

BUILDING A WEBSITE FROM THE GROUND UP: A Practical Approach

Presenters: Ronald R. McDowell, Katharine Lee
Avary, and Michael Ed. Hohn (*in absentia*), West
Virginia Geological and Economic Survey,
Morgantown, WV

Lexington, KY - June 10, 2000

Workshop sponsored by PTTC-Appalachian Region,
Kentucky Geological Survey, and KOGA

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ABSTRACT

The reasons for creating a website range from commercial "peer pressure" to the desire to reach a truly global clientele with your company's goods and services. The choice between In-house and Remote webhosting comes down to issues of economics and control of the site. In-house hosting requires a significant initial outlay of capital and ongoing funding for maintenance and improvements. Remote hosting requires a smaller initial investment. Using Remote webhosting, you may trade unlimited administrative access for fewer security and hardware and software maintenance responsibilities.

The FQDN (Fully Qualified Domain Name) for your new website is partially determined by the type of site, the geographic location, the name you desire for the site, and whether or not this name is currently available. The last point is not a trivial one because many names have been purchased and registered by name "brokers."

The seven key concepts in website design are: 1) Focus of the site's content; 2) Consistency of appearance of the site's pages; 3) Efficiency in display of the site's content; 4) ease of Navigation from page to page within the site; 5) Portability of the site's content from web browser to web browser; 6) updates and Maintenance of the site; and 7) solicitation of and response to Feedback about the site.

HTML is a set of plain text markup codes that controls how text and graphics are displayed by web browsers. The most popular browsers are those by Microsoft and Netscape. These competing products do not always agree on how a page will be displayed and the same manufacturer's browsers differ in display characteristics from to version to version. The web designer is advised to create web pages that can be displayed in their entirety by the majority of web browsers in current use. This will not necessarily be the most current version. Interactive software is currently available that performs HTML coding duties. Use of this software allows the web designer to concentrate on content rather than programming. Graphical images and web icons are available either commercially or free-of-charge. In either case, the web designer is advised to pay particular attention to copyrights and restrictions of use. Internet web search facilities locate websites based on keywords and descriptions of contents read from the sites' pages. Writing

descriptions of website contents is like writing a good abstract - the most crucial information should be condensed into the smallest possible space.

The sale of advertising space on your website can defray or offset expenses. Statistics gathered from detailed logs of website access can be a selling point to potential advertisers, and are invaluable in evaluating your site's effectiveness in reaching potential clients or customers. These statistics can also help justify the continuing existence of and outlay of funds for your site. They can assist in website improvement and planning for expansion. "Cookies" can be programmed to retrieve and send information from your site to a user. They should not be used to transfer sensitive information and their overuse can annoy the user. Firewall software prevents unauthorized access to your website and its computer files. If you intend to allow financial transactions and transfers of proprietary or sensitive information to and from your site, you must implement SSL (Secure Socket Layer) functionality at your site. The handling and maintenance of credit card information may best be left to financial institutions because of the legal liability assumed when dealing with this type of data.

DISCLAIMER

The names and brands of computer software and hardware mentioned and recommended in this presentation reflect the personal views and experiences of the presenters. PTTC (Petroleum Technology Transfer Council) and its regional affiliates do not endorse commercial products or companies. Reference to such products or organizations during the course of this presentation does not imply endorsement by PTTC or any of the agencies sponsoring this presentation. Furthermore, any inaccuracies in the presentation itself are the responsibility of the presenters and not attributable to PTTC or to sponsoring agencies.

Websites: Why Have One?

Slide 1



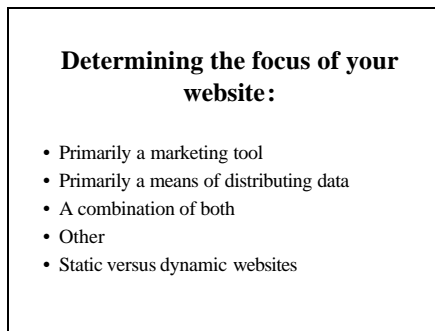
Before creating a website, you need to decide why you want to have a website.

Slide 2



You may have other reasons to build a website. These are just a few common ones.

Slide 3



After you decide why you want to have a website, then you need to decide what you want it to accomplish for you.

Slide 4

**On-going Corporate
Commitment to a Website
Requires:**

- Human resources
- Hardware resources
- Software resources

Once a website is created, you also have made a commitment to keep it up-to-date. This commitment will require appropriate resources.

Slide 5

**Think About Your Potential
Website Customers.**

- Who Are They?
- What hardware and software are they likely to use to surf the web?
- What is their level of expertise in using the web; i.e. downloading plug-ins, saving files, etc?

"Who" will be using your website and "how" are other considerations.

Slide 6

Statistics

Most Used Browsers

Browser	%of Total Hits
Microsoft Internet Explorer	54.70%
Netscape	43.58%
Total for Browsers Above	98.28%

from: <http://www.webpagethatsuck.com/statistics.html>

These statistics were compiled before the September 1999 version of this workshop. I have found other sets of statistics more recently. Some of them indicate that the majority of people use Internet Explorer as their browser.

Slide 7

Microsoft Explorer Browsers	
Browser	% of Total Hits
Explorer 4.x	57.78%
Explorer 5.x	37.01%
Explorer 3.x	4.60%
Explorer 2.x	0.59%
Explorer 1.x	0.00%
Total for Browsers Above	100%
from: http://www.webpagethatsuck.com/statistics.html	

In general, most users will probably have a relatively new version of a browser, but you shouldn't take that for granted.

Slide 8

Netscape Browsers	
Browser	% of Total Hits
Netscape 4.x	91.82%
Netscape 3.x	7.82%
Netscape 2.x	0.25%
Netscape	0.05%
Netscape 5.x	0.02%
Netscape 1.x	0.01%
Total for Browsers Above	100%
from: http://www.webpagethatsuck.com/statistics.html	

There will always be a few die-hards who will continue to use older versions. Believe me, it does make a difference. In the ideal world, a webmaster will view all the website material using different versions of different browsers.

