

Tailoring Gopher Services for Individual Users

(South Pacific User Services Conference, La Trobe University, Melbourne, 6th to 8th December, 1993)

Michael Middleton (School of Information Systems, Queensland University of Technology)

Bill Fisher (Computing Services Department, Queensland University of Technology)

Abstract

The University of Minnesota Gopher client-server software has been widely applied for public access to Internet files and databases. On the Gopher implementation at QUT, space was set aside at a submenu level to enable information management students to build personal gopher menu hierarchies for defined subject areas. This made extension of individual menus possible beyond the inbuilt bookmark facility, for personal definition of a broad range of menus and access points. An analysis of the range of sources used by students for inclusion in the Gopher is made. Advantages and limitations of the approach are discussed, together with suggestions for development and maintenance of subject pathways by intermediaries.

INTRODUCTION

The vast amount of information available via a variety of avenues on the Internet has led to the development of several kinds of searching assistance software. Among software in common use are Gopher (Gopher Central Server 1993), WAIS (Lund University 1993) and WWW (CERN 1993).

Links have been established between the different facilities so that one may be accessed from another and vice versa. The extent to which the access may be used depends in part upon the hardware available to a client in a client-server system. For example, the user of a typical personal computer cannot expect to implement MOSAIC access (Valauskas 1993) that permits transfer and visualisation of multimedia information.

On the assumption that most end-users would have access to text-based retrieval and display, we wished to investigate the effectiveness with which an individual Gopher could be set up to provide a personalised subject approach for end-users. Such a procedure, if practical, could be maintained on an ongoing basis by information specialist intermediaries such as information managers, user support officers or librarians for the benefit of clients.

Although the demise of intermediaries has often been predicted to follow the evolution of more friendly user-interfaces, we are presuming that there will continue to be a role for specialists to keep track of and provide avenues to new information resources.

A certain degree of personalisation of approach is already available through the "bookmark" facility in Gopher. This permits a user to establish repeatable easy-to-use pathways to commonly used sources that are maintained automatically on the user's own account. We extended this approach so that individual space was set aside within a VAX implementation of Gopher for users who were then able within individual menu levels established for them, to build their own menu sublevels (and therefore access points) to systems and data perceived to be of interest.

CAMPUS INFORMATION SERVICES

Campus Wide Information Services have been developed extensively at tertiary institutions connected to the Internet. Typically a menu-based approach provided by Telnet access gives the user access to a number of campus facilities such as those shown on some of the menus which we have used for illustration below. Many of these services are now run through Gopher servers, which also provide access to a variety of off-campus systems through the Internet. The diversity and dynamic nature of resources available on the Internet, has meant that significant effort must be put into the design and maintenance of Gopher menus so that they provide effective client access.

Gopher software has also been incorporated into hypertext-based CWIS approaches. A good example of this is the LYNX software at the University of Kansas which is a development of Scott's Hytelnet software (*Telnet kufacts.cc.ukans.edu* login: *kufacts*).

Although a number of subject index gophers have been created and may be readily accessed at some Gopher sites, we felt that end-users would prefer to have gopher entry points specifically tailored to their own subject areas. Some may wish to do this themselves. Others may wish to have specialists maintaining the access points for them.

Drew (1993) reported an informal survey on the extent to which intermediaries, in this case librarians, should be involved in the development and maintenance of Gopher menus. The information collected included suggestions for general design of menus, incorporating what should be included on top level menus and a general philosophy of design. There was a consensus that menus should not be more than 3 levels deep. This presumably refers to menus developed at a particular site. Drew includes an example of a model Gopher menu structure suggested by Duda (APPENDIX 1).

The common Unix and Vax/VMS Gopher servers provide two methods of setting up a Gopher menu structure.

On one hand the server can be pointed at the data file structure and allowed to construct its menus automatically. The menu structure will be the same as the file

directory structure and the menu item names will be the same as the file names. Only directories and text files are automatically catered for. This system can be refined by the use of *look-aside* or *.cap* files to provide more descriptive item names and to handle special files such as binary, sound or image files. Files containing *link* scripts are only used to point to data outside the server such as other Gopher servers or telnet services.

