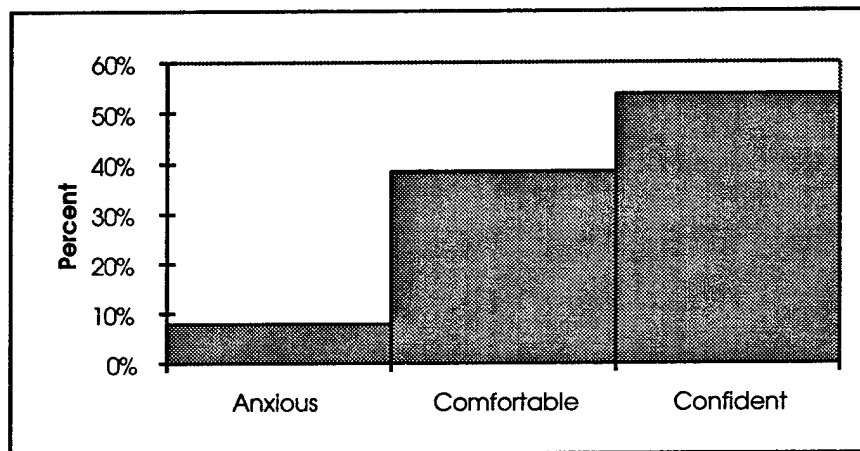


Figure 10 Results from Question Two

Figure 11 illustrates the results from the remaining four questions regarding use of the Internet and the WWW for work and for personal purposes. Seven out of thirteen respondents indicated using the Internet for their jobs on a daily basis. Only five of thirteen used the WWW daily for their jobs. Five of the thirteen also used both the Internet and the WWW for personal purposes on a daily basis.

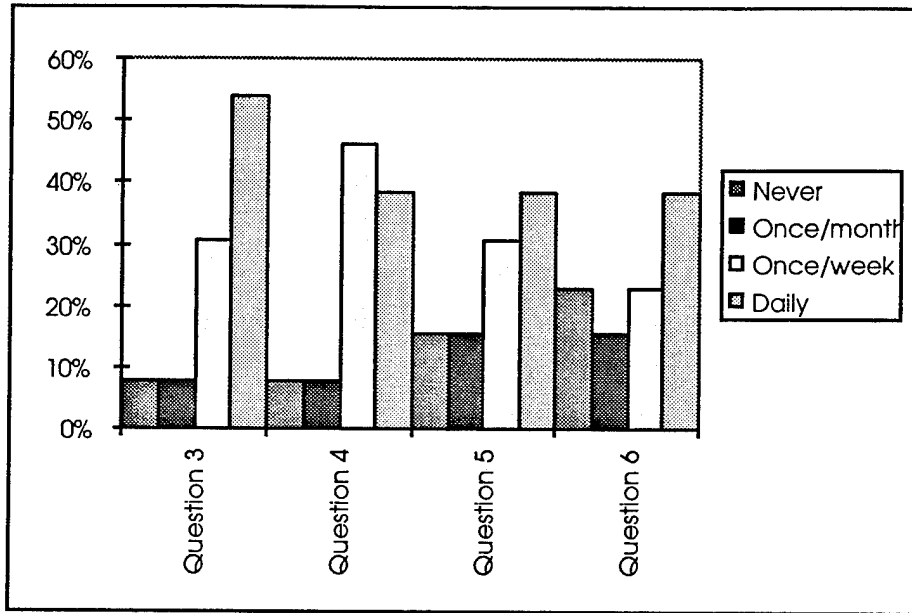


Figure 11 Results from Questions 3 - 6

If the sample had been of adequate size and randomly selected, the data from these last four questions would have been useful for comparison with the results of GVU's Third WWW Survey shown in Figure 5 in the Literature Review. That survey found that the majority of respondents used their browsers many times daily. Very few indicated using the WWW less than a few times each week.

This section has reported the results of the WWW-based questionnaire intended to define an average profile of active duty Air Force IRM personnel. The prototype Air Force IRM community WWW site also collected comments and suggestions from community members using mail-to, fill-in forms, embedded email links, and a WWW-based discussion forum. The

comments submitted through these means are summarized in following subsection.

Comments and Suggestions. The prototype Air Force IRM community WWW site included a link to a WWW-based IRM discussion forum. A total of four comments and suggestions were submitted through this forum. Two contributions suggested WWW sites of interest to IRM personnel. These sites were added to the links on the prototype welcome page.

Of the remaining two comments, one indicated that the discussion forum may function as an alternative to the existing IRM mail list. Membership in the existing list is limited to AFIT IRM graduates. The WWW discussion forum would provide a method of disseminating IRM information to non-AFIT IRM graduates.

The final comment from the discussion forum suggested using graphics to increase the aesthetic appeal of the site's welcome page. More comments were collected through the fill-in forms and the embedded email links on the welcome page.

Eight comments were submitted using the fill-in forms on the prototype site's welcome page and six through email. The submissions divide easily into three categories consisting of: (1) those discussing general use of the WWW and the Internet; (2) those commenting on the usefulness of a WWW



site dedicated to IRM; and (3) those providing specific suggestions for an IRM dedicated WWW site. Some messages provided comments falling into more than one of these categories. The comments from each category are presented below.

Of the two messages discussing general use of the WWW and the Internet, one was concerned with a security issue. The author of the message indicated concern over the difficulty of authenticating visitor input from a WWW site. The possibility of an unauthorized individual submitting false information through a WWW fill-in form was raised. Although procedures exist to limit access to WWW sites only to visitors from computer systems in specified domains, this system is not infallible. Unless another security routine were in place (such as registering users and assigning passwords), data from a WWW fill-in form could not be trusted to be reliable without additional verification.

The second message in this category suggested that the Internet and the WWW were good starting places for research, but that these media could not be relied upon as a sole source of information. Because anyone may publish nearly anything on the Internet, not all sites can be depended upon to provide accurate information. A site's dependability is not necessarily obvious at the first or second visit. As

the author of this message suggests, until a site is proven through experience to be sound, Internet or WWW users may need to verify information discovered there.

This same author pointed out another reason not to use Internet or WWW based information as the only source in research. Because the documents provided by these means are impermanent, the task of documenting sources becomes more difficult. A WWW or other Internet site may move or cease to exist altogether, making it impossible to verify one's sources.

The next category of messages comprises those commenting on the general usefulness of an IRM dedicated WWW site. Each of these messages supported a dedicated site as an "excellent resource for IRM or other MIS professionals." One message suggested that maintaining an index of all of the IRM field's resources in one location would be useful. Two of the messages offered that the site would be an effective means of providing access to Air Force Policy Directives and Air Force Instructions for the IRM field. Two more suggested that the IRM forum would be useful for the discussion of IRM issues. Finally, one message views a dedicated site as a convenient means for IRM personnel to stay informed about their career field and to stay in touch with their colleagues.

The final category of messages made specific suggestions for the format, content, and publicity of an IRM dedicated WWW site. The first of these messages suggested a color background for the site, while another requested that an acknowledgment form be displayed after a visitor submits information through a WWW fill-in form. Each of these comments address limitations of the prototype site described in the Methodology chapter of this paper. Graphics were excluded from the prototype to decrease the download time of the page. An acknowledgment form following submission of a fill-in form is only possible with CGI programs. The forms referred to by the message's author used the mail-to technique, due to a lack of CGI programming expertise. Each of these comments is important to consider in developing a permanent site.

Two more messages in this category concern the definition of IRM used on the prototype Air Force IRM community WWW site. As a result of the first message, the definition originally displayed on the site was changed to that provided in the publication VISTAS.

The second message's author observed that one potential purpose of an IRM dedicated WWW site is to market IRM products and services. With this in mind, the definition presented on the WWW site welcome page should "relate the

strategic importance of information management and how information can create competitive advantages."

A set of messages in this category concern publicizing of an Air Force IRM community WWW site. One author suggested assigning a less lengthy WWW address to the site than that used for the prototype. To accomplish this, the site could be placed higher in the host computer system hierarchy. Another option would be assigning the site an alias--an address that would correspond to the site, even if the site were moved to a different host computer. Either of these solutions would result in a less cumbersome address, possibly resulting in more visitors.

On the other hand, with the use of hotlists and bookmark files in WWW browsers, the length of a site's address may be of concern only once. Hotlists and bookmark files are similar to address books. The titles and address of frequently visited sites are placed in a list. For future visits to a site, the user selects the site's title from the list and the browser connects to the appropriate host computer.

Another message that deals with the publication of the IRM WWW site suggested that its address and topic be submitted to the major WWW meta-indices. In this way, more IRM community members will be able to discover and visit the

site. Publicizing the site through AirForceLINK was also put forth.

A final message indicated that the most valuable information on a WWW page is not its text, but its links to related sites. As another publicizing effort, this message's author suggests offering supplementary services, such as an email IRM newsletter, providing subscribers with information about new features of the WWW site. Finally mentioned was the need to constantly update a WWW site in order to encourage visitors to return.

#### Conclusion

Although few were received, the comments summarized here represent the voices of the members of the IRM community. Designing a WWW site dedicated to this community requires consideration of the members' expressed needs and desires.