Slide 9

Website No-No's
<ul style="list-style-type: none">• Blinking or flashing graphics• Colors that are invisible to most people; i.e. yellow letters on a white background• Colors that are hard to see when printed or waste lots of ink; i.e. yellow letters on a black background• Outdated links

These are some of my personal "pet peeves". Everyone probably has their own which may be different.

Slide 10

Website No-No's continued

- Exceeding “least common denominator” of user hardware and software; i.e.:
 - latest version of browser;
 - what you can see on your ultra-high resolution monitor probably won't look the same to at least some of your users
- Websites that are difficult to navigate

I think the bottom line is to be considerate of your users.

Slide 11



This is an example of a page that I couldn't see “full width” with Netscape Navigator® version 2. Now that I have upgraded to Netscape Communicator® version 4.7, the problem has gone away.

Slide 12



This is an example of requiring users to have the latest version of a browser to use the site.

Slide 13



This is an example of requiring users to have a special plug-in to use a site. Some users with slow connections and limited hard disk space may not find this very friendly.

Slide 14

Website No-No's Continued

- Outdated events on a calendar
- Unclear navigation on website
- Lack of contact information

In today's world of instant, "on-demand" everything, people expect websites to be up-to-date and easy to use.

Also, it's great to have email addresses listed on a website, but it's also very useful to have old fashioned "snail mail" and telephone contact information. Sometimes people just want to know where a company is physically located, even in today's virtual world.

Slide 15

Resources

- <http://www.useit.com>
- <http://www.webpagethatsuck.com/suckframe.htm>
- <http://www.iarchitect.com/mshame.htm>

There are many resources available on web design. These are a few. These sites have links that will lead you to other sites.

Slide 16

In Summary....

- Use common sense and common courtesy when designing a website.
- Think about your customer: the user.

A well-designed website can result in new business opportunities; a poorly designed site can be a detriment.

IN-HOUSE *vs.* REMOTE WEBSITE HOSTING

Slide 1

IN-HOUSE vs. REMOTE
WEBSITE HOSTING

A brief discussion of the pro's and con's of keeping a website “on the premises” or purchasing/leasing/renting this service from someone else.

Slide 2

- In-house Hosting - You provide:
- connection to the Internet
 - host computer
 - system administrator
 - all software and hardware
- Remote Hosting - You provide:
- connection to the Internet
 - software necessary to create web page
 - \$\$\$

The commitment of resources (financial, technical, and personnel) necessary to set up an In-house website may make it impractical. In the long term, the decision probably comes down to economics.

Slide 3

- IN-HOUSE
- Internet Connection - your current ISP (Internet Service Provider) services may not be adequate - for example:**
- <http://www.bellatlantic.net/business/access> - WV
http://smbiz.bellsouth.com/products/internet/web_access - KY
- Continuous connection - 24 hours/7 days
 - Fast connection - 56 kbaud or faster
 - “Wide” connection
 - Secure connection
 - Economical connection

If you choose to go the In-house route, the first place to start is the nearest ISP - your local telephone company. Know what you need before you approach them. You may find that they can't provide the necessary service.

Slide 4

IN-HOUSE

Hardware - *your current computer may not be adequate*

- UNIX or Windows NT operating system
- “Dedicated” PC w/ Pentium III and lots of memory *or* a UNIX workstation
- Fast modem - 56 kbaud or faster or ISDN
- Several gigabytes of hard disk storage
- Uninterruptible power supply
- Fast, reliable, high-capacity tape backup or “ghost” hard drive

In general, unless your company is involved with “high-end” computing operations, you will not have a machine with specifications and capabilities necessary to run an In-house web site.

Slide 5

IN-HOUSE

Software

- Web-authoring - *your current word processor may be able to create HTML files*
 - Text
 - Graphics
 - Utilities - counters, buttons, etc.
- Firewall
- Commerce
- Web statistics

Likewise, you will have to purchase additional software to perform operations associated with your web site. For In-house websites, the software list gets more involved and more expensive because you take on duties otherwise assumed or provided by a webhosting company.

Slide 6

IN-HOUSE

System Administrator

- Available “all the time”
- Maintains hardware, software, Internet access
- Monitors system for security problems
- Monitors system for access problems
- Keeps statistics on web use

- This will probably be a new, full-time position.

For a commercial website, you should plan on either reassigning or adding new personnel to assume the responsibility for keeping your website “on-the-air” twenty four hours a day and seven days a week.

Slide 7

REMOTE

Internet Connection - *your current ISP (Internet Service Provider) services might be adequate* - for example:
<http://www.bellatlantic.net/business/web/> - WV
<http://biz.bellsouth.net/products/hosting/sw/> - KY

- Intermittent connection
- Reasonably fast connection - 28 to 56 kbaud
- Economical connection

• Additionally - Do they offer web hosting?

What if you decide to purchase/ lease/rent webhosting services? Again, the first place to start is your nearest ISP - your local telephone company. Know what you want before you talk to them.

Slide 8

REMOTE

Hardware - *your current computer may be adequate*

- Reasonably fast modem - 28 to 56 kbaud

Remote webhosting significantly reduces your computer needs.

Slide 9

REMOTE

Software

- Web-authoring - *your current word processor may be able to create HTML files*
 - Text
 - Graphics
 - Utilities - counters, buttons, etc.
- File-transfer/remote access
 - transfer files to and from the web host (FTP)
 - edit files on the web host (Telnet)

Remost webhosting significantly reduces your software needs.

Slide 10

REMOTE

System Administrator

- Web host provides this service

Remote webhosting significantly reduces your personnel needs because hardware maintenance duties are provided by the webhost. However, you will still need to designate a webmaster.

The bottom line is that by choosing Remote webhosting, you give up some control along with a lot of responsibilities. Be sure you trust your webhosting service.

Slide 11

REMOTE

Finding a Web Host

- Decide what your site will do - advertise the company?, transfer data?, sell services or product?
- Approach your current ISP
- Get recommendations for local web hosts
- Try <http://www.hostsearch.com>
- Get a detailed explanation of contracted services *in writing*.

You've been convinced that Remote webhosting is for you. The final step is getting everything in writing.