The alternative is to keep the menu structure separate from the data structure in dedicated directories used as index directories and containing only *link* scripts. *Link* scripts are used for all items including the local ones. This alternative requires slightly more effort to set up the menus initially as data items have to all be manually described. However, it is more conducive to aesthetic tuning of the appearance and logical arrangement of the menus. The actual arrangement of the data is hidden from the menus as seen by naive users. The menu structure can be changed without changing the data structure and vice versa. The underlying *link* mechanism is the same for local data as for pointers to external data.

This second method is the one generally adopted on the QUT Gopher server and the one that is put to use in the assignment to be described.

STUDENT ASSIGNMENT

Setting up an assignment so that the students were each able to manipulate their Gopher tree without interfering with others was simplified by the Vax/VMS security provisions. Each student was provided with file space in the area readable by the Gopher server. The area was readable by the lecturer but otherwise owned and controlled by the student. A common area was set up under the control of the lecturer. An obscure branch of the QUT Gopher tree was given a pointer to an index directory in the common area. This directory contained *links* in the name of each student pointing at an empty index directory in the student's area. The first time students accessed the system they could follow the QUT Gopher menu tree down to their own areas and set bookmarks. These then became effectively the bases of their personal Gopher trees which they could set up in any way they liked to carry out their assignments. The process of setting up this structure was automated from the student records of the class.

The structure was intended to be hidden from Veronica but the "no-index" file was set up wrongly so the code name of the unit (ITB323), the names of the students and their efforts are all duly indexed throughout the world by Veronica!

A task was set (APPENDIX 2) in which students were asked to build a 2-level menu structure of their own within the QUT Gopher menu. Their own top level menu was expected to represent a "General Reference Menu" and their subordinate menu was to provide pointers to material in a particular subject area with which they had already worked on other assignments not related to the Internet.

The substantive work for each student consisted of identifying a range of appropriate Internet resources (using Gopher, Usenet NEWS, Listserv, WAIS, Email, Archie,

etc), and then building a combination of text files and Gopher scripts (*link* files) to establish a presentable front end for a hypothetical end user. A typical *link* file appears as follows:

```
Name=Virtual Reference Desk
Type=1
Port=7000
Path=1/gopher.welcome/peg/VIRTUAL REFERENCE DESK
Host=mothra.nts.uci.edu
```

This will be familiar to Gopher users as the 'technical information' which displays following use of the '=' command on Gopher.

Scripts such as these were "grabbed" directly from Gopher searches, or constructed by students as a result of information obtained from lists, mail or news. Because of the nature of the hardware to which most had access, they were effectively confined to Type 0, 1, 7 and 8 resources (APPENDIX 3). They were able to establish pointers to multimedia data if they wished, but such data couldn't be presented on their own equipment.

Most of the Type 0 information that they referred to was text files established under their own accounts either by copying and merging information from Usenet NEWS and Listservers or by creating descriptive information of their own to explain menus.

There has been some discussion on the Internet of best practice in the establishment of menus. Although students were not given any standards to follow, they were required to provide inbuilt explanations for each level of menu established. Some also chose to include a pointer to an Internet or Gopher tutorial at the top level menu

General reference material incorporated a wide range of sources such as dictionaries, telephone books, thesauri and fact books. A popular inclusion was the Queensland weather forecast (Host=gopher.austin.unimelb.edu.au)

An example of a resulting 2 level menu is shown following:

```

Internet Gopher Information Client 1.2VMS pl0
STUDENT GENERAL REFERENCE MENU
1. ** Purpose of This Menu **.
- - - > 2. ** Subject Area: Photography **/
3. Academic Position Network/
4. Australian Archie Server (Search Substring in
Filename) <?>
5. Australian Postcodes (Search by Placename or
Pcode) <?>
6. Dictionary of Acronym Search/
7. HYTELNET Index of Servers (Menu- driven Version
of Telnet) <TEL>
8. Networked Library System (NetLib) <TEL>
9. QUT Library Catalogue - QUT Users <TEL>
10. Roget's Thesaurus for Searching <?>
11. Search GopherSpace: Jughead & Veronica (World)/
12. USENET News (from Michigan State)/
13. Webster's Dictionary <?>
14. Zen and The Art of The Internet/
Press ? for Help, q to Quit, u to go up a menu Page:
1/1