## V. Conclusion

### Overview

This exploratory study investigated three research questions raised by the Air Force IRM community's interest in establishing an IRM dedicated WWW site. The questions, detailed in the first chapter of this paper, focused on determining appropriate and successful content and format for an IRM dedicated site; on uncovering the benefits achieved by the government and business communities' use of the WWW; and on defining an average profile of active duty Air Force IRM Internet and WWW users. This chapter, based on the results achieved through the study, discusses the potential of a permanent IRM WWW site and raises possible topics for further research.

Content and Format. To determine appropriate and successful content and format, online and printed guidelines were consulted. The results were presented in the Literature Review. Another source of information was the GUV Third WWW User Survey, also reviewed in the second chapter. The paragraphs below explain how these guidelines relate to the creation of a permanent IRM WWW site.

A permanent IRM WWW site should offer a welcome page for visitors, describing the IRM community and the contents

and status of the site. To meet the needs of the IRM community members, it should include reference material, links to other relevant Internet sites, and search capability. Relevant graphics and color are important to site visitors. Graphics used should be minimized to avoid excessive download times. Methods for minimizing graphics are discussed in the Literature Review.

Because the most common method of finding new WWW sites is recommendation by colleagues and other WWW pages, a permanent IRM WWW site should be advertised through AirForceLINK. The site should also be announced through other relevant WWW sites and should be listed with major searchable indices.

Clear, consistent navigational aids should be used throughout the WWW site. After choosing an easily understood style for navigational aids, the IRM community WWW site should use that style in each of the documents in its site. To avoid losing visitors within the WWW site, clear links back to the welcome page or other starting point should be established.

A permanent IRM WWW site would require frequent update. Testing existing links and adding new information are other important aspects of site maintenance. Testing the

appearance and operability of the site's features using different WWW browsers is also recommended.

The most pertinent guidelines are those coming from members of the community for whom the site is intended. Comments from IRM community members regarding the prototype Air Force IRM community WWW site are summarized in the Data Analysis chapter of this paper. They indicate that a site containing up-to-date indices of links to worldwide IRM resources and links to Air Force IRM policy and guidance would be useful. The comments also suggest the site be used to market IRM products and services to the entire Air Force community.

Possible Benefits of WWW Site. Through the Literature Review, this study explored the benefits achieved by both business and government through using the WWW. The two communities experienced or expected to achieve benefits in three common areas: information dissemination, collaboration, and marketing. The business community also experienced benefits in customer support. Each of these benefits may also be achieved by the IRM community.

A WWW site containing links to IRM resources and to Air Force IRM policy fulfills the information dissemination objective. Using the WWW for this purpose may result in cost savings. Fewer printed Air Force Instructions or other



material would be necessary if the information were made available on the WWW. If fewer paper copies were needed, mailing costs would be reduced as well.

Collaboration among geographically dispersed colleagues could be achieved through a WWW-based discussion forum, or in the future, through the use of annotation systems with the WWW. Communicating over the Internet may save transportation, temporary lodging, and meal costs.

An IRM dedicated WWW site may be used to market IRM community products and services. The site could become a valuable tool in shaping the way Air Force members, and others, think about information resource management issues.

An increasing number of military personnel have access to the Internet and the WWW. The IRM community may increase its responsiveness to its customers by providing online services. For example, a WWW based frequently asked questions (FAQ) list about IRM policies may provide answers for a customer during non-business hours.

Although supported by business and government community experiences reported in the Literature Review, achievement of the potential benefits described above are not guaranteed. Each of these areas of potential benefit-- information dissemination, collaboration, marketing, and customer support--would profit from dedicated study.

Topics for Further Research. Several possible topics for further research may be gleaned from the paragraphs above. Whether or not electronic publication of material would result in cost savings is one example. Many individuals regularly print documents obtained from the Internet or the WWW. In this case, paper costs may increase, when one-sided, rather than two-sided, documents are produced from printers. Printer maintenance and supplies costs may cause more cost increases. Another topic associated with the use of the WWW to disseminate information is the difficulty of verifying the authenticity and accuracy of online documents. Anyone with access to a WWW server may publish documents providing false information--intentionally or inadvertently. Relying on information from the Internet or the WWW is risky without verification procedures.

In the area of collaboration, the effectiveness of communication over the Internet is a topic for further research. Collaboration over the WWW may reduce travel-related costs, but the quality of that collaboration has not been studied. Comparison of the quality of WWW-based collaboration to that achieved when all participants are located together may be useful.

Research into future uses of the WWW could also benefit the IRM community. Allowing IRM community members to test or be trained on new software or hardware from a remote site using telnet is one example. Further research on and publication of experiences with the WWW will provide more examples of benefits achievable by the IRM community.

Profile of IRM Internet and WWW Participants. The third objective in this research project was to identify an average profile of active duty IRM Internet and WWW users. To accomplish this objective, eight questions were made available on a WWW fill-in form as part of the prototype IRM WWW site. Problems with the form-processing method used for collecting the questionnaire responses resulted in an unexpectedly small, nonrandom sample size. Combining this problem with the unknown effects of using a WWW based questionnaire resulted in data of limited interest and use to the IRM community. The results of the questionnaire are detailed in the Data Analysis chapter.

#### Summary

This paper has reviewed guidelines for appropriate and successful content and format for a WWW site from experts in the field and from IRM community members. By following these guidelines, the resulting WWW site can be expected to effectively meet the needs of the IRM community.

The benefits achieved or expected by the business and government communities were discovered through the Literature Review. As discussed in the section above, the IRM community can also reasonably expect to achieve benefits in these same areas of information dissemination, collaboration, marketing, and customer support.

The WWW provides a revolutionary new medium of communication. With further study and innovative ideas, effective methods of employing this medium are certain to be discovered. Establishing a carefully designed, frequently updated, IRM WWW site affords the community the opportunity to benefit from the wise exploitation of the WWW medium.

## Appendix A: Brief History of the Internet and WWW

### The Internet and the WWW

This appendix briefly describes the origins and workings of the Internet and the WWW.

The Internet. The Internet is a worldwide computer network of interconnected computer networks. It began in the late 1960's when the Department of Defense (DOD) Advanced Research Projects Agency (ARPA) developed an experimental computer network, ARPAnet. ARPAnet emerged as a method of connecting DOD researchers and contractors, and as an experiment in resilient communications. The computer system determined message routing during transmission. If portions of the network were disabled, information could be transmitted over what remained of the system (Engst, 1993:27-37; Krol, 1994:13-21). ARPA's research established the framework of today's Internet.

In the 1980's the National Science Foundation (NSF) created its own computer network. Connecting five supercomputing centers at universities across the United States, NSFnet became the backbone of the Internet. Many regional computer networks connected to NSFnet, creating an immense research and educational tool (Taylor, 1994:38).

NSFnet used the Transmission Control Protocol/Internet Protocol (TCP/IP) originally developed and implemented on ARPAnet. When using TCP/IP, a computer network divides its outgoing messages into small packets. This division is the responsibility of the TCP portion of TCP/IP. TCP also assigns a number to each packet, along with verification information to aid the receiving station in ensuring that all data was correctly transmitted. At the receiving end, TCP reassembles and verifies the data. If errors are detected, TCP requests retransmission.

The IP portion of TCP/IP supplies addresses for each packet, including addresses for both the transmitting and receiving systems. Each network node receiving a packet determines to which node to forward the packet, based on its knowledge of available, operational routes.

Use of TCP/IP became widespread during the 1980's. Many of the local area networks that emerged during that time and which planned connections to NSFnet were designed to use TCP/IP for compatibility. TCP/IP is now the most widely used protocol in the United States and Canada and is the protocol most frequently used on the Internet (Krol, 1994:230-29).

Not all networks selected TCP/IP. A number of regional networks were developed with their own protocols; BITNET,

for example. To communicate with these systems, gateways were created to translate requests and replies between the communicating systems using different protocols. Today, gateways are available for interconnecting systems using any protocols.

All computer systems connected to the Internet have distinct IP addresses, consisting of four sets of numbers separated by periods. Rather than memorizing numbers for each computer system, individuals typically use the domain name for each computer system. The domain name consists of a series of "words", again separated by periods. The right-most word in a domain name address indicates the domain type of the particular computer system. The most common United States domain types are shown in Table 2 below (December and Randall, 1994).

TABLE 2  
COMMON UNITED STATES DOMAIN TYPES

<u>Domain Name</u>	<u>Explanation</u>
.com	Commercial organizations
.edu	Educational institutions
.gov	Governmental organizations (except military)
.mil	Military organizations
.net	Network and service providers
.org	Organizations other than those above

Immediately to the left of the domain name is the first subdomain of the computer system. It is possible for a computer system to have only its domain type and one subdomain name; for example, *dtic.mil*. From the table, one can determine that the domain *.mil* is the military domain. The subdomain, *dtic*, represents the Defense Technical Information Center (DTIC). The computer system with the domain name *dtic.mil* would appear to be connected at this level in the computer system hierarchy created by DTIC. A computer system with the domain name *www.afit.af.mil* is of the military domain type. The subdomain *af* indicates the system belongs to the United States Air Force. The next subdomain indicates the system is part of the Air Force Institute of Technology (AFIT) computer system hierarchy. Finally, *www* pinpoints the system within the AFIT hierarchy. The leftmost word in the domain name, in this case *www*, is also known as the host name.

