MANAGING INFORMATION ON-LINE:
THERE ARE SO MANY PLAYERS YOU CAN'T FIND THE GAME BOARDS
OR
MODELS FOR CAMPUS-WIDE INFORMATION SYSTEMS

Lida Larsen
inforM Coordinator
Computer Science Center
University of Maryland at College Park
Bldg. 224, Room 3335
College Park, MD 20742-2411
301-405-2936
FAX: 301-314-9220
LL3@umail.umd.edu

MaryJac M. Reed
Acting Executive Director
Computer Center
The Catholic University of America
Washington DC 20064
VOICE: 202-319-5373
FAX: 202-319-6690
reed@cua.edu

Ken Han
Senior Programmer Analyst/GWIS
Coordinator, Computer Information
and Research Center
The George Washington University
801 22nd St. N.W., Suite B-106
Washington DC 20052
202-994-0104
khan@gwis2.circ.gwu.edu

INTRODUCTION

There is much evidence that the current use of Campus-Wide Information Systems (CWIS) to electronically publish information about and for our respective institutions will not diminish. Models for providing a CWIS vary from systems which require all documents to be approved and posted by a central office to those who distribute responsibility across the institution with little to no information oversight and few guidelines. Some institutions provide full- or part-time staff to manage the process. Some are managed by existing staff. Some provide extensive policy and procedures and require their information providers to sign official agreements concerning their legal responsibilities. Others provide loose guidelines or assume coverage by existing campus acceptable use policies (AUP) and codes of conduct. Each institution has developed a unique infrastructure to coordinate and manage their CWIS.

While we can foresee a day when electronic publications will be our primary sources, and from them we will print occasional copies, we can safely say that we have not yet convinced our institutions to provide but a fraction of the information in their traditional printed resources on-line nor the resources to create a parallel resource. The CWIS administrator (or coordinator, or manager, if there is one) is faced with the complexities of providing a valuable service to bridge the gap between the current paper document and future electronic media, often with little to no staff support, and always with significant skill level differences of their information providers. Their work is made more complex by contemporary discussions of copyright and legal issues.

The academic computer organizations of The Catholic University of America, The George Washington University, and the University of Maryland at College Park provide CWIS's for their respective institutions. The goals and strategies selected by their institutions to build this important bridge have many similarities, but what has worked or not worked in the actual implementations vary. Issues discussed in this paper include:

- The Game Board: institutional differences;

- The Game Objectives: institutional goals;

- The Rules of the Game: special challenges, policies and guidelines;

- The Game Strategy: organizational models and approaches; *The Game Players: staffing and resources;

- The Game Cards and Pieces: information provider support tools; and

- Reaching the Winner's Circle: what works and what doesn't.

THE GAME BOARD

Our campuses differ in size and resources. We represent both private and public institutions. A short summary of each institution is provided below.

- The Catholic University of America (CUA) has 675 faculty, 650 staff, 3800 graduate and 2400 undergraduates. CUA is comprised of 10 Schools with a total of 38 departments offering 67 bachelors, 94 masters, 56 doctoral, and 5 professional degrees. There are 20 research centers and more than 20 administrative departments and services. Eighty percent (80%) of CUA students are commuters. The status of the CUA campus network is 1/3 of campus is on fiber, with 80% of administrative offices on fiber while only 10% of faculty and academic offices are on fiber.

- George Washington University (GWU) has 4365 faculty members and 19,298 students in 7 Colleges. GWU has 42 research institutes and centers.

- College Park has 2616 faculty, 3611 staff, and 3015 graduate assistants serving 23,724 undergraduate students and 8,769 graduate students in 13 Colleges offering 98 bachelor, 87 master, and 68 Ph.D. state approved programs. More than 70% of the undergraduates and nearly 99% of the graduate students are commuters. There are over 100 research institutes and centers. The campus network reaches 95% of all buildings excluding dormitories. Seven dorms are wired. 100% of administrative offices have access, though a good number do not have desktop units and therefore are not making use of the available connections. 75% of the faculty and associate staff are connected and there are over 9000 campus accounts.

While our relative sizes are different, all three institutions support a large commuting population. In addition, we all serve diverse information and research needs (and desires) and have nationally acclaimed resources which are important to share not only with the international academic community but to many others with access to the Internet.

THE OBJECTIVES OF THE GAME

Despite our institution differences, our objectives are essentially the same. We have identified four major objectives which we have in common:

- to provide an integrated information service for the campus community; to market the institution to prospective students, faculty, and staff;

- to create an electronic presence on the Internet;

- and, to move our campus communities towards the use of and the creation of on-line information.