```

Example of Root Level "General Reference" Menu

```

** Subject Area: Photography **
- - - > 1. ** Purpose of This Menu **.

2. Experimental Work Contest: Photographs in Digital
Form? , $5,000 p...
3. Frequently Asked Questions About Photography.
4. Minneapolis College of Art and Design Gopher/
5. Miscellaneous on Photo CD System/
6. Network Info for Social Science, Arts &
Humanities Researchers <?>
7. Photography News Group/
8. Photography and Similar Processes/
9. Queensland College of Art (Griffith Uni) Library
Catalogue <TEL>
10. Smithsonian Institute (SI)/
11. University of Arizona - Science..Engineering and
Creative Photo <TEL>
Press ? for Help, q to Quit, u to go up a menu Page:
1/1

```

Example of Subordinate Level Subject Menu

RESULTS

Most participants found the exercise very stimulating and fruitful. A wide range of subject areas were tackled ranging from the relatively specific 'Geographic Information Systems' and 'Fishing' through to more general areas such as 'Crime', 'Sport' and 'Marketing'. Subjects relating to information technology predominated, and were generally the most productive for information resources.

Students were asked to indicate the facilities that they found most useful for identification of resources. This varied according to chosen subject area but there was overwhelming preference for Gopher itself as a source, usually accompanied by use of Veronica. The following table summarises the proportion of students (N=87) who searched particular resources (% search) and the proportion who subsequently made use of an identified resource (% use) as the origin of a particular information resource on their menu:

<u>Origin of information resource in Menu</u>	<u>% search</u>	<u>% use</u>
Gopher Menus	100	100
Veronica/Jughead Searches	50	40
WAIS Searches	10	7
News	52	23
Listservers	23	3
Email	2	-
Hytelnet	10	3
Other (eg Archie, Netfind)	5	-
Print Sources	2	n/a

Although it gives an indication of relative utility, this distribution of use is biased by the fact that a significant proportion of students had not used News and Listserver facilities in any directed way before, and was therefore relatively shy about using them, particular when Gopher itself proved a cornucopia for many of their subject areas.

Difficulties encountered

Students highlighted a number of difficulties when carrying out the exercise. These included:

The "dead end" problem when using menus or particularly when identifying sources through Veronica was the largest single source of criticism by students. We did not try to make any use of software for establishing Gopher dead ends such as that developed by O'Callaghan (1993), so students often encountered unavailable or unknown clients as a result of system unavailability or database movements to other clients without any cross-referencing.

Some students who found groups from the Usenet NEWS very useful for their topic, took the trouble to build Gopher links to files that they had created and updated by extracting and merging news items. There is at present no link at QUT between NEWS and the Gopher although such links do exist in some Universities. Such links may become universal in time.

Students were encouraged to join listservers for the duration of the exercise (about 1 month). Although most were able to identify appropriate lists, for example by use of an email search facility (APPENDIX 4), in many cases, they did not find the lists fruitful because the lists were relatively dormant during the time of the exercise.

The Gopher is set up at QUT in such a way that students could not establish hidden files within Gopher subdirectories. This caused confusion for quite a number who found that creating text files within a subdirectory lead automatically to the display of the file name in a Gopher menu. As they were creating the text files to provide information for certain menu items they were encouraged to build the text files in directories away from the Gopher levels and then point to these text files with Gopher *link* scripts.

The VMS Gopher server at QUT is being replaced by a more highly developed and reliable one. The downtime of the experimental Gopher in use at QUT at the time was greater than would be acceptable in a production environment. The VMS Gopher is backed by a Unix Gopher, but on a number of occasions limited access was available.