DOMAIN NAME REGISTRATION

Slide 1

DOMAIN NAME REGISISTRATION

A brief discussion of the steps necessary to pick a name for your website, to get it registered, and to get it “found” on the Internet.

Slide 2

What’s in a Domain Name or better, a Fully Qualified Domain Name (FQDN)?

- Alphabetic address used as part of an URL (uniform resource locator) to access websites on the Internet - everything after “http://” and before the next “/”.
- Type of website determines the domain
.gov - government, .org - organization (non-profit), .mil - military, .com - commercial, .net - network service, .edu - university, .us - everybody else.

The composition of a website name is determined by the type of site you will be operating, by Internet naming “conventions,” and by what you want to call your site.

Slide 3

Is the name you want for your website currently available?

- Decide on the appropriate domain - .com, .us, .net, or .org (no restrictions??).
- Check your proposed name (for no fee) with InterNIC at <http://www.networksolutions.com>
NOTE: because there may be a delay of up to a week in registration, the name you want may have been requested by someone else and not yet “finalized” - keep checking.

After deciding what domain will be appropriate to your type of website, the next step is to determine if the name you want to use is currently available.

Slide 4

Name available:

- Ask your ISP or Web host to register your new domain name - you pay a service fee *in addition* to the \$100 registration fee (for the first two years; \$50/year afterwards).
- Register it yourself by submitting an email form then paying the \$100 registration fee - NOTE: you must request two IP addresses from your ISP and submit them with the email form.

If the name is available, you can have your webhost or ISP register it for you or do this yourself. You will have to pay for this service and there will be an annual fee to remain registered.

Slide 5

Name Not Available:

- Purchase it from the owner (or address "broker")
<http://www.greatdomains.com/feature/feature.asp>
- Try a different name

If your name is not available but you are really intent on using it anyway, you can "try" to purchase it from the person or organization that currently owns it. NOTE: this can be an expensive and frustrating process. Or you can pick a new name.

Slide 6

Domain Name Registered

- Notify your ISP of the new Domain Name *or* notify your Web host that you wish to use this Domain Name. NOTE: there may a "hook-up" charge for this.
- Once your first web page is ready, "publish" your FQDN to the various search services - [Alta Vista](#), Yahoo, Lycos, etc.

Once you have picked a name and registered it, you must notify your webhost or ISP of your intent to use it. They must "hook-up" this name to your computer address or to your account and files - there may an additional fee for this service.

Finally, publish your website's homepage address to any of the prominent web information services.

Slide 7

Costs

- .com, .org, and .net names all require a \$100 upfront registration fee for the first two years of registration and \$50 per year thereafter.
- Service fees from ISP's or Web hosts should range from \$50 to \$100. Charges greater than this are excessive.
- .us names are free *but* this Domain is not (yet) typically used for commercial websites . Contact: <http://www.nic.us/cgi-bin/template.pl>

The costs associated with domain name registration can vary from nothing to several hundred dollars. Beware of excessive charges from ISP's or webhosts for things that you can do yourself.

Effective ~~**Good**~~ **Web Design**

Slide 1

Effective
Good Web Design

1. Focus
2. Consistency
3. Efficiency
4. Navigation
5. Portability
6. Maintenance
7. Feedback

By Michael Ed. Hohn
West Virginia Geological
and Economic Survey

Web design has a number of key elements. Remember: the “beauty” of your site truly is in the “eye of the beholder.”

Slide 2

Focus

- Logical Order
- Easy to find items of interest
- Can easily skip over items of no interest
- Site map or table of contents if site is complex

Keep your site focused on its purpose. Indexing of web pages makes this much easier.

Slide 3

Consistency

- navigation structure
- appearance
- position of banners and pictures
- position of navigation buttons across pages

Consistency in appearance gives your site a more “professional” look and affects how the public perceives you and your business.

Slide 4

Efficiency

Be interesting, but...
avoid large images, etc

Things I hate

Java that doesn't seem to work
Sound on home page
Images that take forever to download
gratuitous graphics and fancy effects
fake tickertape
blinking images or text

We suggest opting for “substance” rather than “style” in your web design. Be conservative in the use of web “gimmicks” to attract user attention. First impressions when viewing a new web page are very important and a negative reaction may mean users will never visit that page (or your website) again.

Slide 5

Navigation

- useful and intuitive links between pages
- allow users to find and read content of site
- make site easy to maintain
- *navigation bars* are the usual solution

Even the best information contained on a website is useless if the user can't locate it or get to it. Keep the number of mouse “clicks” to a minimum.

Slide 6

Portability

- avoid restrictions that limit browsers which can read site
- frames problematic for older browsers
- color within tables also problematic for some browsers
- monitor size, color range, resolution affects appearance

You want the widest possible audience for your website. Consequently, you must design your site for a reasonable, “lowest common denominator.” Your users may not have the latest software and hardware capabilities.

Slide 7

Maintenance

- schedule regular updates and changes
- identify pages that will change and those that do not

Signs of neglect:

Links that don't work (broken links)

Ancient "last updated" dates

Unchanged content

Your site should be “dynamic” in that it shows signs of maintenance. Think of your website as you would the buildings and grounds around your place of business - you want your potential customers to think there’s “somebody home.”

Slide 8

Feedback

- provide means for visitors to provide tips, suggestions
- be accepting of suggestions

“The customer is always right” whether it comes to business or websites. Provide a means of contacting you (*INCLUDING A TELEPHONE NUMBER AND POSTAL ADDRESS*). Be responsive to inquiries and suggestions.

VERSIONS: HTML CODE AND WEB BROWSERS

Slide 1

VERSIONS: HTML CODE
AND WEB BROWSERS

A brief introduction to HTML (HyperText Markup Language) and web browsers currently available.

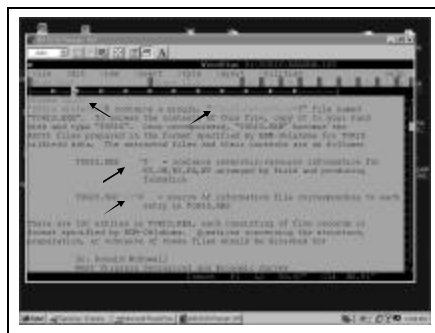
Slide 2

HTML (HyperText Markup Language) - a collection of text codes, called elements, used to indicate the structure and format of a document to be displayed on the web.

