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Scientific Home Pages on the World Wide Web

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Summary. As the World Wide Web increases in popularity, it has become easier to create and maintain home pages on the network. How this is accomplished is as varied as those using the web. The possibilities for scientific sites create questions for the research page editor. This paper provides a nontechnical discussion of why and how to create a scientific home page. Universal Resource Locators are given for home pages that may benefit the reader.

As the World Wide Web increases in popularity, it has become easier to create and maintain home pages on the network. How this is accomplished is as varied as those using the web. The possibilities for scientific sites create questions for the research page editor.

Why? The first question to be asked is, "Why create a home page?" Communication among colleagues is better handled with direct e-mail. Data can be transferred with e-mail or FTP exchanges. Many scientific interest groups have established electronic mailing lists to communicate effectively with most or all researchers in specific research areas. Home pages are designed for public access by a world audience (Burger et al., 1995). A home page publisher must have a reason or desire to share the information with all that might pause at that location while scanning the web. The effort and costs associated with the creation and maintenance of the page should be offset by the perceived benefits of presenting the information to the public.

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The cost of publishing this paper was defrayed in part by the payment of page charges. Under postal regulations, this paper therefore must be hereby marked advertisement solely to indicate this fact.

Has a home page already been created for this purpose? The web has become very popular and increased use has resulted in declining performance. If a similar or related page already exists, check with the author to see if your information can be provided for inclusion at the existing site or to establish a link to your new page.

How? The first requirement is to obtain a link to the Internet. Faculty members should contact their campus computer center. Universities often will provide access for nonprofit or government researchers at little or no cost. Assistance will vary with the work load and abilities of the computer center staff. Students and other users also can be good sources of information and aid to the novice. Local network providers are usually the lowest priced and will provide the software to get started. Once up and running, however, the ability to educate the user on how to use the software provided may be lacking. If a web site becomes accessed heavily, the author may have to pay increased server fees for the popularity. Although the disk space used remains the same, a popular web site means that a large number of users will be using the telecommunication abilities of the host site for access. With either of these options, the user must learn to use some file transfer method to place the finished document in a location on the provider's system. The method and directory information will be supplied by the Internet provider.

National providers, such as America Online or CompuServe, provide free software and generally are easier to use but more expensive than local or area providers. Creating home pages through these companies may be the easiest means, with ample on-line help available.

As the use of the web increases, so does the amount of software available to create and view home pages. Any ASCII text editor can be used to create a home page using hypertext markup language (HTML), but software designed for the job such as FrontPage (<http://www.vermeer.com>) or HotDog (<http://www.sausage.com>) make the task easier (Fig. 1). Most companies provide free software downloads of either their actual products or trial versions of their software. When assistance is required to create the home page, the software preference of those providing the technical assistance

should be used. Online tutorials are available to aid in the understanding of HTML. Netscape has an excellent online tutorial on creating web sites found at the Netscape home page (<http://home.netscape.com>). Topics include "A Beginner's Guide to HTML," "Composing Good HTML," and "Guide to Writing HTML Documents." Examples are included with each section. This source is but one of many sites that exist to educate novice and advanced users of HTML. Select the software that provides the information necessary to allow its full use based on your level of expertise.

Designing the page. Once the decision has been made to connect to the Internet and present a home page to the world, it is important to present the information effectively (Flynn, 1995). The purpose of the site should be readily discernible on opening the home page. The title should stand out, by increased size, color, or positioning (Fig. 2). Usually a list of options appears to provide the viewer a method of selecting a more specific area of interest. Take care not to use too many pictures, or large pictures, as they slow the transfer of data. This is an important trade-off. The pictures and graphics make the page more interesting but also consume on-line time to download. When using graphics for connections with other options, always provide textual options also. Some users do not have graphical access or they have disabled their graphics to improve performance. Although creating a visually pleasing home page is important, the

effective presentation of the information is the reason for the site, and it should not be sacrificed for the sake of spectacular special effects.

It is important to keep the information current. Old e-mail addresses are a nuisance and out-of-date links to other sites waste the user's time. Plan monthly tests of the links and remove or update as needed. Do not leave out-of-date listings of meetings, events, or deadlines on the page.

Be open to suggestions from those using the page. Provide an e-mail address for correspondence regarding the home page and its use. A scientific home page could provide links to other researchers in the field and other associated web sites. Listings of current projects, meetings, and publications are appropriate. Provide information on contacts should the viewer decide to request a reprint or attend a function.

