

**Newsletter Publishers Foundation Award-Winning Article
Instructional Reporting Category**

“Your Own Website On \$1.72 A Day”

It may be difficult nowadays for anyone who has set up a free web page or recently developed an inexpensive website with a public-domain shopping cart to understand why this two-part series was such a big deal in 1997. Here’s the story on the story:

In 1996, I was determined to be a bleeding-edge online publisher.

I did some reading on what it cost to hire a web developer. Here is what the “experts” were saying about a web site with content and e-commerce capabilities back then:

Forrester Research of Cambridge, Mass., said these are typical first-year commercial web site costs, including design and hosting:

! a promotional site just to promote your organization	\$ 304,000
! a "content" site with information of value	\$1,312,000
! a "transaction" site, at which goods are sold	\$3,368,000

IDC/Link, a subsidiary of International Data Corp., said a survey of big companies and Internet-exclusive companies revealed first-year costs of \$840,000-\$1,250,000, not including the training, marketing, or public relations to open a site.

A million-three to have your own “content” site. Three-point-three million to sell anything.

I really wanted my small news publishing company to have a content website. And I wanted to take subscription payments online.

So I decided to study how to build a website and do it myself.

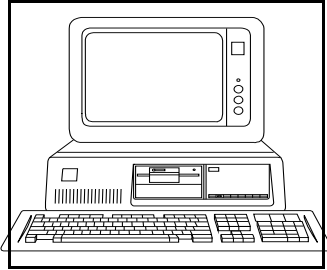
I went online and read, taught myself, and built a basic Content Management System for subscribers – a password-protected, searchable database of back issues – plus a subscription transaction system in late 1996.

It cost a total of \$627.80 in development tools and a year’s hosting – \$1.72 a day.

I was so impressed with what I’d accomplished that I wrote the two-part series below for our readers on how to do it yourself (and save \$304,000 to \$3.3 million).

Then, I was so impressed with my own instructional two-part series that I submitted it to the awards competition of the Newsletter Publishers Foundation.

The judges were impressed, to. We won third place.



An
Inside Healthcare Computing

Special Report:

**Your Own Full-Scale Web Site on \$1.72 a Day, Part 1:
How To Build It, Find a Host, and Promote It.
...And How Not To**

By Bill Donovan, Publisher

Yes, you can build your own web site--a fairly substantial one--and buy a year's worth of hosting services for \$630, or \$1.72 a day. That includes all costs if you write the pages in house and shop smartly for an Internet Service Provider (ISP). You'll need to do these tasks:

- (1) create the content in HTML (and CGI, Java, ActiveX, etc, as needed);
- (2) find and contract with an Internet Service Provider (ISP); and
- (3) promote the site--tell the right people on the Internet that it exists.

In fact, you could spend less--as little as \$304.41--to create a site up to 2 megabytes in size and buy a year's worth of hosting services from the lowest-priced ISP we found in research for this article. (Two megabytes theoretically holds up to 500 or so web pages written in HTML, each equal to a single-space paper page, if you minimize graphic art). That's a far cry from the prices served up by the heavyweights of the web-site construction business, who will tell you it's too difficult to build your own, and that "real-world" prices run from \$304,000 to \$3.4 million.

The low end: Ventana Press* (asterisks denote a URL in the resource list at the end of this article) has a do-it-yourself kit with an older version of an HTML authoring package, Hotmetal Pro, and a 480-page how-to book for \$84.96. A year's site rental for 2 megabytes is another \$219.45. **Our recommendation: don't try to go this cheap.** The newest version of Hotmetal Pro*, Release 3.0, and Microsoft's Frontpage,* are a lot easier to learn and use than the old version of Hotmetal that Ventana sells, and you'll probably need services you won't get with this barebones offer.

The high end: an article published by something called "Uniforum's IT Solutions," (sent to us by a salesman trying to sell us his company's high-priced services) quotes Forrester Research of Cambridge, Mass., as saying these are typical first-year commercial web site costs, including design and hosting:

! a promotional site just to promote your organization	\$ 304,000
! a "content" site with information of value	\$1,312,000
! a "transaction" site, at which goods are sold	\$3,368,000

In the same article, IDC/Link, a subsidiary of International Data Corp., is quoted as saying a survey of big companies and Internet-exclusive companies revealed first-year costs of \$840,000-\$1,250,000, not including the training, marketing, or public relations to open a site.

Now, let's get real. Sure, it's possible to fritter away \$3 million on a web site. But here are the actual amounts Inside Healthcare Computing has spent and has contracted to spend for all measurable

costs in the first year of our soon-to-be running (we think) site:

\$2,230, or \$6.11 a day.