HTML is reminiscent of DOS word processor programs such as WordPerfect and Wordstar that used "enclosing" codes within a document to perform special printing or display functions such as italics, underlining, subscripts, etc.

HTML is similar to the codes used by the earliest wordprocessor software to perform special printing and display operations.

Slide 3



A nostalgic look a Wordstar® document showing markup codes.


Slide 4

Markup codes in older word processor programs used transparent or non-printable "control" characters to force monitors and printers to display special text properties correctly.

HTML avoids the use of transparent characters. An HTML document is an ASCII or plain text document. This allows it to be transferred from computer to computer without need for special "handling."

All HTML markup characters are visible and in plain text so the document can be sent back and forth between computer systems without special encoding or decoding.

Slide 5

A screenshot of a text editor window displaying an HTML document. The document contains various HTML tags such as <HTML>, <HEAD>, <TITLE>, <BODY>, <H1>, <H2>, <H3>, <P>,
, , , <PRE>, <CODE>, , , , <U>, , , , <TABLE>, <TR>, <TD>, <TH>, <TBODY>, <THEAD>, <FOOTER>, <HR>,
, <H1/>, <H2/>, <H3/>, <P/>,
, , , <PRE>, <CODE>, , , , <U>, , , , <TABLE>, <TR>, <TD>, <TH>, <TBODY>, <THEAD>, <FOOTER>. Several arrows point to specific tags and attributes within the code.

Here is an example of a typical HTML document. All markup characters are visible.

Slide 6

HTML "Rules":

- Documents have a required "structure"
- HTML element and attributes names are not case sensitive - <BODY> is the same as <body>
- Attribute values *are* case sensitive - <IMG SRC="myfile.html" is not the same as <IMG SRC="MYFILE.html"
- Attribute values other than letters (a-z, A-Z), hyphen (-), period (.) or containing spaces must be "quoted."
- Spaces in HTML documents are ignored unless "quoted."
- Browsers ignore the "unknown."

General rules of HTML.

Slide 7

```
HTML document structure - a basic example

<!DOCTYPE HTML PUBLIC "html 2.0">
<HTML>
<HEAD>
<TITLE>A basic HTML document</TITLE>
</HEAD>
<BODY>
The rest of the document goes here.....
</BODY>
</HTML>
```

An example of the basic structure of an HTML document.

Slide 8

```
Versions of HTML - based on recommended
specifications from various Internet communica-
tions working groups - http://www.w3.org/MarkUp

• Versions are "backwards compatible"
• Version 4.01 is the newest recommendation
• Version 3.2 is recognized by browsers
• Version 2.0 is recognized by browsers, but dated
• BUT, each browser may recognize their own set
set of special features or extensions to the recom-
mended specifications - for example:
http://www.fictionwriters.com/fwc/html/join\_fwc.html
```

HTML versions and standards are "suggestions" from a working committee on Internet communication standards. Browsers may or may not be able to correctly display all the features specified in an HTML document depending on the version of the HTML code used to create the document, the version of browser used to view it, and the manufacturer of the browser.

Slide 9

```
Versions of web browsers

• Netscape Navigator®/Communicator® versions 4.08,
4.7x are currently available.
http://cgi.netscape.com/cgi-bin/upgrade.cgi/

• Internet Explorer® versions 4.0, 5.0, 5.01 are
currently available.
http://www.microsoft.com/windows/ie/download/windows.htm
```

The two most popular Internet browsers are those from Microsoft and Netscape.

Slide 10

“Other” browsers

- Customized versions of Netscape or Microsoft browsers “tailored” by computer vendors, other software manufactures, or ISP’s for specific applications - eg. UNIX systems, dial-up web access
- Opera version 3.62 - available at <http://www.opera.com/download.html>
- Neoplanet version 5.1 - available at <http://www.neoplanet.com/download/install/index.html>

Other “alternative” web browsers are available including customized versions of Internet Explorer and Netscape as modified by major ISP’s like AOL and AT&T.

Slide 11

When writing HTML code or creating web page:

- Remember that there are two competing browsers in various versions, some no longer fully functional.
- HTML specifications are still only recommendations regardless of version number.
- Code and pages need to be viewable by everybody, even if this means making separate versions of your web page - let the viewer select the appropriate format.
- The latest HTML “gimmick” may be entertaining on personal web pages but “bad” for business pages.
- Review your finished pages on several browsers before you release them to the public.

The bottom line is that when you create a web page, you must design it to be viewed by the widest possible audience. You should avoid gimmicks and features that take a long time to load via modem. You should write HTML code that can be correctly viewed by both Internet Explorer and Netscape Communicator, even if this means creating two distinct versions of the same page.

**WEB DESIGN: “Brute Force” is
no longer necessary**

Slide 1

WEB DESIGN: "Brute Force" is no longer necessary

By Michael Ed. Hohn
West Virginia Geological and Economic Survey

Creating HTML code for your web page doesn't have to be a "trial and error" process any longer.

Slide 2

The "Brute Force" Method

1. Create the HTML code from scratch in a text editor - Drawback: It's actually getting harder to find a text editor that "knows" how to produce plain text.
2. Create a document using word processing software, then "SAVE AS" or "EXPORT" it as an HTML file - Drawback: You'll still have to edit that file with a text editor to customize it and to correct "boo-boos."
3. Or

The "Brute Force" method of creating HTML code relies on text editors and/or word processors, but there may be a better way of doing all this.

Slide 3

What Web Design Software Does

1. Interactive design of page
2. Little or no work with HTML
3. Displays pages as seen by user
4. Easy insertion of graphics and links
5. Creation of thumbnails
6. Organization aids

Web design software has a number of advantages over the "Brute Force" method. It can automatically perform manipulations of your HTML code that can only be done by "trial and error" otherwise. The software is linked to your web browser and can give you an immediate look at how your new page will appear.