Organizations have begun to track and report the growth rates of each of the domain types and of common host names. Some of these statistics are presented in the second chapter of this paper.

Individuals and communities have found this worldwide interconnection of computer networks to be useful for a



variety of purposes, all of them increasing the ease of information sharing and collaboration. While the network was initially the domain of researchers and academics, it has come to be more frequently used by those in other fields. With the introduction of more user-friendly applications, the Internet has earned its place among common household phrases.

From the beginning, even among the researchers and academics, the most popular Internet application has been electronic mail. The next most frequently used method of Internet communication is Usenet News. The newsgroups of Usenet News are asynchronous discussion forums divided by subject area.

Other basic tools on the Internet include file transfer protocol (FTP) which allows the transfer of files of any formats supported by the communicating computer systems. Telnet allows a user to log on to another computer over the Internet, either a host on which the user has an account or one offering public services. Gopher provides information in a menu-based format. Archie, Veronica, and Wide Area Information Service (WAIS) each allow searches of various types of information available on the Internet. Each of these applications is useful for a variety of user needs.

One of the latest applications, the World Wide Web, provides the ability to perform many of the same functions described above, but in perhaps the least technically demanding format of all. Through hyperlinks, WWW documents provide access to any type of information stored anywhere in the world on any type of computer system, from any type of computer system (Berners-Lee, 1995b; Kantor, 1995:16-18; Krol, 1994:49-323).

The history and a more specific description of the WWW are detailed in the next section. The methods and results of using the WWW in the business and government communities are reported in the second chapter of this research paper.

With the population of Internet users expanding exponentially and internationally and with the number of Internet applications widening, leaders in the Internet community have recognized the need for a guiding organization. The Internet Society (ISOC) formed to "maintain and extend the development and availability of the Internet and its associated technologies and applications - both as an end in itself, and as a means of enabling organizations, professions, and individuals worldwide to more effectively collaborate, cooperate, and innovate in their respective fields and interests" ("What is the Internet Society?"). ISOC is a non-governmental, international organization

overseen by an elected, international Board of Trustees. The Society's members include representatives from the entire Internet community, including individuals, corporations, non-profit organizations and government agencies ("What is the Internet Society Index Page").

The World Wide Web. The World Wide Web is a revolutionary method of communicating over a network like the Internet. A hypermedia system, the WWW allows users to access a variety of object types (the "media"), including text, sound, graphics, animation, and video. The "hyper" in hypermedia results from the WWW's use of highlighted links (text or images typically distinguished with an underline or a specified color) within a document to connect to other documents that may be located anywhere in the world. As indicated above, these documents may be in any of various formats.

The WWW began in 1989 at the European Particle Physics Laboratory (CERN). According to WWW co-creator Tim Berners-Lee, it was developed to create "a pool of human knowledge, which would allow collaborators in remote sites to share their ideas and all aspects of a common project" (Berners-Lee and others, 1994:76). It accomplishes this through its hypertext orientation: documents on the WWW contain highlighted links to other documents, which in turn contain

links to more documents located anywhere on the Internet. The information in these documents, located on any type of computer system anywhere in the world, is accessible to any authorized individual, also using any type of computer system anywhere in the world and using the single WWW application. As a result, once information is created, it can be shared and collaborated on with ease (Berners-Lee, 1995b).

What began as a system of hypertext documents, soon came to include other media. WWW documents frequently contain links to sound, pictures, or animation as well as to text anywhere on the Internet; thus the WWW is often referred to as a distributed hypermedia system.

The WWW makes use of client-server architecture. Anyone interested in exploring the WWW must use a WWW browser, a client program that can interpret in a way that is understood by its computer platform any data it receives from a contacted server. There are text-only browsers for UNIX and DOS systems, as well as many graphical browsers for Windows, Macintosh, and other graphically based systems.

A homepage on the WWW is a designated access point for entry to a WWW site (December and Randall, 1994:1022). A homepage also provides information about the WWW site's originator or originating community. Often, a homepage belonging to an organization or community is called a welcome

page. Welcome pages usually contain information about the organization's mission, links to other documents in the organization's WWW site, and links to other related WWW sites. An organization's WWW site may contain other hypermedia documents, plain text documents available for transfer to visitors, or any other relevant, WWW-accessible information. World Wide Web documents are presented using Hypertext Markup Language.

Hypertext Markup Language (HTML) is the language on which the WWW is currently based. HTML is derived from the International Organization for Standardization (ISO) Standard General Markup Language (SGML) definition which established standards for creating Document Type Definitions (DTDs). DTDs specify how to identify structural items (for example, italicized text) by specifying tags and their meanings for a class of documents. HTML is a DTD for the hypermedia class of documents. HTML specifies tags and their meanings for items in WWW hypermedia documents (Vaughn-Nichols, 1995: 92).

Links, lists, headings, citations, images, forms, sound files, image maps, and more can be defined with HTML. World Wide Web browsers interpret tags defining these items to determine how to display the items for the user (December and Randall, 1994:50-51).

Figure 12 below displays an HTML encoded section from the prototype Air Force IRM community WWW site welcome page. The tags, surrounded by greater than and less than signs, cause the user's browser to display the enclosed text in a distinct manner. Some browsers may display "<Address>" tagged text in italics, while others may use a typewriter-like font. Page 88 in Appendix B illustrates one browser's display of the text in Figure 12.

```
<ADDRESS>
This page was created for a research project by
<BR>Capt Kris Waldner<BR>AFIT/LAA<BR>WPAFB, OH
45433<BR>
Please send comments to the author at
<A HREF="mailto:">kwaldner@afit.af.mil</A>
or use the <A HREF="#comment">comment</A> form.
</ADDRESS>
```

FIGURE 12 HTML Encoded Paragraph

As it evolves, new versions of HTML incorporate new capabilities. The HTML 3.0 specification, currently under development, will include many new features, including support for tables of data, mathematical formulas, and text wrapped around inline images (Wiggins, 1995:38). (Inline images are graphics that appear as part of a WWW page, coded through HTML.)

To transfer hypermedia efficiently, the WWW uses Hypertext Transfer Protocol (HTTP). Rather than calling for a standard format for data, HTTP allows clients and servers to

transfer data in any format (text, sound, image, or others). After connecting to a server, the client program sends a request for a specific document to the server, along with a weighted list of formats the client program can manage. The server responds in any of those formats that it can produce. This allows room for any formats currently in use, as well as any yet to be developed. Because the client program, the WWW browser, maintains its standard user interface, the technical aspects of WWW browsing remain behind the scenes (Berners-Lee, 1994:78).

This user-friendliness is a major contributor to the WWW's popularity and a major cause of its astounding growth rate. The following data illustrate the WWW's phenomenal growth: monthly WWW traffic over the NSFnet in December 1994 exceeded total NSFnet traffic for January of the same year (Snyder, 1995:103). In February 1995, WWW traffic ranked number two in total number of packets transmitted over NSFnet, falling behind only number one ranked FTP data (NSF-9502 Highlights). Another example of WWW growth, the number of WWW servers increased from 62 in April 1993 to over 3,000 by August 1994 (Wiggins, 1995:37). The growth rate of the WWW shows no signs of slowing.

Like the Internet, the WWW was originally most useful to researchers and academics. Although those communities

still comprise a large percentage of WWW users, commercial organizations now account for the largest and fastest growing segment of the WWW population ("More Data on Size of the Internet"). World Wide Web user statistics are presented in the second chapter of this paper.

As the WWW continues to grow, organizations have formed to steer its development. One such organization, the World Wide Web Consortium (W3C), formed to develop the Web into "a global information infrastructure capable of supporting commercial as well as research activities." The Consortium is also working to prevent fragmentation of the WWW into smaller, disconnected webs (Husum, 1994). Funded by industrial members, W3C works "with the global community to produce specifications and reference software." All W3C products are freely available. The Consortium is run by the Massachusetts Institute of Technology Laboratory for Computer Science, with the French National Institute for Research in Computer Science and Control (INRIA) acting as the European host, in collaboration with CERN where the web originated ("The World Wide Web Consortium").

Several times each year, an international World Wide Web conference is held to present and discuss issues about all aspects of the WWW: its uses, users, providers, developers, and potential. Following the second conference,



papers presented were made available online, allowing those unable to attend to keep abreast. Some foresee conferences held on the WWW itself, allowing up-to-the-minute papers and continual discussion of pertinent issues (Crawley, 1994).

### Conclusion

As the popularity of the WWW increases, more organizations become interested in creating WWW sites. In line with their counterparts in both business and military communities, IRM community members and leaders have expressed an interest in establishing a presence on the WWW. This appendix provided background on the history and workings of the Internet and the WWW. The five main chapters of this paper discuss issues related to the establishment of a WWW site dedicated to the IRM community.

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## USAF Information Resource Management Community

*prototype*

### WWW Homepage

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**WELCOME!**

You are visitor number **0000147**.