Objective I: To Provide an Integrated Information Service for the Campus Community.

In the recent past there was a relatively simple game that provided an option for our academic computing centers to provide a Campus-Wide Information Server (CWIS) to house frequently needed campus information and public domain software on-line. CUA, GWU, and College Park have each provided a CWIS based on a primary objective to provide an integrated information service for our campus community. The basic information posted grew from event calendars, information about campus services, and a link to the Internet to the inclusion of official university publications, schedule of classes, registration information, searchable personnel databases, on-line library catalog access, individual course syllabi and resource materials, and any other official, or in some cases non-official, information that someone on our campuses wished to make available on-line.

Part of our growth has come from a desire to have all campus information in one location. Part of our growth has come from increasingly sophisticated computing communities. Part of our growth has come from the development of Gopher and now, frankly, the development of Mosaic, Netscape and other World Wide Web (WWW) browsers has been the proverbial sky-shooting beanstalk of fairy tale fame. Beyond the academic computing center, each of our institutions is becoming more aware of CWIS use as an integrated information service.

Objective II: To Market the Institution to Prospective Students, Faculty, and Staff.

The current availability of a user friendly, and flashy, graphical interface has brought a desire by many of our campus units to provide information about individual colleges and departments, admissions criteria, forms, and procedures, scholarship and financial aid opportunities, special campus resources, as well as "pretty pictures" of life on campus. As Internet access grows exponentially, so does our potential audience. From the high school student on an America On-Line account to the recent college graduate looking for a graduate school to the collaborating faculty members at institutions on opposite sides of the country, many are paying virtual visits to campuses before or in place of actual visits.

Objective III: To Create an Electronic Presence on the Internet.

Each institution has unique resources to share across the Internet. We each provide information about our local environment, as well as electronic collections of specific academic information. GWU provides information on Washington DC shops and services and Terrorism Studies resources. CUA provides Catholic Files: a number of resources are available that are of interest to people searching for documents and information about Catholicism. CUA's Education department operates an "Ask ERIC" service for questions on how to use the ERIC database, and the Music department distributes its world-famous Gregorian Chant database via Gopher. College Park provides several scholarly databases including Econ-Data, Material Culture, Women's Studies and Diversity Resources. Each of us also provide the vast array of Internet resources to our own communities by building in pointers to them. This facilitates our own communities' Internet searches for information which is important to their own work.

Objective IV: To Move Our Campus Communities Towards the Use of and the Creation of On-line Information.

Few institutions have been able to provide a desktop computer for every faculty, staff and student in their community. Even fewer have been able to provide Internet access to everyone who has a desktop computer. And each campus is faced with the need to change people's attitudes and habits about computing. Few are using computers for work beyond the personal productivity tool of word processing and email. We each want to move towards universal use of the electronic collections we are building and creation and use of new and effective uses of electronic media.

Publishing information in electronic format is not now second nature to our institutions. Many departments and offices on our campuses have publications staff. While we can envision a day, perhaps five years away, when publication staff will automatically publish their information electronically, this is not the case now. Today, few groups plan electronic publications as primary documents. Most official campus documents which you will find on our servers are taken verbatim from printed sources. When we are lucky, we are able to upload these documents from diskettes where the information was created and stored prior to being shipped to the printer. Sometimes the information is only available in hard copy and we must scan or type it in for our use on our systems. Developing plans to bridge the gap between a world that thinks in

hard copy to one that thinks electronically will take creativity in place of resources that none of us have.

THE RULES OF THE GAME: WHAT ARE THE CHALLENGES?

Providing a CWIS goes far beyond the posting of campus events and course syllabi. If we are to reach our goals of being the central integrated campus information system for our institutions, then we must find ways to obtain or create all of the pertinent information and then to maintain it in a timely way. Collection development and maintenance becomes our biggest challenge. It is followed closely by development of indexing and search tools that help our user communities locate needed information. As we trip merrily along the CWIS game board we need to be firmly aware that providing our service requires careful cultivation of information providers in every unit and the administrators who decide on campus priorities. We each see a need to move WWW efforts from a grass roots movement to a more recognized institutional goal as critical to our success. At the same time we need to be concerned about the majority of our users who are still accessing our systems via Gopher. We need to worry less abut how our users will reach us than we need to be concerned about what resources we are providing when they do reach us. Indexing and search tools are being developed by the Internet community so our major focus must be our local information and its organization. Each of us has chosen a model which defines a general organization of information and distributes the responsibilities for collection development and maintenance across our institutions. A major challenge is the recruitment and development of our information providers.