If yours is a big organization, you may be looking at these options for a Web site:

1. Host it in house: buy Internet host server software, job out the site design to \$50-to-\$150-per-hour specialists, hire the programming staff, be your own host, and create your own web site and intranet. An ISP, Digex Business Internet,* says you would run into these costs for a Unix server and Internet connection: \$14,675 setup plus \$2,900/month for a site with 56kbs of bandwidth, or up to \$48,850 setup plus \$9,500/month for 10mbs of bandwidth.

2. Contract with an HIS vendor or healthcare intranet vendor and create a web site or a combination web site/intranet linking your hospital(s) with community caregivers. This approach virtually guarantees that you'll spend five figures, maybe six with the intranet, on developing the content alone. Then, either rent or buy server space from the vendor, or rent or buy a server at one of the many Internet farms popping up all over the U.S. (see #3).

3. Rent a dedicated server at an Internet farm: Digex offers a "Tier 1" (e.g. fastest, most expensive) Internet connection via multiple T3 lines, and your own server with e-mail at its farm using industrial-strength hardware (Sun Sparc 2) and software (Apache Web Server), on its 10mbs LAN connected to the T3 lines. Price: \$1,995 setup, \$1,050/month, for the system alone.

But you could start with a tiny capital investment and ease into the web site thing. Ours is due to launch soon with 23 web pages--24 if we convert this article in time--including:

- ! a password-protected, subscribers-only section with back issues and other references;
- ! a page with 96 links to healthcare IS-related and reference sites for caregivers; and
- ! an on-line order form including encryption for secure credit-card transactions.

It's nothing fancy. It lacks the graphic art files and split-screen frames that many web sites make you wait forever to download. It's a bit on the wordy side. And our brief, part-time development cycle followed several months of stumbling and fumbling (most of which you can probably avoid just by reading this article). But in the parlance of the web service analysts quoting those astronomical prices, our site is all three--a promotional site, a content site (admittedly, a minimally automated one), and a secure transactional site. Yet it took only about 120 hours of in-house R&D (if an English literature major's efforts can indeed be called "R&D"). Add some hours to make periodic changes, and that's the whole job. The budget:

Authoring software: Hotmetal Pro 3.0 (more info below)	\$ 100
Internet service provider's setup fee	\$ 150
First year's ISP service at \$89.95/month (details below)	\$1,080
CGI script and other programming beyond our ability (details below)	\$ 500
SSL secure server key, annual fee (see below)	\$ 300
Domain name registration (covers first two years)	\$ 100
TOTAL	\$2,230

Here's what this pays for:

At our ISP, Pick Internet Services,* the \$150 setup and \$89.95/month include:

- ! 60 mb of data storage (we currently need only about 9 mb, but web host services usually come in packages, and due to other needs, we had to take a bigger package than the one closest to our storage needs);
- ! 1,000 mb of data transfer from the site per month (also well beyond our projected needs, but comes with the package);
- ! 10 e-mail boxes (5-6 more than we need, comes with the package);
- ! \$40 monthly use of a database software supplied by the ISP to support usernames and passwords for a subscribers-only content area (this is the feature for which we took a higher-priced package than we'd otherwise need);

! shared space on Silicon Graphics web servers, each with 128 MB of RAM and fast SCSI hard drives, with daily tape backup, Cisco telecom router and switches on a 100 mb in-house backbone, two T3 fiber optic digital circuit connections to the Internet, ISP support for more than one database manager, CGI, SSI, Java, Visual Basic, and ActiveX, should we want to use them, and not only UPS but also a power generator in case the electricity fails.

The \$500 CGI scripting fee pays for two scripts:

! one which acts in the background to securely capture data from an order form we wrote with Hotmetal Pro 3.0; and

! the other to run a popup password box that searches the password database to admit subscribers to the subscribers-only area. This password area is similar to the kind of authorized-users-only area you might need if you had a special area for community physicians.

The \$300 fee goes to a company, Verisign,* for a key to allow transmission of secure information between a remote user's browser and the host's server using Secure Socket Layer (SSL) encryption. In our case, this is for credit-card transactions; a hospital or health system might need similar security to give community physicians access to sensitive patient medical data.

Probable additional costs: \$60 to \$300 for promotion; more in-house hours for updates.

If you need even an extensive community awareness/promotional site, but not SSL-secure transactions or a password database--in other words, a site like many current hospital web sites--you could do it on these costs:

Authoring software--Microsoft Frontpage (more info below)	\$ 150
Web host's fee for setting up:	\$ 80
First year's service at \$24.95/month, rounded:	\$ 300
Domain name registration (covers first two years)	\$ 100
TOTAL	\$ 630

This price includes: 20 MB of disk space, 400 mb of data transfer a month (\$0.15 per mb for more); and five e-mail accounts, on the same kinds of servers as above, if you were to use the same ISP we chose. These lower figures also assume that you write all pages in house, your site either doesn't need any CGI scripting (or you can use the prefab scripts that come with Frontpage), you don't need dedicated 24-hour Web access, and you offer only less costly PPP access to visitors. But much faster ISDN isn't that expensive (see "extras" below).