This prototype page is established in conjunction with a thesis research effort to determine appropriate and successful content and format for a permanent USAF IRM community WWW site, should one be established. It will attempt to determine a profile of high frequency and low frequency users. It will also determine expected potential benefits of a WWW site to the USAF IRM community. Visitor comments and suggestions are highly encouraged!

Currently this page contains links to other WWW sites relevant to the IRM community. (If you disagree or want to add other sites, please use the comment form.) It also includes an *IRM WWW-based discussion forum*. Please join in the discussion!

---

Follow these links to sites and lists about:

- General Business Indices
  - General Lists and WWW Search Mechanisms
  - Government Sites and Indices
  - Information Technology
  - Internet and WWW Sites and Indices
  - IRM-related Professional Societies
- 

### The USAF IRM Community

For purposes of this document, the USAF IRM community is defined as consisting of active duty and civilian USAF personnel involved in managing the information lifecycle and in managing or acquiring information technology.

*IRM may be defined as the process of managing information resources (information and related resources such as personnel, equipment, funds and related technology) to accomplish agency missions and improve agency performance. (VISTAS, published by SAF/AQKI.)*

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### Comment Form for the USAF IRM Community Prototype WWW Site.

Please submit your comments and suggestions. Comments about the potential usefulness of a WWW site to the IRM community and suggestions about format and content are particularly sought. All comments are greatly appreciated.

Preceding the comment box are eight questions which will help determine a profile of users. Due to regulatory requirements, *completion of the eight questions is restricted to active duty Air Force personnel*. If you are not an active duty Air Force member, but would like to make comments or suggestions about this site, please send email or use the comments-only fill-in form. Follow this link to bypass these questions and only submit comments.

Input will be included (anonymously, unless otherwise requested) in the resulting thesis.

This is a "mailto" form. If your browser does not support "mailto" forms (Netscape does), please email your comments directly to [kwaldner@afit.af.mil](mailto:kwaldner@afit.af.mil). The author thanks you from the bottom of her heart for completing this form.

---

**Notice: Completion of these questions is restricted to active duty Air Force personnel.** (Your name and email address are required only if you request a reply)

Your name:

Your email address:

Anonymity Preferred:

If you are an AFIT IRM graduate, please check this box.

Choose a button describing your current job:

- USAF IRM-related job  
 Another USAF, non-IRM-related job

Choose a button describing how often you use a computer at home:

- Never--I don't have one  
 Never, but I have access to one at home  
 At least once each month  
 At least once each week  
 Daily

Choose a button describing your familiarity with computers:

- Almost totally unfamiliar  
 I use them occasionally  
 I use computers frequently  
 I use computers frequently and have great knowledge of how they work

Choose a button describing your level of comfort with computers:

- I feel anxiety when using computers
- I feel comfortable when no problems occur
- I feel confident that I can handle problems that occur with normal computer use

Choose a button describing how often you use the Internet specifically for your job:

- Never
- Once per month
- Once per week
- Daily

Choose a button describing how often you use the WWW specifically for your job:

- Never
- Once per month
- Once per week
- Daily

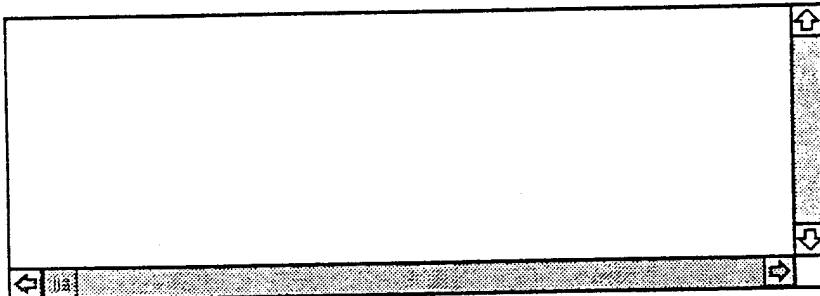
Choose a button describing how often you use the Internet (from a non-government computer) for your personal use:

- Never
- Once per month
- Once per week
- Daily

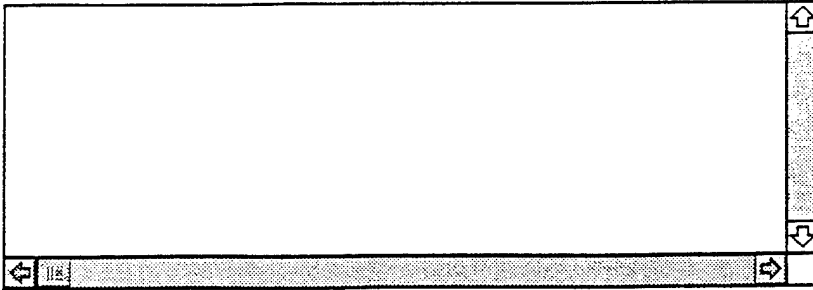
Choose a button describing how often you use the WWW (from a non-government computer) for your personal use:

- Never
- Once per month
- Once per week
- Daily

Please comment on the benefits or problems that you have experienced or that you foresee with using the Internet and the World Wide Web in your job. If you work in an IRM-related job, please comment on uses/benefits/problems resulting from a permanent IRM WWW site. (This topic is also available as a discussion item in the IRM Discussion Forum. Please [join the discussion](#) after submitting your comments.)



Please submit suggestions for the format and content of the USAF IRM Community WWW site or other comments:



*Notice: Completion of the questions above is restricted to active duty US Air Force personnel. If you are not an Active Duty USAF member, you may still use the comments section.*

Submit your comments  or Clear the form

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### Comments Only

This is the comments only form. If you are an active duty US Air Force member, you can help determine profiles of online computer users by completing eight quick questions about your use of computers and the Internet-- and submit your comments using the same form. To do so, follow this link: [Yes I'll help!](#)

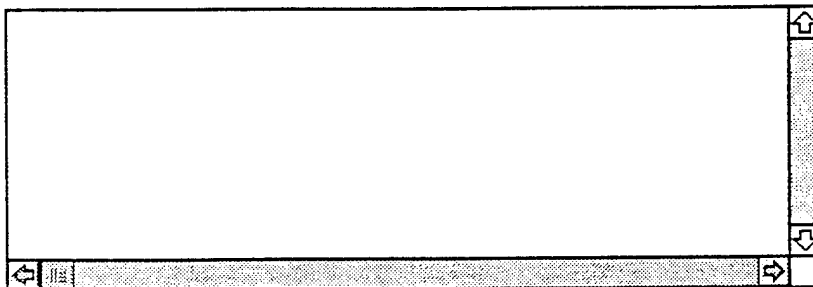
(Your name and email address are required only if you request a reply)

Your name:

Your email address:

Anonymity Preferred:

Your comments:



Submit your comments  or Clear the form

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## A List of US Government Sites and Indices

### Sites

#### [AirForceLINK](#)

Follow the [Air Force Internet link](#) on AirForceLINK to the DoD and the other military services' pages.

#### [The Air Force Institute of Technology Homepage](#)

#### [Defense Technical Information Center \(DTIC\)](#)

Learn about DTIC products and services, and the organization which produces them.

#### [DoD Policy Letter on Electronic Information Publishing](#)

#### [Federal Communications Commission](#)

#### [FedWorld](#)

The National Technical Information Service introduced FedWorld to help with the challenge of accessing U.S. Government Information online.

#### [Global Information Infrastructure: Agenda for Cooperation](#)

The Agenda for Cooperation sets forth the U.S. Government's vision for developing a GII.

#### [Government and Internet](#)

Issues, Applications, and Prospects--A Seminar Sponsored by Syracuse University

#### [HO AFMC's Government Internet Policy Links](#)

#### [Information Infrastructure Task Force \(IITF\) Gopher](#)

#### [Library of Congress](#)

#### [National Archives and Records Administration \(NARA\) CLIO](#)

An Information System that combines information available about the National Archives and Records Administration (NARA) with easy access to diverse electronic resources over the Internet.

#### [National Information Infrastructure Virtual Library](#)

#### [NCCOSC](#)

The U.S. Navy's warfare center for command, control and communication systems and ocean surveillance and the integration of those systems which overarch multiplatforms.

#### [National Institute of Standards & Technology](#)

#### [National Performance Review](#)

#### [U.S. General Services Administration](#)

#### [U.S. Information Agency](#)

Welcome to the Whitehouse

**Indices:**

E-HAWK

Contents include: A catalog of DoD and NATO Internet sites; a catalog of veterans information sites; Military Science; Current Events; Military Graphics; and Military History.

Galaxy Government List

A guide to worldwide information and services about government.

Library of Congress DoD List

The Military WWW/FTP Sites List

The Villanova Center for Information Law and Policy Federal Web Locator

A one stop shopping point for federal government information on the World Wide Web

WWW Virtual Library--Government

Yahoo Government List

A hierarchical subject-oriented catalogue of WWW and Internet information.

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Links to other Sites

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### **Information Technology Sites and Indices**

**Sites:**

ARPA/CSTO

DoD Advanced Research Project Agency's Computing Systems Technology Office.

Datamation Magazine

Defense Information Systems Agency

Department of Defense Corporate Information Management (CIM) Home Page

Business Process Reengineering, Data Administration, Migration Systems and Computer and Communications Infrastructure.