We must provide motivation or "buy-in" opportunities for all campus entities to become information content providers. We can offer incentives to them for putting their information on-line and provide accounting information to determine access data for their files. Increasing academic department involvement is critical to providing the kinds of resources we feel our communities need.

In addition we must develop policy frameworks for our information providers. We are the ones who must understand and interpret campus policy and copyright law for them. Each of us has developed CWIS specific policies, procedures, and guidelines. Our steering committees and campus legal offices have helped to shape agreements on what we allow and what we do not allow on our systems. We have set up formats for WWW and Gopher pages and written HTML style guides for our campuses.

Because our information providers are adding electronic publication to their already long list of daily tasks, we must each develop tools which support our information providers. This is especially important for those who have minimum training and technical skills. These must include printed and on-line help documents and support personnel who can consult with information providers at all levels.

And, of course, even with our many information providers, we each must provide the necessary infrastructure which allows it all to happen with no increase in budget or staff in the face of significant growth in demand for access.

THE GAME STRATEGY

The models our institutions have chosen involve provision of an infrastructure of hardware, software, and content and technical coordination and support. Exemplary models of information creation and/or original electronic publication of important data sets by CWIS staff lead our constituencies to high standards for their own work.

Strategy I: The Technical Infrastructure.

On the hardware side this means providing a fast, reliable, stable WWW and/or Gopher server, information storage units, public access units, and appropriate network connections.

GWU provides two Sun UNIX machines to serve as telnet hosts, distributed machines to hold the information, multiple microcomputer labs that connect to GWIS, and modem pools to allow dial-in connections.

CUA provides a VMS WWW server, running on a DEC AlphaServer 2100 4/200, positioned on the campus network to provide the fastest Internet access and the least contention with campus network traffic. All networked microcomputers, both in offices and in public labs, have direct Internet access and full graphical access to the WWW via Netscape or Mosaic; offices not on the network and any CUA user off-campus can access the Internet via the dial-in modem bank, using either Gopher for Gopher access or LYNX for text-only access to the WWW.

inforM provides a DECstation 5000/200 and a DEC AXP 3000/600 with over 8 GB of storage. We currently support FTP, Gopher, World Wide Web, and WAIS. We provide no direct dial-in. Other campus computing infrastructure provides inforM kiosks, connections from student computer labs, and modem pools for dial-in access to university computing systems. In addition, many colleges, schools, departments, and centers at the university now provide their own WWW servers to whom we can provide links. Over 90 individuals with significant WWW responsibilities as webmasters or creators are on the College Park Web-list email list.

Strategy II: The Collection Development and Management Coordination and Support.

On the coordination and support side we each offer professional staffing to provide content, organization, collection development, technical, marketing, training and outreach skills to support our information providers and general coordination of the system. We each do this as centralized support and training while we empower our information providers with tools and access to control and maintain their own information. Specific staffing patterns will be discussed later.

In setting policies, procedures and guidelines we look to suggestions from University administration, establish in-house guidelines for information, and provide a Code of Conduct or make use of current campus documents.

Dissemination of the collection development and management functions is critical to our models. CUA, GWU and College Park each provide a coordinator to recruit and develop a pool of information providers. CUA provides the coordinator function through existing personnel. GWU provides a part-time coordinator. College Park provides a full-time senior program analyst to act as the coordinator. Mechanisms are in place to facilitate easy contact by volunteers, however, most information providers are actively sought as representatives of specific groups.

Once information providers volunteer or are recruited good centralized support and training are necessary to empower them to use submittal tools and access mechanisms to control and maintain their information files. This help and support includes printed handouts that can be picked up in our office or delivered via campus mail; on-line help which includes documentation and consulting by email; and hands-on training for HTML, Gopher, information processing tools, and submittal tools. In addition, classes on UNIX and Internet services are taught on a regular basis.

Strategy III: Modeling Information Creation and Original Electronic Publishing.

College Park also provides staff support (students) for the development of databases on specific topics of importance to the College Park community (i.e., Women's Studies, Diversity Resources, Campus Calendars). CUA provides a model of exemplary database organization and maintenance in their Library and Computing sections.