Slide 4

Advantages of Tools

1. Can concentrate on content and appearance
2. Consistency in position, appearance, and content of navigation bars, background, style
3. Easy to set up and modify organization of pages
4. Accurate specification of links to pages, other sites, and graphics
5. Checks for missing pages, graphics

Automating the HTML coding process allows you to concentrate on other features that can add significantly to your website's content and level of sophistication.

Slide 5

Procedure

1. Define pages, relationships
2. Add content
3. Define style
4. Place on web server
5. Update periodically

In general, the design and implementation of each web page proceed in the same order.

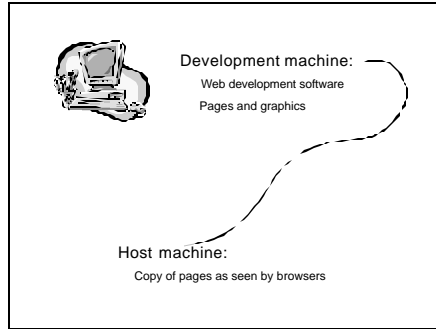
Slide 6

Maintenance and Updating

1. Modify pages as needed on development machine
2. Replace modified pages on host machine

Modification and customization of existing pages can be performed by the same software.

Slide 7



Most typically, you will design your web pages on one machine and send them to a different machine - the webserver. For this reason, if you choose Remote webhosting, you must have full and unrestricted access to all of your web files.

Slide 8

FrontPage™ Views

1. Page: for design and editing
2. Folders: directory
3. Navigation: organizing pages and defining shared features
4. Reports: site summary and diagnosis (slow pages, broken links)
5. Hyperlinks: all files and pages

Examples of the use of Microsoft's FrontPage® web design software.

Slide 9



"Page View" in Microsoft FrontPage® showing the positions of text, graphics, and tables ready for further editing.

Slide 10



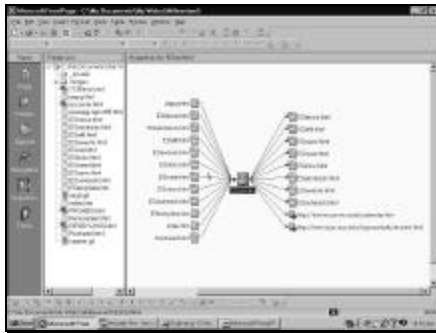
"Folder View" in Microsoft FrontPage® showing all files present in the directory where the web page is to be stored.

Slide 11



"Navigation View" in Microsoft FrontPage® displaying the links between pages as a "tree."

Slide 12



"Hyperlink View" in Microsoft FrontPage® displays all links from the current page to other pages on your website, all links from your site to other sites, and all pages on your site that link to the current page.

Slide 13

Web Design Software

Microsoft Frontpage® 2000** (getting started) -
<http://www.microsoft.com/frontpage/>

Macromedia Dreamweaver® 3** (advanced) -
<http://macromedia.com/software/dreamweaver/>

** - Top rated web design software, PC Magazine,
v. 19, no. 10

Adobe GoLive® 5.0 -
<http://www.adobe.com/products/golive/main.html>

Currently, the best web design software, as evaluated by PC Magazine is Microsoft Frontpage® 2000 (for the beginner) and Macromedia Dreamweaver® 3 (for advanced web designers).

Slide 14

Finishing Touches

- Links to other pages
- Links to other sites
- Graphics
- Email links, *telephone number, business address*

Links and graphics add the finishing touches to your new web pages.

ICONS, “DINGBATS” AND OTHER GRAPHICAL ITEMS

Slide 1

ICONS, "DINGBATS" AND
OTHER GRAPHICAL ITEMS
FOR THE WEBSITE

Obtaining web graphics to improve
the look of your website.

Slide 2

Any image or graphical element you find for use on your website may be copyrighted by someone, regardless of where you obtain it. This is especially true of images you "capture" from the web or other sources. But, it may also apply to images taken from clipart collections or "free" image libraries.

- "Research" the image. Is it being used elsewhere? Does it have a copyright citation elsewhere?
- For commercial sites, be prepared to remove the image or there may be legal repercussions.

Both free and commercial images
and graphical art are available but
originators are becoming
increasingly concerned about
copyright and intellectual properties
infringement.

Slide 3

Sources of web graphics and utilities - perform a web search for "icon libraries" or "web graphics libraries" on AltaVista, Yahoo, etc. Find .GIF and .JPG files to meet your needs and save or capture them for your use. *NOTE: Be sure to check for copyright or "restriction of use" warnings in the "fine print."*

<http://www.mailbag.com/images/>

<http://www.mediabuilder.com#graphicsicon.html>

<http://www.animfactory.com/>

Large libraries of images are
available for use - just be sure to
read the fine print on restrictions to
that use.

Slide 4

Be sure and note the “dimensions” - width and height in pixels - of the image you wish to use. When it’s displayed on your web page, you should use these dimensions or “multiples” (2x, 1/2x, etc.) to insure that the image is readable (not too small or large) and undistorted (maintains the correct aspect ratio).

.JPG images may be preferable because they are generally more “compact.” *REMEMBER: the larger the image, the longer it takes to transfer, interpret, and display (LOAD).*

When including images, you want to use the best possible image and one that displays in the shortest amount of time. This generally means using a JPG image.

Slide 5

Capturing images from the screen or other web pages:

- Place the cursor on or over the image you want and click with the right mouse button. “Save as” the suggested file type. *BEWARE OF COPYRIGHT VIOLATIONS!*
- Use Hijaak or other image-manipulation software to “capture” the image you want. “Save as” an easily modifiable format such as .WMF or .BMP, edit the image to remove the unwanted parts, then save again in .JPG format.

Capturing an image for use on your web page can be as simple as “right-clicking” with the mouse and saving the image to a file. You can also use specialized image-editing software to perform the same operation.

Slide 6

Using Hijaak to capture and modify screen images for use in web pages:

- Hijaak Professional v. 5 (IMSI) - its webpage is <http://www.imsisoft.com/products/hijaakpro>

Capture and created images can be modified with the Hijaak software program from IMSI.

SEARCH ENGINES, META DATA, TITLES, AND CONTENT: Getting found on the Web

Slide 1

**SEARCH ENGINES, META
DATA, TITLES, AND CONTENT:
Getting found on the Web**

By Michael Ed. Hohn
West Virginia Geological and Economic Survey

A discussion of methods to insure that your web site will be found by all Internet search engines.