DoD Information Systems Technology

The latest information on technology insertion activities for information systems in the DoD--from DISA's Joint Interoperability and Engineering Organization

GSA's IT Policy OnRamp

Information about Federal Information Resource Management and Information Technology policy letters, guidance, regulations, policies, acquisition guides, programs, related government information sources, document libraries, and scheduled events.

InformationWeek Magazine

A weekly newsmagazine for business and technology managers.

ISWorld

Describes itself as "a useful starting point for professors and students of information systems for harnessing the WWW for the creation and dissemination of information systems knowledge.

USAF Scientific Advisory Board

Promotes the exchange of the latest scientific and technical information that may enhance the

WWW Page Creation

Automatically generate a homepage with the "Create A Homepage" section of The-Inter.net's World Wide Web server.

Yanoff Internet Connections List

Back to the Top  
Links to other Sites

---

**General Business Lists**

Directory

Galaxy Business and Commerce List

Open Market

Back to the Top  
Links to other Sites

---

**General Lists and WWW Search Mechanisms**

The Clearinghouse for Subject-Oriented Internet Resource Guides

List of USENET FAQs

MetaCrawler

A tool which allows you to search through multiple search crawlers at once.

Planet Earth

A virtual library containing a collection of resources available on the World Wide Web.

The Spider's Web

Self-described as "your gateway to some of the best things on the Web, as well as FTP and Gopher sites."

Web Crawler

A search mechanism.

New Riders' Official WWW Yellow Pages

Search by keyword or by subject.

Back to the Top  
Links to other Sites

---

*This page was created for a research project by  
Capt Kris Waldner  
AFIT/LAA  
WPAFB, OH 45433  
with massive technical help from Mike Rader*

*The page was last updated 11 Sep 95.*

*Please send comments to the author at [kwaldner@afit.af.mil](mailto:kwaldner@afit.af.mil) or use the comment form.*



accomplishment of the Air Force mission.

**Indices:**

[Galaxy Engineering and Technology List](#)

A guide to worldwide information and services about Engineering and Technology.

[IS Meta List](#)

An archive of pointers to information systems resources on the Net, presented by the Center for the Application of Information Technology (CAIT).

[U of TX Virtual Computer Library](#)

Links to information sources regarding computers and computing.

[Yahoo Computer List](#)

A hierarchical subject-oriented catalogue of WWW and Internet information.

[Yahoo Government Technology Policy List](#)

[Yahoo IT List](#)

[Yahoo MIS List](#)

[Back to the Top](#)

[Links to other Sites](#)

---

**IRM-Related Organizations**

[ACM](#)

[Conference on Information and Knowledge Management \(CIKM\)](#)

An international forum for presentation and discussion of research on information and knowledge management, as well as recent advances on data and knowledge bases.

[Institute of Electrical and Electronics Engineers](#)

The world's largest technical professional society.

[The Internet Society](#)

The non-governmental International Organization for global cooperation and coordination for the Internet and its internetworking technologies and applications.

[SEA-- Society for Electronic Access](#)

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[Links to other Sites](#)

---

**Internet and WWW Sites and Lists**

[Galaxy Internet and Networking List](#)

A guide to worldwide information and services about the Internet and Networking.

[Internet Resource Meta Index](#)

A loosely categorized meta-index of the various resource directories and indices available on the Internet.

[WWW Consortium](#)

The World Wide Web Consortium promotes the Web by producing specifications and reference software.

# IRM WWW Discussion Forum

This message board is provided as part of a thesis research project. If this is your first time using the forum, you may want to review these [Frequently Asked Questions](#).

Please post your **unclassified, non-sensitive** announcements, messages, questions, thoughts, and considered opinions, but not flames.

- 
- [M] [Comments on Page](#)
    - ◊ Posted By: Linda New on
  - [M] [Suggested Link](#)
    - ◊ Posted By: Capt Dale Long on
  - [M] [Idea for a link](#)
    - ◊ Posted By: Anne McPharlin on
  - [Q] [Uses of IRM WWW Site](#)
    - ◊ Posted By: Kris Waldner on

---

Post a Message to the Message Board:

Your Name:

Your E-Mail Address:

Subject of Posting:

:

← 112 →

Optional Link To A Page:

Name of the Link:

Optional Image URL:

\*

---

Send all questions/comments about this page to [Kris Waldner](#)

Return to the [IRM Welcome page](#).

# IRM WWW Discussion Forum

## Questions and Answers

Here is a brief explanation of some of the features and questions you may have about using the WWW Discussion Forum. For other questions about the IRM Discussion Forum, please contact [Kris Waldner](#).

---

- [What do \[Q\] and \[M\] stand for?](#)
  - [Can I use html tags anywhere in my posts?](#)
  - [Why didn't my post show up?](#)
  - [Where can I get the scripts for this program?](#)
- 

What do [Q] and [M] stand for?

The [Q] and [M] indicate Question and Message, respectively. This indicates to you whether their post is in the form of a general message or a question. You can indicate this by choosing one of the options in the pull down menu on the main post screen.

---

Can I put html tags anywhere in my posts?

Yes, you can embed html tags anywhere in your post. I have included the option of allowing you to put in a link and a picture in case you were not familiar with html markup, but still wanted to add a link. Keep in mind that your address will already be made into a mailto: link and therefore you should not add any html markup around it.

---

Why didn't my post show up?

Your post most likely did not show up, because your browser did not reload the page, it simply pulled it out of cache. Please reload your browser and it should then appear.

---

Where can I get the scripts for this program?

The scripts are written in Perl and created by [Matt Wright](#). They are free to anyone who wishes to use them. You can get them as well as other scripts at: <http://alpha.pr1.k12.co.us/~mattw/scripts.html>. Enjoy!

Return to the [Discussion Forum](#).

---

## Appendix C: WWW Site Source Code

```
<HTML>
<HEAD><TITLE>USAF IRM Prototype WWW Site</TITLE></HEAD>
<BODY>

<CENTER>
<HR>
<H2 ALIGN=CENTER>USAF Information Resource Management
Community</H2>
<EM>prototype</EM><BR>
<H2 ALIGN=CENTER>WWW Homepage</H2>
<HR WIDTH=70%>
</CENTER>

<A NAME="top"></A>

<H3 ALIGN=CENTER>WELCOME!</H3>
<BR>
You are visitor number
<IMG SRC="/school-bin/LA/kwaldner.counter">.
<P>
This prototype page is established in conjunction with a
thesis research effort to determine appropriate and
successful content and format for a permanent USAF IRM
community WWW site, should one be established. It will
attempt to determine a profile of high frequency and low
frequency users. It will also determine expected potential
benefits of a WWW site to the
<A HREF="#USAFIRM">USAF IRM community</A>.

Visitor <A HREF="#comment">comments and suggestions</A>
are highly encouraged!<P>

Currently this page contains links to other WWW sites
relevant to the IRM community. (If you disagree or
want to add other sites, please use the
<A HREF="#comment">comment form</A>.)
It also includes an
<EM><STRONG>IRM WWW-based discussion forum.</STRONG> </EM>

Please <A HREF="msgs.html">join in the discussion</A>! <P>

<HR>
```

<!-- \*\*\*\*\*Link List\*\*\*\*\* -->

<A NAME="links"></A>

<H4>Follow these links to sites and lists about:</H4>

<UL>

<LI><A HREF="#business">General Business Indices</A><BR>

<LI><A HREF="#general">General Lists and WWW Search Mechanisms</A><BR>

<LI><A HREF="#govsites">Government Sites and Indices</A>

<LI><A HREF="#itsites">Information Technology</A><BR>

<LI><A HREF="#int\_www">Internet and WWW Sites and Indices</A> <BR>

<LI><A HREF="#irmorg">IRM-related Professional Societies</A><BR>

<BR>

</UL>

<HR>

<!-- \*\*\*\*\*IRM Community\*\*\*\*\* -->

<A NAME="USAFIRM"></A>

<CENTER><H3>The USAF IRM Community</H3></CENTER>

For purposes of this document, the USAF IRM community is defined as consisting of active duty and civilian USAF personnel involved in managing the information lifecycle and in managing or acquiring information technology.<P>

<EM>IRM may be defined as the process of managing information resources (information and related resources such as personnel, equipment, funds and related technology) to accomplish agency missions and improve agency performance. </EM>

<CITE>(VISTAS, published by SAF/AQKI.)</CITE><P>

Back to the <A HREF="#top">Top</A>

<HR>

<!-- \*\*\*\*\*Comment Form\*\*\*\*\* -->

<A NAME="comment"></A>

<FORM METHOD=POST ACTION="mailto:kwaldner@afit.af.mil">

<H4 ALIGN=CENTER>Comment Form for the USAF IRM Community  
Prototype WWW Site. </H4>

<STRONG>Please</STRONG> submit your comments and  
suggestions. Comments about the potential usefulness of a  
WWW site to the IRM community and suggestions about format  
and content are particularly sought. All comments are  
greatly appreciated.<P>

Preceding the comment box are ten questions which will help  
determine a profile of users. Due to regulatory  
requirements,

<EM><STRONG>completion of the ten questions is restricted  
to active duty Air Force personnel.</STRONG></EM>

If you are not an active duty Air Force member, but would  
like to make comments or suggestions about this site, please  
send email or use the comments-only fill-in form.