Although students have been exposed to a range of editors, the VAX editor that they used was unfamiliar to a number of them and slowed down the progress of their work.

CONCLUSION

The exercise was carried with great enthusiasm and a number of the students showed an innovative approach to the development of a presentable 'front-end' for users. Organising information available via Gopher or similar systems so that it is attractive and easy to use is not a trivial exercise but most of the students managed to get on top of it. It is a new skill which needs further study and development.

Although end-users who have an orientation to information technology could be expected to make use of systems such as the Internet without recourse to intermediaries, there is a large and growing user population whose interest is the relevant resources, rather than the means of access to them. Even as software such as Gopher is supplemented or supplanted by more flexible alternatives, the identification

of resources, application of standards for interfaces to the resources, and filtering the relevant items from the 'detritus' of the information mass, will remain a specialist role.

REFERENCES

Drew, B. (1993) 'FWD: Summary and conclusions on gopher, CWIS, and librarians'.
In: **GO4LIB-L%UCSBVM.BITNET@cmsa.Berkeley.edu** [electronic bulletin board] 13 Aug 1993 08:05:39 - 0500.

Gopher Central Server (1993) Gopher to: **gopher.micro.umn.edu** (Gopher Central Server (University Of Minnesota, USA)/ - - > 1. Information About Gopher/)

O'Callaghan, D. 'RE: Dead Links in the Middle of the Road', In: **GO4LIB-L%UCSBVM.BITNET@cmsa.Berkeley.edu** [electronic bulletin board] 18 Aug 1993 11:56:08 - 0500.

Valauskas, E.J. (1993) 'One-stop Shopping: NCSA Mosaic on the Macintosh', **Online**, 17, 5, pp. 99-101.

Lund University (1993) Gopher to: **lundns.lu.se** directly, or via the Lund University Gopher: **gopher.ub2.lu.se** > 3. About "Lund University Electronic Library Service: WAIS" at UB2/ - - > 3. Software archive (WAIS, gopher, WWW, hytelnet, etc.)/ - - > 14. wais/

CERN (1993) Telnet to: **info.cern.ch** > About WWW > [4] About the World Wide Web global information sharing project

APPENDICES

APPENDIX 1 : A model CWIS master Gopher suggested by A. Duda for UC-Santa Barbara, details from Drew (1993)

1. About the UCSB Grand Central Gopher/
 1. Map of this gopherspace.
 2. UCSB Gopher Title Keyword Search (Jughead) <?>
 3. Search for keywords within documents (WAIS) <?>
 4. How to include your information in this gopher.
 5. About gopher in general.
 6. Gopher help.
2. Search for campus addresses <?>
3. Directories of People and Services/
 1. Search for campus addresses <?>
 2. Departmental directories/
 3. Faculty, staff, and student publications/
 4. Areas of expertise and interest/
4. Course Information/
 1. Course descriptions/
 2. Schedule of classes (Current quarter)/
 3. Schedule of classes (Next quarter)/
 4. Course syllabi (by department)/
5. Events, Schedules, and Announcements/
 1. Campus Events Calendar/
 2. Academic calendar/
 3. Departmental Events and Announcements/
 4. Athletic Schedules and Scores/
6. Financial Aid and Employment Information/
 1. Employment Information/
 2. Scholarships/fellowships/awards/
7. UCSB General Campus Information/
 1. About official information.
 2. Campus profile/
 3. Institutional statistics/
 4. Admissions Information/
 5. Press Releases/
 6. Newsletters/
 7. Policies/
8. Computing on Campus/
 1. Campus Computing Facilities/
 2. Site license information.
 3. Bookstore Prices and Promotions/
 4. Computing Support/
9. Suggestion box <?>
10. Gopher help.
11. - - - - -
12. Other UCSB Gophers
14. - - - - -

APPENDIX 2: The Student Assignment

QUEENSLAND UNIVERSITY OF TECHNOLOGY

School of Information Systems

ASSIGNMENT: ITB323.3

(LOCAL INFORMATION REMOVED FROM EXAMPLE)

OBJECTIVES:

1. To examine a range of databases and information services available via an Internet access facility;
2. To build an access tool that assists user entry to remote systems for an identified user need

REFERENCE: Middleton, M. 1993 *Making use of Networks*, Brisbane, QUT.