Slide 2

The "Ultimate" Goal

You don't want to "trick" search engines into finding your website. Rather, you want them to recognize the subject of your web pages and to successfully return the addresses (URL's) of your site and individual pages when users search for the appropriate topics.

Your goal is to make search engines retrieve the address of your site whenever a user searches for information that is related to your business.

Slide 3

**Search Engines Look for and
Save:**

- Page title
- URL
- Summary description
- Keyword list

Search engines don't all work the same way but, in general, they look for the same basic information.

Slide 4

Where Do Search Engine Get This Info?

1. A "spider", "crawler", or "web-bot" reads through pages at a site and extracts needed data.
2. Information is saved in a database.
3. When you do a web search, the engine uses info from this database.

Search engines use text processing programs to read the content of a web page, retrieve key information, and store it in a database.

Slide 5

Title: Overkill or Necessity?

- Formerly, search engines would ignore untitled pages. Now, they may ignore the title itself.
- Search engines show titles in list of search results.
- Titles are used in bookmarks.
- Titles are displayed by some browsers.

In the past, search engines would work primarily from web page titles. This may no longer be the case, because unscrupulous web designers began to cram titles with keywords unrelated to their site's contents. Now, the title is no longer the main bit of information retrieved, however it is still used by browsers for bookmarks and onscreen display.

Slide 6

Summary Description and Keywords

- The summary description may be taken from the body, or from the <meta> field. Summary descriptions are usually taken from the first 100 to 200 characters of the page.
- Keywords may be taken from either the body, the <meta> field, or a combination of both.

The HTML <meta> fields are the preferred method for storing summary descriptions of web page contents and keywords.

Slide 7

<Meta> Tags and Fields

- <meta name> - describes type of information e.g. "description" or "keywords."
- <meta content> - supplies information.

Remember: 200 words or less for description.
Remember: 1000 characters for keywords.

The <meta name> tag describes the type of information to follow. The <meta content> tag stores the information.

Slide 8

Example Summary and Keywords

```
<title>Petroleum Technology Transfer Council Appalachian  
Region Home Page</title>
```

```
<meta name="keywords" content="petroleum, oil, gas,  
Appalachian basin, petroleum geology, petroleum engineering,  
PTTC workshops, Department of Energy, Kentucky, West  
Virginia, New York, Pennsylvania, Tennessee, Virginia, Ohio">
```

```
<meta name="description" content="The Appalachian Basin  
region of the Petroleum Technology Transfer Council identifies  
producers' priority technical problems and communicates them  
to the research and development community. Technology  
workshops are held on topics covering: (1) exploration, (2)  
drilling and completion, (3) development and reservoir, (4)  
operations and production, and (5) environmental compliance.">
```

An example of the information presented to search engines by the PTTC - Appalachian Region website.

Slide 9

Results of an *EXCITE* search for the word "pttc":

```
80% Petroleum Technology Transfer Council Appalachian  
Region Home Page - The Appalachian Basin region of the  
Petroleum Technology Transfer Council identifies producers'  
priority technical problems and communicates them to the  
research and development community. Technology workshops  
are held on topics covering: (1) exploration, (2) drilling and  
completion, (3) development and reservoir, (4) operations and  
production, and (5) environmental compliance. We offer...  
http://karl.nrcce.wvu.edu/index.html
```

The results returned for a search using the EXCITE search engine to find references to the word "PTTC".

Slide 10

Improving Contents with Eye on Search

1. Is the subject clear?
2. Is major subject of page woven throughout page?
3. Is the relationship between main subject and other pages on the site clear?
4. Do descriptions accompany lists of links?
5. Is all written text clear, concise, and *spell-checked*?

Tips to help write a summary that will pack the most pertinent information into the smallest possible space. Think of the process as similar to writing a good abstract.

Slide 11

Finally: How to Avoid Annoying Users

- Don't include misleading or false information in the title or `<meta>` fields.
- Do include a "HOME" link on each page.

Even though the search engines won't mind if you "stretch the truth" in describing of the contents of your web pages, users will.

Make sure that users can get to your main or home page, no matter what part of your website they access first.

Slide 12

Finally (For Real This Time)

"Publish" your home page to the various search services - [Alta Vista](#), Yahoo, Lycos, etc.

Your final task is to publish the address of your new web pages to the major search engine sites.

Slide 13

Additional Information

<http://www.excite.com/Info/listing8.html>

<http://accusubmit.com/secrets/engines.html>

Here are a couple of sources of additional information on improving your site's <meta> data and your chances in being one of the top ten sites found by a search engine.

**WEBSITE ADVERTISING,
STATISTICS, “COOKIES”,
SECURITY, AND
ELECTRONIC COMMERCE**

Slide 1

WEBSITE ADVERTISING,
STATISTICS, "COOKIES",
SECURITY, AND ELECTRONIC
COMMERCE

Security and commerce issues for
your website.

Slide 2

Web Advertising - make your site pay for itself

Defray website expenses by displaying advertisements from commercial "sponsors", consultants, and service companies.

To sell advertising "space", you will have to convince your potential client that your website will be viewed by the same "audience" that the client is trying to reach, that your website is continuously accessible, *and that you can demonstrate potential customers are actually viewing the advertisement* (see Web Statistics). You set the rates.

Selling advertising on your website is a good way of defraying expenses. Just remember that selling advertising can become a business all its own and this may detract from the actual purpose of your site.

Slide 3

Advertising "items" for your website:

- Company logo's or trademarked images
- Customized images - let others do the work
- "Standard" advertising copy - let others do the work
- Business cards, telephone numbers and email addresses, links to other commercial websites

Website advertising rates are generally less than print media *or* "whatever the market will bear."

Displayed advertising material is much like what you would expect for printed copy - except that the associated costs are generally less because you receive the material "ready to go" - except for scanning or electronic conversion of text files.