Follow this link to bypass these questions  
and <A HREF="#commonly">only submit comments.</A> <P>

Input will be included (anonymously, unless otherwise  
requested) in the resulting thesis.<P>

This is a &QUOT;mailto&QUOT; form. If your browser does not  
support "mailto" forms (Netscape does), please email your  
comments directly to

<A  
HREF="mailto:kwaldner@afit.af.mil">kwaldner@afit.af.mil</A>.

The <A HREF="#author">author</A> thanks  
you from the bottom of her heart for completing this form.

<P>

<HR>

<EM><STRONG>Notice: Completion of these questions is  
restricted to active duty Air Force personnel.</STRONG></EM>

(Your name and email address are required only if you  
request a reply)

<BR><BR>

Your name:<P>

<INPUT TYPE="TEXT" NAME="name" SIZE=40,4 MAXLENGTH=100>

<BR><BR>

Your email address:<P>

<INPUT TYPE="TEXT" NAME="ename" SIZE=40,4 MAXLENGTH=100>  
<BR><BR>

Anonymity Preferred:

<INPUT TYPE="CHECKBOX" NAME="anon"  
VALUE="ANON\_YES" CHECKED>  
<BR><BR>

If you are an AFIT IRM graduate, please check this box.

<INPUT TYPE="CHECKBOX" NAME="afit\_grad" VALUE="IRM\_GRAD">  
<BR><BR>

Choose a button describing your current job:<P>

<INPUT TYPE="radio" NAME="job" VALUE="USAF\_IRM"> USAF IRM-  
related job<BR>

<!-- <INPUT TYPE="radio" NAME="job" VALUE="NONUSAF\_IRM">  
Non-USAF IRM-related job<BR> -->

<INPUT TYPE="radio" NAME="job" VALUE="USAF\_OTHER"> Another  
USAF, non-IRM-related job<BR><BR>

<!-- <INPUT TYPE="radio" NAME="job" VALUE="NON\_USAF\_OTHER">  
Another non-USAF job<BR><BR> -->

Choose a button describing how often you use a computer at  
home:<BR><BR>

<INPUT TYPE="radio" NAME="home" VALUE="Never\_None"> Never--I  
don't have one<BR>

<INPUT TYPE="radio" NAME="home" VALUE="Never\_Own"> Never,  
but I have access to one at home<BR>

<INPUT TYPE="radio" NAME="home" VALUE="Monthly"> At least  
once each month<BR>

<INPUT TYPE="radio" NAME="home" VALUE="Weekly"> At least  
once each week<BR>

<INPUT TYPE="radio" NAME="home" VALUE="Daily"> Daily<BR><BR>

Choose a button describing your familiarity with computers:<BR><BR>

<INPUT TYPE="radio" NAME="computer" VALUE="TotUnf"> Almost totally unfamiliar<BR>

<INPUT TYPE="radio" NAME="computer" VALUE="UsedOne"> I use them occasionally<BR>

<INPUT TYPE="radio" NAME="computer" VALUE="FreqUse"> I use computers frequently<BR>

<INPUT TYPE="radio" NAME="computer" VALUE="Techie"> I use computers frequently and have great knowledge of how they work<BR><BR>

Choose a button describing your level of comfort with computers:<BR><BR>

<INPUT TYPE="radio" NAME="comfort" VALUE="UsedOne"> I feel anxiety when using computers<BR>

<INPUT TYPE="radio" NAME="comfort" VALUE="FreqUse"> I feel comfortable when no problems occur<BR>

<INPUT TYPE="radio" NAME="comfort" VALUE="Techie"> I feel confident that I can handle problems that occur with normal computer use<BR><BR>

Choose a button describing how often you use the Internet specifically for your job:<P>

<INPUT TYPE="radio" NAME="internet\_job" VALUE="Never"> Never<BR>

<INPUT TYPE="radio" NAME="internet\_job" VALUE="Once per month"> Once per month<BR>

<INPUT TYPE="radio" NAME="internet\_job" VALUE="Once per week"> Once per week<BR>

<INPUT TYPE="radio" NAME="internet\_job" VALUE="Daily"> Daily<BR><BR>



Choose a button describing how often you use the WWW specifically for your job:<P>

<INPUT TYPE="radio" NAME="www\_job" VALUE="Never"> Never<BR>

<INPUT TYPE="radio" NAME="www\_job" VALUE="Once per month"> Once per month<BR>

<INPUT TYPE="radio" NAME="www\_job" VALUE="Once per week"> Once per week<BR>

<INPUT TYPE="radio" NAME="www\_job" VALUE="Daily"> Daily<BR><BR>

Choose a button describing how often you use the Internet (from a non-government computer) for your personal use:<P>

<INPUT TYPE="radio" NAME="internet\_personal" VALUE="Never"> Never<BR>

<INPUT TYPE="radio" NAME="internet\_personal" VALUE="Once per month"> Once per month<BR>

<INPUT TYPE="radio" NAME="internet\_personal" VALUE="Once per week"> Once per week<BR>

<INPUT TYPE="radio" NAME="internet\_personal" VALUE="Daily"> Daily<BR><BR>

Choose a button describing how often you use the WWW (from a non-government computer) for your personal use:<P>

<INPUT TYPE="radio" NAME="www\_personal" VALUE="Never"> Never<BR>

<INPUT TYPE="radio" NAME="www\_personal" VALUE="Once per month"> Once per month<BR>

<INPUT TYPE="radio" NAME="www\_personal" VALUE="Once per week"> Once per week<BR>

<INPUT TYPE="radio" NAME="www\_personal" VALUE="Daily"> Daily<BR><BR>

Please comment on the benefits or problems that you have experienced or that you foresee with using the Internet and the World Wide Web in your job. If you work in an IRM-related job, please comment on uses/benefits/problems resulting from a permanent IRM WWW site. (This topic is also available as a discussion item in the IRM Discussion Forum.

Please [join the discussion](msgs.html) after submitting your comments.)

Please submit suggestions for the format and content of the USAF IRM Community WWW site or other comments:

**Notice:** Completion of the questions above is restricted to active duty US Air Force personnel. If you are not an Active Duty USAF member, you may still use the comments section.

Submit your comments

or Clear the form

Back to the [Top](#)

[commonly](#)

**Comments Only**

This is the comments only form. If you are an active duty US Air Force member, you can help determine profiles of online computer users by completing ten quick questions about your use of computers and the Internet--and submit your comments using the same form. To do so, follow this link:

<A HREF="#comment">Yes I'll help</A>!<P>

<BR>

(Your name and email address are required only if you request a reply)

<BR><BR>

Your name:<P>

<INPUT TYPE="TEXT" NAME="name" SIZE=40,4 MAXLENGTH=100>

<BR><BR>

Your email address:<P>

<INPUT TYPE="TEXT" NAME="ename" SIZE=40,4 MAXLENGTH=100>

<BR><BR>

Anonymity Preferred:

<INPUT TYPE="CHECKBOX" NAME="anon"

VALUE="ANON\_YES" CHECKED>

<BR><BR>

Your comments:<BR><BR>

<TEXTAREA NAME="comment" ROWS=9 COLS=60></TEXTAREA>

<BR><BR>

Submit your comments

<INPUT TYPE="SUBMIT" VALUE="SUBMIT">

or Clear the form

<INPUT TYPE="RESET" VALUE="RESET"><BR><BR><BR>

Back to the <A HREF="#top">Top</A>

</FORM>

<HR>

<!-- \*\*\*\*\*Government Sites\*\*\*\*\* -->

<A NAME="govsites"></A>

<CENTER><H4>A List of US Government Sites and Indices</H4></CENTER>

<H5>Sites</H5>

<DL>

<!-- <DT><A  
HREF="http://www.dtic.dla.mil:80/defenselink/">DefenseLINK</A>  
<DD>The Department of Defense Homepage<P> -->

<DT><A  
HREF="http://www.dtic.dla.mil:80/airforcelink/index.html">AirForceLINK</A>  
<DD><P>

<DT>Follow the <A  
HREF="http://www.hq.af.mil/USAF/USAF.html#OTHER">Air Force Internet link</A>  
on AirForceLINK to the DoD and the other military services' pages.  
<DD><P>

<!-- <DT><A HREF="http://www.army.mil/">ArmyLink</A>  
<DD><P>

<DT><A HREF="http://www.ncts.navy.mil/">NavyOnLine</A>  
<DD><P>

<DT><A HREF="http://www.webcom.com/~d13www/welcome.html">US Coast Guard Home Page</A>  
<DD><P>

<DT><A HREF="http://www.hqmc.usmc.mil">US Marine Corps Home Page</A>  
<DD><P> -->

<DT><A HREF="http://www.afit.af.mil/AFITHome.html">The Air Force Institute of Technology Homepage</A>  
<DD><P>

<DT><A HREF="http://www.dtic.dla.mil/">Defense Technical Information Center (DTIC)</A>  
<DD>Learn about DTIC products and services, and the organization which produces them.<P>