PROCEDURE

1. For the subject area that you have chosen for your Thesaurus work (or another subject area negotiated with your tutor), begin to identify Internet information resources in this general area. You can identify the resources by:
 - monitoring the News (see Middleton, page 11)
 - joining a listserver that deals with your subject (see Middleton, page 14)
 - using the Gopher itself via its menus
 - using the Gopher via its searching facilities (eg Veronica)
2. Establish your own Gopher (from your own level within the main Gopher) that at your top level:
 - a. describes itself
 - b. provides 9 access points to useful general information
 - c. provides a pointer to a submenu on your subject area
3. Establish at specific subject area level of your Gopher menu, a menu that:
 - a. describes itself
 - b. provides up to 10 access points to information on your subject; (these may in turn point to subdirectories).

WORK TO BE SUBMITTED

1. Printout of the 2 levels of your menu (each level may be saved and printed - gopher entries will be tested for their functionality when your work is assessed).
2. A general description of why you have included the various sources, and specific information describing the content of 2 of the sources at each level (approximately 3 pages).

GUIDE TO ASSESSMENT

Entries/functionality at top level of your Gopher menu	20
Entries/functionality at subject level of your menu	40
Written description	40
	100% (20% of unit mark)

APPENDIX 3: Type codes used in Gopher *link* scripts

0 Item is a file
1 Item is a directory
2 Item is a CSO (qi) phone-book server
3 Error
4 Item is a BinHexed Macintosh file.
5 Item is DOS binary archive of some sort.
6 Item is a UNIX uuencoded file.
7 Item is an Index-Search server.
8 Item points to a text-based telnet session.
9 Item is a binary file???? Client must read until the
connection closes. Beware.
T TN3270 connection.

Experimental IDs.

s Sound type. Data stream is a mulaw sound.
g GIF type.
M MIME type. Item contains MIME data.
h html type.
I Image type.
i "inline" text type (used by panda).

APPENDIX 4: Illustration of Email use for Identifying Listservers.

```
MAIL> send
To:in%"listserv@bitnic.bitnet"
CC:
Subj:
Enter your message below. Press CTRL/Z when complete, or CTRL/C to quit:
list global/educ
```

```
.
.
.
```

(Leads to the response)

```
Excerpt from the LISTSERV lists known to LISTSERV@BITNIC on 25 May 1993 23:34
Search string: EDUC
```

Network- wide ID	Full address	List title
'EDUCATIONAL-...	ERL- L@TCSVM	Educational Research List (TCSVM)
ACEWEST	ACEWEST@WSUVM1	Ag Communicators in Education
ADLTED- L	ADLTED- L@UREGINAL	Canadian Adult Education Network
AERAMC- L	AERAMC- L@UAFSYSB	American Education Research Association - Me+
ALLIANCE	ALLIANCE@HARVARDA	Alliance for International Educational and C+
AMIED- L	AMIED- L@MCGILL1	American Medical Informatics Association Edu+
AMIEDC- L	AMIEDC- L@UBVM	AMIA Education PSG Administrative Committee +
APLEDU- L	APLEDU- L@UNBVM1	APL in Education
APPL- L	APPL- L@PLTUMK11	Computer applications in science and educati+
ASHE- L	ASHE- L@MIZZOU1	Association for the Study of Higher Educatio+
ASSESS	ASSESS@UKCC	ASSESS - Assessment in Higher Education
AYN- EDUC	AYN- EDUC@IUBVM	Moderated Introduction of Objectivist Philos+
BGEDU- L	BGEDU- L@UKCC	BGEDU- L is a forum for persons concerned wit+
CARET	CARET@GWUVM	Capital Area Researchers in Educational Tech+

(ETC....)

Last updated 9 March 1995