THE PLAYERS/GAME PIECES

CWIS staffing patterns vary significantly. The functions are the same but the staff skills and background differ. At CUA, existing staff provides the CWIS functions. At GWU and College Park both designated and existing staff provide them. The following section describes in more detail who does what at our institutions.

The Catholic University of America

Paid Staff

1. No full-time staff 100% devoted to WWW.

2. Three full-time staff whose additional duties include WWW: training/support

   • Computer Center Editor
   • Public Affairs
   • Publications Designer
   • Computer Center Systems Programmer

3. Four part-time staff whose duties include WWW: *Three Computer Center senior student consultants *One Public Affairs student designer

Volunteer Staff or Information Providers

1. Any CUA faculty, staff, student who attends WWW training or who requests WWW space.

2. Some departments have designated real time to staff to work on WWW activities, i.e., Library WWW Coordinator, English Department graduate student, Engineering Network Coordinator

Advisory or Steering Committee

1. Academic Computing Services Advisory Committee acts as default WWW steering committee; ACSAC has been expanded beyond original 12 representatives to include anyone with academic computing interests; WWW is responsible for current

ACSAC-L listserv membership of 54.

The George Washington University

Paid Staff

1. One contracted systems programmer to handle technical details of the UNIX machines

   • perform installations
   • hardware support
   • system backups

2. One programmer analyst to support users and software.

   a. user support with software and information
   b. accounting of system use
   c. coordinate GWIS
   d. training of information providers

3. One half-time web coordinator

   a. design GWU home pages
   b. user support for HTML creators

4. Support from existing personnel

Volunteer Staff or Information Providers

1. All academic departments and Colleges

2. University services

3. Administrative departments

4. Individual home pages for faculty, staff, and students

5. Student organizations

6. Any GWU group

Advisory or Steering Committee

Advisory Council for Academic Computing retains responsibility for GWIS. Representatives include faculty, administrative staff, and a student.

University of Maryland at College Park

Paid Staff

1. One professional: inforM Coordinator -100% (librarian by training)

   • collection development
   • marketing
   • organization
   • outreach
   • training
   • interdepartmental communication
   • supervision of student employees
   • facilitation of campus-wide advisory committee
   • facilitation of internal working group

Professional technical staff (1.4 FTE) from existing groups

* server support
* programming support
* training support
* data entry support
* operational system support
* reporting usage

Computer Science Center/student staff - (80-140 hours per week) and Student Affairs/student staff - (40 hrs/wk)

* ability to work within all hierarchies on campus
* content expertise sought for specific datasets
* data entry, HTML formatting, scanning & graphics creation
* technical programming skills (1)

Existing staff support.

Volunteer Staff or Information Providers

1. Campus outreach /Campus Computing Associates provide outreach (sometimes data entry /maintenance) in Colleges

2. Individual and group inforMation Providers **Provide** their own inforMation server (more than 30 on campus). Example: Libraries, Colleges, departments (academic and service),research units, Records and Registrations (Academic Data Systems), Communication and Business Services

   a. Provide their own inforMation on central inforM server using inforM accounts or **WebSpinner.** Example: Colleges, departments (academic and service), research units, individual faculty and staff, committees and associations, official student groups

   b. Provide materials in electronic form (email or diskette) to inforM staff - (inforM staff formats and posts). Example: Colleges, departments (academic and service), research units, individual faculty and staff, committees and associations, official student groups

   c. Provide materials in hardcopy to inforM staff - (inforM staff formats and posts). Example: Colleges, departments (academic and service), individual faculty and staff.

Advisory or Steering Committee

1. inforM Steering Committee includes representatives from:

   * Undergraduate Studies
   * Student Affairs Faculty
   * Staff Student body Libraries
   * Office of Public Information
   * Administrative Computer Center
   * Computer Science Center (academic computing)

GAME CARDS/SUPPORT FOR INFORMATION PROVIDERS

Special tools, documentation and training form the backbone of support for our critical pools of information providers.

Game Card I: Documentation.

In-house published documentation is provided in printed hardcopy (handouts) and on-line in the majority of cases. Topics include: information providers guidelines, HTML or WWW style guides, general acceptable use policies, WWW personal home page acceptable use policy, Step-by-step cookbook directions specific for a WWW central server, and submittal tool help screens. In addition, each of our systems point users to other key documentation available on the Internet such as the HTML Beginners Guide from NCSA.

Game Card II: Training.