<DT><A HREF="http://www.af.mil/mil-only/policy-DOD.html">DoD Policy Letter on Electronic Information Publishing</A>  
<DD><P>

<DT><A HREF="http://www.fcc.gov">Federal Communications Commission</A>  
<DD><P>

<DT><A HREF="http://www.fedworld.gov">FedWorld</A>

<DD>The National Technical Information Service introduced FedWorld to help with the challenge of accessing U.S. Government Information online.<P>

<DT><A

href="http://ntiaunix1.ntia.doc.gov:70/0/papers/documents/giiaagend.html"> Global Information Infrastructure: Agenda for Cooperation</A>

<DD>The Agenda for Cooperation sets forth the U.S. Government's vision for developing a GII.<P>

<DT><A

href="http://www.ncts.navy.mil/~peveritt/seminar.notes.html">Government and Internet</A>

<DD>Issues, Applications, and Prospects--A Seminar Sponsored by Syracuse University<P>

<DT><A href="http://www.afmc.wpafb.af.mil:12000/internet-policy">HQ AFMC's Government Internet Policy Links</A>

<DD><P>

<!-- http://oasun1.wpafb.af.mil:12000/organizations/HQ-AFMC/SC/policy.html -->

<DT><A href="http://www.iitf.doc.gov:70/">

Information Infrastructure Task Force (IITF) Gopher</A>

<DD><P>

<DT><A

href="http://lcweb.loc.gov/homepage/lchp.html">Library of Congress</A>

<DD><P>

<DT><A href="http://www.nara.gov">National Archives and Records Administration (NARA) CLIO</A>

<DD>An Information System that combines information available about the National Archives and Records Administration (NARA) with easy access to diverse electronic resources over the Internet.<P>

<DT><A href="http://nii.nist.gov">National Information Infrastructure Virtual Library</A>

<DD><P>

<DT><A href="http://www.nosc.mil/">NCCOSC</A>

<DD>The U.S. Navy's warfare center for command, control and communication systems and ocean surveillance and the integration of those systems which overarch multiplatforms.<P>

<DT><A HREF="http://www.nist.gov">  
National Institute of Standards & Technology</A>  
<DD><P>

<DT><A HREF="http://www.npr.gov">National Performance  
Review</A>  
<DD><P>

<DT><A HREF="http://www.gsa.gov">U.S. General Services  
Administration</A>  
<DD><P>

<DT><A HREF="http://www.uisa.gov">U.S. Information  
Agency</A>

<DD><P>

<DT><A HREF="http://policy.net/capweb/congress.html">  
Unofficial Capitol Web Site</A>  
<DD><P>

<DT><A HREF="http://www.whitehouse.gov">  
Welcome to the Whitehouse</A>  
<DD><P>

</DL>

<H5>Indices:</H5>  
<DL>

<DT><A HREF="http://kuhttp.cc.ukans.edu/history/ehawk/">E-  
HAWK</A>  
<DD>Contents include: A catalog of DoD and NATO Internet  
sites; a catalog of veterans information sites;  
Military Science; Current Events; Military Graphics; and  
Military History.<P>

<DT><A  
HREF="http://galaxy.einet.net/galaxy/Government.html">Galaxy  
Government List</A>  
<DD>A guide to worldwide information and services about  
government.

<DT><A  
HREF="http://lcweb.loc.gov/global/executive/defense.html">  
Library of Congress DoD List</A>  
<DD><P>

<DT><A HREF="http://www.utval.net/misc/mil.www.ftp.html">The  
Military WWW/FTP Sites List</A>  
<DD><P>

<DT><A HREF="http://www.law.vill.edu/Fed-Agency/">The  
Villanova Center for Information Law and Policy  
Federal Web Locator</A>  
<DD>A one stop shopping point for federal government  
information on the World Wide Web<P>

<DT><A HREF="http://www.lib.lsu.edu/gov/fedgov.html">  
WWW Virtual Library--Government</A>  
<DD><P>

<DT><A HREF="http://www.yahoo.com/Government/Countries">  
Yahoo Government List</A>  
<DD>A hierarchical subject-oriented catalogue of WWW and  
Internet information.<P>

</DL>

Back to the <A HREF="#top">Top</A><BR>  
<A HREF="#links">  
Links to other Sites</A>

<HR>

<!-- \*\*\*\*\*IT Sites\*\*\*\*\* -->

<A NAME="itsites"></A>  
<CENTER>  
<H4>Information Technology Sites and Indices</H4></CENTER>  
<H5>Sites:</H5>  
<DL>

<DT><A HREF="http://www.csto.arpa.mil/CSTOWelcome.html">ARPA  
CSTO</A>  
<DD>DoD Advanced Research Project Agency's Computing Systems  
Technology Office.<P>

<DT><A HREF="http://www.datamation.com">Datamation  
Magazine</A>  
<DD><P>

<DT><A HREF="http://www.disa.mil">  
Defense Information Systems Agency</A>  
<DD><P>

<DT><A HREF="http://www.dtic.dla.mil/dodcim">Department of Defense Corporate Information Management (CIM) Home Page</A><BR>

<DD>Business Process Reengineering, Data Administration, Migration Systems and Computer and Communications Infrastructure.

<P>

<DT><A HREF="http://disall.disa.atd.net/">DoD Information Systems Technology</A>

<DD>The latest information on technology insertion activities for information systems in the DoD--from DISA's Joint Interoperability and Engineering Organization<P>

<DT><A HREF="http://www.gsa.gov/irms/ka/home.htm">GSA's IT Policy OnRamp</A>

<DD>Information about Federal Information Resource Management and Information Technology policy letters, guidance, regulations, policies, acquisition guides, programs, related government information sources, document libraries, and scheduled events.<P>

<DT><A HREF="http://techweb.cmp.com/techweb/iwk/current/">InformationWeek Magazine</A>

<DD>A weekly newsmagazine for business and technology managers.<P>

<DT><A

HREF="http://www.isworld.org/isworld.html">ISWorld</A>

<DD>Describes itself as "a useful starting point for professors and students of information systems for harnessing the WWW for the creation and dissemination of information systems knowledge.<P>

<!-- <DT><A HREF="http://cism.bus.utexas.edu/">

U of TX Ctr for Info Systems Management</A>

<DD>An intellectual indexing of CISM's research goals and work. <P> -->

<DT><A

HREF="http://web.fie.com/web/fed/afr/text/afrtsab.htm">

USAF Scientific Advisory Board</A>

<DD>Promotes the exchange of the latest scientific and technical information that may enhance the accomplishment of the Air Force mission.<P>

</DL>

<H5>Indices:</H5>



<DL>

<DT><A HREF="http://galaxy.einet.net/galaxy/Engineering-and-Technology/Computer-Technology.html">Galaxy Engineering and Technology List</A>

<DD>A guide to worldwide information and services about Engineering and Technology.<P>

<DT><A HREF="http://nearnnet.gnn.com/gnn/wic/comput.91.html">IS Meta List</A>

<DD>An archive of pointers to information systems resources on the Net, presented by the Center for the Application of Information Technology (CAIT).<P>

<DT><A HREF="http://www.utexas.edu/computer/vcl">U of TX Virtual Computer Library</A>

<DD>Links to information sources regarding computers and computing.<P>

<DT><A

HREF="http://www.cybertoday.com/cybertoday/Wanderer/Computer.html">

The Web Wanderer Computer Index</A>

<DD><P>

<DT><A HREF="http://www.yahoo.com/Computers/">Yahoo Computer List</A>

<DD>A hierarchical subject-oriented catalogue of WWW and Internet information.<P>

<DT><A

HREF="http://www.yahoo.com/Government/Technology\_Policy/">

Yahoo Government Technology Policy List</A>

<DD><P>

<DT><A

HREF="http://www.yahoo.com/Science/Information\_Technology/">

Yahoo IT List</A>

<DD><P>

<DT><A HREF="http://www.yahoo.com/Business/Management\_Information\_Systems/">Yahoo MIS List</A>

<DD><P>

</DL>

Back to the <A HREF="#top">Top</A><BR>

<A HREF="#links">  
Links to other Sites</A>

<HR>

<!-- \*\*\*\*\*IRM Orgs\*\*\*\*\* -->

<A NAME="irmorg"></A>  
<CENTER>  
<H4>IRM-Related Organizations</H4>  
</CENTER>

<DL>  
<DT><A HREF="http://info.acm.org">ACM</A>  
<DD><P>

<DT><A  
HREF="http://www.cs.umbc.edu/conferences/cikm/">Conference  
on Information and Knowledge Management (CIKM)</A>  
<DD>An international forum for presentation and discussion  
of research on information and knowledge management, as  
well as recent advances on data and knowledge bases.<P>

<DT><A HREF="http://www.ieee.org">Institute of Electrical  
and Electronics Engineers</A>  
<DD>The world's largest technical professional society.<P>

<DT><A HREF="http://www.isoc.org">The Internet Society</A>  
<DD>The non-governmental International Organization for  
global cooperation and coordination for the Internet and its  
internetworking technologies and applications.<P>

<DT><A HREF="http://gopher.panix.com">SEA--  
Society for Electronic Access</A>  
<DD><P>