The HTML tags. HTML was designed to provide basic text formatting capabilities for publishing scientific text on the Internet. The HTML tags used in the web page example (Fig. 1) are distinguished easily by the brackets surrounding each tag (Grobe, 1995). The beginning of the HTML document is signified by `<HTML>` and the end with `</HTML>`. In this example, the document is broken into two sections, the heading `<HEAD>` to `</HEAD>` and the body `<BODY>` to `</BODY>`. Within the heading, a title is provided. This title will appear in the web browser's title line and will be the identifier used if the page location is saved as a bookmark. Titles are also

used by search engines to index your site, so they should be as descriptive and concise as possible. The body section provides the bulk of the site information. In this example, Netscape-specific commands are used for formatting text. The `<B>` command initiates the bold attribute for text and the `</B>` terminates the bold effect. Other font effects such as italics and font size are implemented in a similar manner. Font size is relative and is enlarged by increasing the numeral associated with the font size instruction. In this example, the font is increased +7 for the station name, +3 for the photograph description, and the default size is used for all other text. Non-Netscape-compatible browsers would view all of the text as identical. To support all types of browsers, heading tags should be used in place of the font tags. Heading tags are identified `<H1>` to `<H6>`. `<H1>` is the largest and `<H6>` the smallest font size. The `<IMG>` tag identifies an image location. SRC specifies the name of the image file to be displayed. In this case, the station.jpg file resides in the same directory as the HTML page, and no further description is necessary to locate and display the image. The alt option is included to provide text that is displayed when the viewer is using a text-based browser or is not downloading images. The `<UL>` tag specifies an unordered list. Each list item is specified with `<LI>`. This example is a list of three user options that point the browser to new pages. These pointers are described with an "A" for anchor and "HREF," which provides the hypertext reference for the file location. The file to which the anchor points can be anywhere on the web. The "http:" indicates that the anchor points to another HTML document. The "mailto:" indicates that the anchor will send an e-mail message to the designated address.

Conclusion

The example given in this paper is very basic. Many other elements are available, from simple `<BR>` for carriage return to `<FORM>`, which could create a questionnaire to be submitted by the web-site viewer. Background images may be added to pages. Common Gateway Interface (CGI) files can be used to provide interactions among programs and web servers, such as counters to display how many times

```
<HTML>
<HEAD>
<TITLE> AFRS</TITLE>
</HEAD>
<BODY>
<B><BIG><FONT SIZE=+7>Appalachian Fruit Research Station</FONT></BIG></B><HR>
<FONT SIZE=+3>Aerial View of Station</FONT> <IMG SRC="station.jpg" Alt="Photograph
of Station">
<UL>
<LI><A HREF="http://www.intrepid.com/public/afrs2">Location Scientists</A>
<LI><A HREF="http://www.intrepid.com/public/afrs3">Location Research Projects</A>
<LI><A HREF="http://www.usda.com/public/sites">Link to other USDA Sites</A>
</UL>
<P>
<A HREF="mailto:glightne@asrr.arsusda.gov">Correspond to Web Site Manager</A>
</BODY>
</HTML>
```

Fig. 1. Sample HTML document. Words in brackets are HTML commands.

Fig. 2. A screen view of the HTML example as seen with Netscape.

the page has been accessed. HTML is under constant revision, and new options, such as Java, create an environment that allows the web page to be limited only by the imagination of the editor. Perhaps the best method to learn about home pages is to browse the web and view what others already have created. Some pages to view are the Gypsy Moth Modelling Programs home page (<http://barney.fsl.wvnet.edu/gypsymth>), the Association of Natural Bio-control Compounds (<http://ipm-www.ncsu.edu/bio-control/anbp/HomePage.html>), Clemson Univ. Dept. of Horticulture (<http://agweb.clemson.edu/hort/hortmain.htm>), Texas A&M Univ.

Horticulture Page (<http://aggie-horticulture.tamu.edu>), AgAnswers (<http://www.aes.purdue.edu/AgAnswns/AgAnswers.html>), and the Cornell Cooperative Extension home page (<http://www.cce.cornell.edu>).

See what is attractive, intuitive, and useful and remember that which is awkward or confusing. The "view source" browser option will display the HTML information of the active web page. There are endless possibilities for research programs to interact with Internet users by creating a home page. The technical level required is not extraordinary, the cost is not prohibitive and, with a little research and planning, the potential benefits are great.

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