Slide 4

Web Statistics - why you need statistics to track web traffic:

- Determine the “best” and “worst” parts of your site - your site should be dynamic and stats are an impetus for changes and modification
- Demonstrate your site’s effectiveness in reaching potential customers - stats are your marketing departments primary resource
- Assess your site’s accessibility - fast enough?, “wide” enough?, or are you just wasting money?

Web statistics are much more than marketing tools. They can help you determine the parts of your site that need fixing, pinpoint bottlenecks in site access, help you plan for expansion, or tell you if your site is just a waste of money.

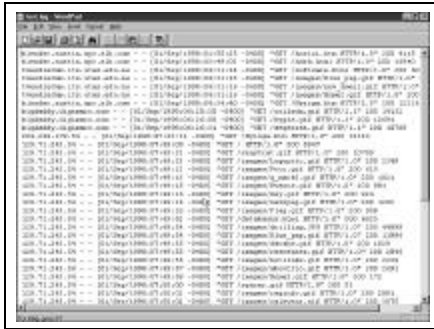
Slide 5

Some web hosts provide statistics on web traffic as part of their standard services, others charge extra.

However, you can create these statistics yourself because web server software compiles an ongoing log of all access to your site. Analyze this log “manually” or use commercial software. We recommend - Webtrends Log Analyzer® 5.0 - <http://www.webtrends.com/products/cartridge/logprolog.htm>

Web server software captures all web access in a log file. Web-hosting services may offer to analyze this information for you, or you can do it yourself. Remember: web statistics are much more than just the number of "hits" to your site's home page.

Slide 6



Web access logs are generally in plain text or ASCII so that you can edit them. However, unless you are an expert, they may not make any sense.

Slide 7



This is the opening window for WebTrends Log Analyzer®. The PTTC - Appalachian Region website has been selected as an example.

Slide 8



Log Analyzer® allows the user to precisely specify the time period for which statistics are desired.

Slide 9



Log Analyzer® can output the final statistical report in a variety of formats including HTML.

Slide 10



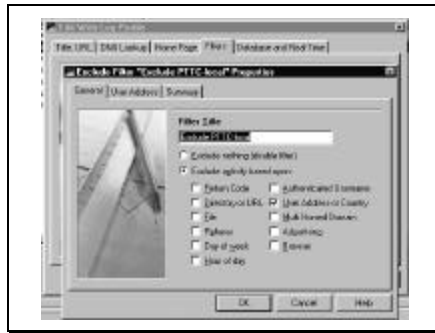
Log Analyzer® uses internal FTP (File Transfer Protocol) software to connect to the computer storing your website's access records. The log is transferred to machine where Log Analyzer® is installed and stored temporarily while it is being analyzed.

Slide 11



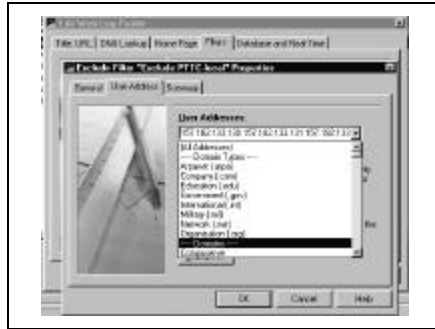
To prevent the inflation of statistics due the counting of administrative and maintenance access to your website, you can build a series of “filters” to explicitly exclude or include IP addresses and domain names from analysis.

Slide 12



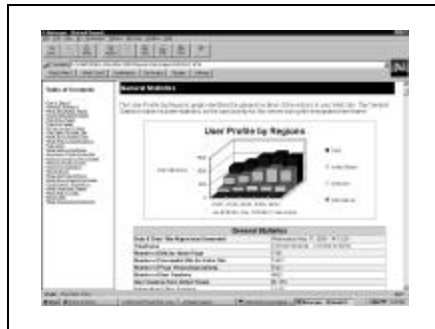
Filters can be tailored to fit almost any conceivable situation.

Slide 13



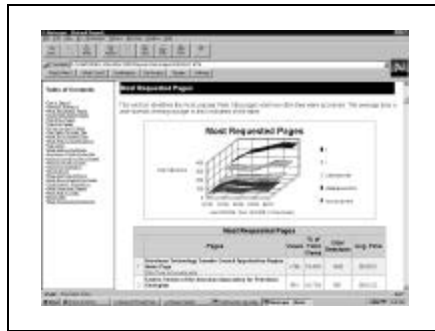
Filters can even be set to exclude or include access on a more general level, i. e., by domain, organization, or geographic location.

Slide 14



The first page of the HTML version of PTTC - Appalachian Region website statistical report for the year 2000 to date. The HTML version is set up to allow easy access to individual statistical analyses. It can be displayed with a web browser or printed.

Slide 15



Further information from the PTTC - Appalachian Region report. This is breakdown of the "Most Requested Pages" at the site.

Slide 16

“Cookies” - can't live without them?

Legitimate uses - storage of information from one web session to reduce redundant information requested at the next session

- URL accessed
- User name
- Billing or shipping address
- Last access date
- Number of accesses to this site
- “Customized” browser or web page settings

“Cookies” may use or abused by webauthors. There are legitimate uses for cookies such as saving and maintaining data to prevent users from having to repeat the entry of the same information every time they visit your website.

Slide 17



Here is an example of a Netscape cookies file showing the “generally” benign nature of the information contained.

Slide 18

Illegitimate uses:

- Passwords
- Email addresses (unless you say it's ok)
- Credit card numbers
- Social Security numbers
- Information on your computer system and software (unless you say it's ok)

Other “questionable” Cookies uses:

- More than 20 Cookies per web session
- Cookies persisting for extremely long time

Cookies should not be used to store or exchange critical, proprietary, or personal information unless you are prepared to accept liability for possible misuse of the information . . . and you have the permission of the web user. Cookies can readily become a nuisance if you send too many or insist that they remain on the web user's system for a long period of time.

Slide 19

Final word on Cookies:

To send and receive Cookies from/at your website, you will need to write a program script (PERL or Java) to send, store, retrieve, and process data.

Once information has been successfully received by means of Cookies, be "merciful" with the next action you and your website take with on that information - keep the data secure and try to limit "junk" advertising and SPAM sent back to the web user.