CWIS staff are usually very involved in the general Internet training programs for users as well as specific training programs for information providers. CUA offers a 3 hour Internet Training course covering FTP, Telnet, Gopher, and WWW; a 1.5 hour overview Gopher Training for network researchers; Gopher Administrator Training upon request, if WWW is not 'right' for some reason.; a 2 hour overview WWW Training for network researchers; and a 6 hour WWW Administrator Training which is broken into three 2 hour sessions). Beginning Fall 1995, content-oriented Internet training will be provided by the CUA library staff.

At GWU training is similar with on site training in Gopher and WWW use, Internet courses, and General UNIX courses. College Park offers inforM, Internet, Internet Tools, and HTML training in their short courses for faculty and staff and their peer training which is designed for students.

Game Card III: Email and Electronic Communication Support.

College Park and CUA offer electronic mail alias (inform-steer, web-list) and listserv discussion forums (info-L, webadmin-L, acsac-L). CUA is considering a local newsgroup for web update information. This enhances the communication among those who provide webservers, content, or advice for their campuses CWIS or those who are users only. All attempt to integrate email addresses within the content of their CWIS systems and where appropriate, email forms support for immediate contact with CWIS staff.

Game Card IV: Tools.

CUA's VMS WWW server provides an infrastructure with personal read/write access and protected directory structure, Departmental Home Page template, a campus-wide repository of graphics, logos, icons, etc, and Personal Home Page access set-up.

GWU individual information providers have individual accounts with short cuts to their Gopher and Web areas. They also provide checking and policing of WWW and Gopherspace.

College Park support tools include an automatic calendar entry program (single password protected); three submittal programs with individual login and password protection (Mr. Submit/e-mail submittal format, Submit for Windows, and WebSpinner/a forms supported program available for those using Netscape); and a new or changed URL posting form. In addition, an expiration date field (automatic) is available and automatic age notifications for files as they reach 11-12 months, 23-24 months, 35-36 months, and again when the file is over 4 years old.

REACHING THE WINNERS' CIRCLE: EVALUATION

Did anyone win the game, are we in stalemate, or was it no contest? Each CWIS staff has experienced things that worked with one group but not with another. In general the things that we agree work are:

- Use of distributed collection development and management model with recruitment of information providers.

- Departments who designate individuals (staff or enthusiastic student volunteers) and give them time and resources to perform the information gathering, processing and management task.

- Commitment or "buy-in" of information providers facilitates completeness and timeliness of information.

- One-on-one on-site training for information providers.

- Easy to use submittal tools.

- Peer Pressure to "be on the web".

CUA's WWW is a joint venture between the Computer Center and the CUA Public Affairs office. This has been particularly helpful for them. The Computer Science Center at College Park is working on a similar effort that will involve University Publications, University Relations, Communication and Business Services and expects this to be a winner also.

GWU specifically notes GWIS access from multiple platforms including modem works well in their situation.

College Park and CUA are both making use of traditional library organizational skills. The CUA Libraries are providing leadership and College Park has hired a CWIS Coordinator with a MLS and over 20 years of traditional library experience.

CUA finds that their centrally administrated WWW server via VMScluster is a winner.

Things that don't work for CUA, GWU, and College Park are:

- Sustaining a CWIS as a grass-roots phenomenon from bottom up without official recognition or support.

- Trying to establish a CWIS when much of a campus does not have adequate or direct Internet access.

- Attempting to support both WWW and Gopher campus-wide.

- Supporting the increased user load created by WWW pressure - increased account requests, increased usage in public areas, meltdown of dial-in modem pool; demand for PPP access; proliferation of backdoor network accesses (Close-up, PC Anywhere).

- Supporting a CWIS with no additional staff and no load reduction.

- Excessive hand-holding in the recruitment and training of information providers.

- Information providers who are in multiple games. Enthusiastic though they may be, many of our information providers are already over committed with many other responsibilities.

- Administration units giving directives to "do this" without achieving "buy-in" from their people or providing the resourcing needed to support the assigned task.

- The assumption that the format of any printed document is appropriate for electronic publication.

- Great difficulty in tracking the game pieces.

CONCLUSION

In conclusion, it must be noted that the provision of a Campus-Wide Information System is an exciting arena made complex by both political, legal, and technical issues. CUA, GWU, and College Park have each found that distributed responsibility for content coupled with centralized editorial control provides an effective framework on which to build a system for collection development and management of a CWIS. And, we are convinced that taking measured steps to lead our institutions towards a new paradigm of electronic publication of campus documents will continue to be challenging, but will not go unrewarded.