</DL>

Back to the <A HREF="#top">Top</A><BR>  
<A HREF="#links">Links to other Sites</A>

<HR>

<!-- \*\*\*\*\*Internet Sites\*\*\*\*\* -->

<A NAME="int\_www"></A>  
<CENTER>

<H4>Internet and WWW Sites and Lists</H4>  
</CENTER>

<DT><A HREF="http://galaxy.einet.net/galaxy/Reference-and-Interdisciplinary-Information/Internet-and-Networking.html">Galaxy Internet and Networking List</A>

<DD>A guide to worldwide information and services about the Internet and Networking.<P>

<DT><A HREF="http://www.ncsa.uiuc.edu/SDG/Software/Mosaic/MetaIndex.html">Internet Resource Meta Index</A>

<DD>A loosely categorized meta-index of the various resource directories and indices available on the Internet.<P>

<DT><A HREF="http://www.w3.org">WWW Consortium</A>

<DD>The World Wide Web Consortium promotes the Web by producing specifications and reference software.<P>

<DT><A HREF="http://the-inter.net/www/future21/create1.html">WWW Page Creation</A>

<DD>Automatically generate a homepage with the "Create A Homepage" section of The-Inter.net's World Wide Web server.<P>

<DT><A HREF="http://www.uwm.edu/Mirror/inet.services.html">Yanoff Internet Connections List</A>

<DD><P>

</DL>

Back to the <A HREF="#top">Top</A><BR>

<A HREF="#links">Links to other Sites</A>

<HR>

<!-- \*\*\*\*\*Business Lists\*\*\*\*\* -->

<A NAME="business"></A>

<CENTER>

<H4>General Business Lists</H4>

</CENTER>

<DL>

<DT><A  
HREF="http://www.directory.net/dir/directory.html">Directory  
</A>  
<DD><P>

<DT><A HREF="http://galaxy.einet.net/galaxy/Business-and-  
Commerce.html">Galaxy Business and Commerce List</A>  
<DD><P>

<DT><A HREF="www.openmarket.com">Open Market</A>  
<DD><P>

</DL>

Back to the <A HREF="#top">Top</A><BR>  
<A HREF="#links">Links to other Sites</A>

<HR>

<!-- \*\*\*\*\*Search Mechanisms\*\*\*\*\* -->

<A NAME="general"></A>  
<CENTER>  
<H4>General Lists and WWW Search Mechanisms</H4>  
</CENTER>

<DT><A HREF="http://www.lib.umich.edu/chhome.html">  
The Clearinghouse for Subject-Oriented Internet Resource  
Guides</A>  
<DD><P>

<DT><A HREF="http://www.cis.ohio-state.edu/hypertext/faq/  
usenet/FAQ-List.html">List of USENET FAQs</A>  
<DD><P>

<DT><A  
HREF="http://www.cs.washington.edu/research/projects/ai/  
metacrawler/www/home.html">MetaCrawler</A>  
<DD>A tool which allows you to search through multiple  
search crawlers at once.<P>

<DT><A  
HREF="http://www.nosc.mil/planet\_earth/info.html">Planet  
Earth</A>  
<DD>A virtual library containing a collection of resources  
available on the World Wide Web.<P>

<DT><A HREF="http://gagme.wwa.com/~boba/spider.html">The Spider's Web</A>  
<DD>Self-described as &QUOT;your gateway to some of the best things on the Web, as well as FTP and Gopher sites.&QUOT;<P>

<DT><A HREF="http://webcrawler.com/WebCrawler/Home.html">Web Crawler</A>  
<DD>A search mechanism.<P>

<DT><A HREF="http://www.cs.colorado.edu/home/mcbryan/WWW.html">WWW Worm</A>  
<DD>A search mechanism.<P>

<DT><A HREF="http://www.mcp.com/nrp/wwwyp/">New Riders' Official WWW Yellow Pages</A>  
<DD>Search by keyword or by subject.<P>

Back to the <A HREF="#top">Top</A><BR>

<A HREF="#links">Links to other Sites</A>

<HR><BR>

<A NAME="author"></A>

<ADDRESS>

This page was created for a research project by<BR>Capt Kris Waldner<BR>AFIT/LAA<BR>

WPAFB, OH 45433<BR>

with massive technical help from Mike Rader<BR><BR>

The page was last updated 11 Sep 95.<P>

Please send comments to the author at  
<A HREF="mailto:">kwaldner@afit.af.mil</A>  
or use the <A HREF="#comment">comment</A> form.  
</ADDRESS><BR><BR>

Back to the <A HREF="#top">Top</A>

</BODY>

</HTML>

<html><head><title>IRM WWW Discussion Forum</title></head>  
<body><h1 ALIGN=CENTER>IRM WWW Discussion Forum</h1>

This message board is provided as part of a thesis research project.  
If this is your first time using the forum, you may want to review these  
<a href="faq.html">Frequently Asked Questions</a>.<P>

Please  
<a href="#post">post</a> your <STRONG>unclassified, non-sensitive</STRONG>  
announcements, messages, questions, thoughts, and considered opinions, but not flames.  
<P>

<hr>  
<ul>  
<META begin>

</ul><hr><a name="post"></a>  
Post a Message to the Message Board:<p>  
<form method=POST action="http://www.afit.af.mil/school-bin/LA/bbs/msgs.pl">  
Your Name: <input type=text name="realname" size=30><br>  
Your E-Mail Address: <input type=text name="username" size=40><p>  
Subject of Posting: <input type=text name="subject" size=42><br>  
<Select name="kind">  
<option>Message  
<option>Question  
</select>:<br>  
<textarea COLS=60 ROWS=5 name="comments"></textarea><p>  
Optional Link To A Page: <input type=text name="link" size=40><br>  
Name of the Link: <input type=text name="linkname" size=40><br>  
Optional Image URL: <input type=text name="image" size=40><p>  
<input type=submit value="Add Message"> \* <input type=reset value="Reset  
Message"></form><hr>

<A NAME="me"></A>  
Send all questions/comments about this page to <a  
href="mailto:kwaldner@afit.af.mil">Kris Waldner</a><P>  
Return to the <A HREF="irmnet.html">  
IRM Welcome page</A>.

</body></html>

```
<html><head><title>IRM WWW Discussion Forum Questions</title></head>
<body>
```

```
<h1 ALIGN=CENTER>IRM WWW Discussion Forum</h1>
```

```
<h2 ALIGN=CENTER>Questions and Answers</h2>
```

Here is a brief explanation of some of the features and questions you may have about using the WWW Discussion Forum. For other questions about the IRM Discussion Forum, please contact [Kris Waldner](mailto:kwaldner@afit.af.mil).

```
<hr>
```

```
<ul>
```

```
<li><a href="#qm">What do [Q] and [M] stand for?</a>
```

```
<li><a href="#links">Can I use html tags anywhere in my posts?</a>
```

```
<li><a href="#reload">Why didn't my post show up?</a>
```

```
<li><a href="#getit">Where can I get the scripts for this program?</a>
```

```
</ul><hr><p>
```

```
<a name="qm">What do [Q] and [M] stand for?</a><p>
```

The [Q] and [M] indicate Question and Message, respectively. This indicates to you whether their post is in the form of a general message or a question. You can indicate this by choosing one of the options in the pull down menu on the main post screen.<p><hr><p>

```
<a name="links">Can I put html tags anywhere in my posts?</a><p>
```

Yes, you can embed html tags anywhere in your post. I have included the option of allowing you to put in a link and a picture in case you were not familiar with html markup, but still wanted to add a link. Keep in mind that your address will already be made into a mailto: link and therefore you should not add any html markup around it.<p><hr><p>

```
<a name="reload">Why didn't my post show up?</a><p>
```

Your post most likely did not show up, because your browser did not reload the page, it simply pulled it out of cache. Please reload your browser and it should then appear.<p><hr><p>

```
<a name="getit">Where can I get the scripts for this program?</a><p>
```

The scripts are written in Perl and created by [Matt Wright](http://alpha.pr1.k12.co.us/~mattw/home.html). They are free to anyone who wishes to use them. You can get them as well as other scripts at: <http://alpha.pr1.k12.co.us/~mattw/scripts.html>. Enjoy!<p>

```
Return to the <A HREF="msgs.html">Discussion Forum</A>.<hr>
```

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# REPORT DOCUMENTATION PAGE

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<b>13. ABSTRACT (Maximum 200 words)</b>  This research project investigated establishing a World Wide Web (WWW) site dedicated to the United States Air Force Information Resource Management (IRM) community. The project determined guidelines for successful, appropriate format and content for such a site. To discover what benefits the IRM community might achieve, the project explored those benefits achieved or expected to be achieved by the business community and by government agencies with established WWW sites. The project also attempted to define an average profile of active duty IRM community Internet and WWW users. The above objectives were accomplished through a literature review and through the use of a prototype WWW site. Guidelines uncovered through the literature review were used in establishing a prototype site. The prototype site offered a variety of features, including indices of links to IRM-relevant WWW sites and a WWW-based discussion forum. To obtain feedback from community members, the site provided both an embedded electronic mail link to the author and a WWW fill-in form.				
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