Sending, receiving, and interpreting cookies require programming ability. If you choose to use cookies, your users are at your mercy. You are responsible for the securely storing any data you collect.

Slide 20

SECURITY - Firewalls

Whether or not you host your own website, you are legally responsible for stored information and transactions. You must prevent unauthorized access. Remote webhosts should provide secure access to files and data kept at their site. **But**, you must provide security on computers at your business location connected to the Internet. To do this, you will need software (and hardware) that constantly monitors who's accessing your site and what they are doing - this is the essence of a "firewall."

Firewalls prevent outsiders from invading your website and data files. If you choose Remote webhosting, your service provider should protect your website with a firewall. Discuss this issue before contracting their service.

In addition, all computers at your place of business connected to the Internet need protection from unwanted outside access, especially if you choose In-house webhosting. A firewall can provide this protection.

Slide 21

Firewalls - you really can do it yourself (if you have the right computer system)

For PC systems running any of the Windows® operating systems, a possible "first step" (not actually a firewall) is BlackICE® from NetworkICE - <http://www.networkice.com/html/products.html>

This customizable software is very user friendly, has several levels of protection, and continuously monitors Internet traffic for attempts to invade your system.

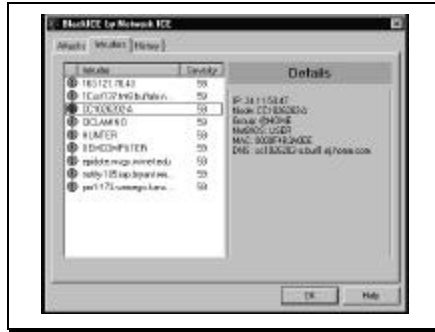
For computers using any of the various Microsoft Windows® operating systems, a possible "first step" is the BlackICE® security package.

Slide 22



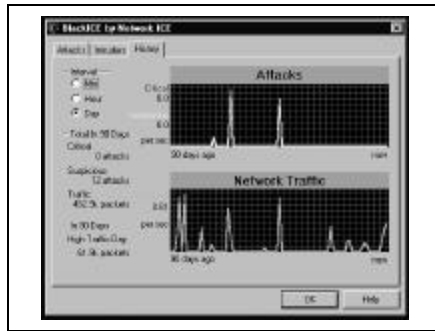
BlackICE's log and description of attempts to "invade" a home computer system connected to AT&T's Worldnet® Internet service.

Slide 23



BlackICE's log of data gathered from the computers of "hackers" attempting to invade a home computer system.

Slide 24



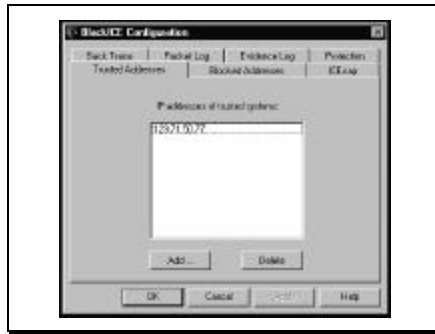
BlackICE's statistical record of frequency and severity of attempts to invade a home computer system.

Slide 25



BlackICE's configuration menu. The user sets the level of protection based on their level of concern for security.

Slide 26



BlackICE's configuration menu. Trusted sites can be given more liberal access by explicitly granting those privileges. By the same token, access by problematic sites can be explicitly denied.

Slide 27

Firewalls - you really can do it yourself (if you have the right computer system) (continued)

See an article by Frank Derfler in recent *PC Magazine* ("Secure Your Network", *PC Magazine*, v. 19, no. 12) for a review of firewall solutions (may be software *and* hardware) for large and small business internet systems. Prices range from \$140 to \$8,000 for firewall solutions for 1 to 4,500 internet connections.

An article by Frank Derfler ("Secure Your Network", *PC Magazine*, 2000, v. 19, no. 12) reviews firewall solutions for small and large businesses.

Slide 28

Firewalls - maybe you can't do it yourself (if you have the wrong computer system)

In general, for UNIX operating systems, firewall software is either costly (if you purchase it from a major manufacturer like Silicon Graphics) - <http://www.sgi.com/solutions/internet/products/gauntlet/>

or difficult to set up and install (if you find a public domain package that you like) - <http://packetstorm.securify.com/UNIX/firewall/>

Firewall software for UNIX systems is another story. Generally, commercial UNIX firewall software is expensive (SGI's Gauntlet® lists for \$19,000) because it is tailored to the manufacturer's hardware and "flavor" of the UNIX operating system. On the other hand, public domain or "shareware" UNIX firewall software can be difficult to install and configure.

Slide 29

Web Commerce - SECURITY, SECURITY, SECURITY!

If your site provides Internet sales or other proprietary data transactions, you are responsible for the security of the transaction and for any information stored at your site pertaining to those transactions.

- Credit card numbers
- User account or personal information
- Proprietary databases

If your website deals in Internet sales or the exchange of proprietary information, you assume the legal responsibility for keeping this information secure.

Slide 30

Secure Transactions

SSL (Secure Socket Layer) - if your website moves "sensitive" information back and forth to the user, insure a secure transaction by using software that implements a SSL between your website and the user. The key to SSL success is "encryption" or encoding. Two levels are available, 64- and 128-bit. These numbers refer to the length of the coded computer word holding your sensitive data - longer is better. *NOTE: Your site and the user's web browser must implement SSL at the same time and in the same "fashion" or the transaction should fail.*

Web transactions involving credit card numbers and other sensitive information must be performed using SSL implementation by both your website and by the user visiting your site. If this secure layer cannot be established, no actual transaction should take place because it can be "observed" by third parties.

Slide 31

Unless you want the responsibility (liability?) for processing credit card transactions, it may be safer and more economical to arrange to have all credit transactions forwarded to and processed by a third party such as a bank. *NOTE: You still must insure secure transfer of information.*

If your site requires cookies to be exchanged to successfully complete a transaction, *tell the user*. Don't miss sales because transactions fail with no explanation.

?? <http://ecommerce.about.com/smallbusiness/ecommerce/>

Banks and other commercial firms are probably a lot better at handling secure credit card transactions that you are. Why not let them provide this service and take on the associated legal responsibilities?