Also, both sets of costs above include web site hosting, but not your own dial-up access. You would need PPP access at an additional cost, typically \$19.95/month or less per account. Many business web site ISPs offer dial-up access bundled with their hosting services, saving those PPP access fees. But after visiting the web sites of over 90 ISPs while looking for our host and researching this article, we have these observations:

(1) Most ISPs seem to emphasize either dial-up PPP connections for the public, or business hosting services. Few appear to do both well. If a host declines to offer you dial-up PPP, it's trying to tell you that it specializes in being a host to commercial sites.

(2) Prices, experience, and quality of ISP services vary so widely that you may be better off buying dial-up Internet access from a local company that specializes in PPP access, and shopping nationally for commercial web hosting. This lets you choose the ISP with the best deal, yet allows you to visit your site without paying long-distance phone tolls.

Our web host, Pick Internet Services, is 2,900 miles away in Florida. For dial-up access, we're planning to leave Compuserve (which is expensive for Web access), and get PPP access from Pacific Bell (\$14.95 for 20 hours/month plus \$1.90 for additional hours to a maximum \$19.95/month). This is the best combination of ISP host services and hardware we saw for the price, plus local access from a reliable provider at a very low price.

Extras at Extra Cost: Bandwidth and Duration of Connections

1. Adding a minimal intranet: "Intranet," like "outsourcing," can mean any of several things. At its simplest, an "intranet" is a directory on a network server, accessible only "internally." But the network could be a small departmental LAN, a corporate-wide LAN, or something beyond, such as a server directory accessible only through a separate phone number from your "public" web site, or it could be a directory of special services visible from your site, but for which users need passwords and usernames.

The most basic intranet, a password-accessible area offering sensitive information such as patient medical for community MDs, will add costs for:

! A password CGI script and database. Our password database is costing \$40/month; the CGI script cost about \$250. Add in-house effort to create and update password data.

! An SSL secure key, which costs \$300/year for encrypted transactions.

2. Providing ISDN (faster dial-up access) for local users or for access to an intranet: this can turn ISP prices into a matter of luck, because you're limited to ISPs which offer ISDN in your local area, and ISP prices tend to be all over the map. Here are some prices that would be paid at the browser end for ISDN. In addition, as host, you may pay setup fees or monthly fees, or both, to the ISP as well as the phone company's charge for your ISDN lines.

! Westworld Internet Services,* which gets \$19.95 for a monthly dial-up PPP account, charges \$89.95/month for a 2-channel (128 kbs) business ISDN PPP connection.

! Asyst Data Group* offers local 64 kbs ISDN dial-up for \$14/month more than a basic analog PPP account.

3. Dedicated full-time access to your site for internal users (assuming the site is at an ISP, not in house). This is where a Web site enters the big leagues. ISP packages like those quoted above, with dial-up PPP access, are typically priced by the whole package, including space on their hardware, maintenance of the system, and phone line rental. But ask for a dedicated connection to the Internet, and prices unbundle. Westworld and Call America* ask \$350/month for one 56kbs line, Asyst Data \$250/month. A dedicated T1 (1.544 kbs) starts at around \$1,000/month, and can support about 53 concurrent Internet sessions, according to Digex. If you already have dedicated lines with bandwidth left over, you may be able to piggyback your web site on them. Otherwise, ask yourself: do we need dedicated phone access to the Web?

4. Extra e-mail accounts: generally, ISPs bundle three to 10 e-mail accounts with lower-level business hosting; prices for additional e-mail accounts are often quoted at \$3-\$5/month each, but large numbers of accounts are probably very negotiable with ISPs.

5. More data transfer or storage: for bundled web site packages, these are generally about \$0.10 to \$0.25 per mb of data transfer over monthly limits and \$1 or so per mb storage.

Finding the Right--and Wrong--Web Host; Web Hosting Costs

The biggest disparity in price quotes is in monthly site hosting costs and related services. "Unfortunately, shopping for a local Internet Service Provider for your business Web pages isn't fun," says Dr. Ralph F. Wilson, an Internet web site consultant.

If only it were merely not fun. IHC found, in months of shopping and asking questions, and trying out two ISPs, that there are many more wrong-fit choices than right ones, that figuring out who's good and who is not is a headache-filled pursuit, and that a wrong decision can be painful. The good news is that for smaller-scale bundled ISP services, the typical minimum contract is three months, and moving to another ISP, while time-consuming, doesn't require calling a lawyer.

Here was our first experience with a web site ISP: in December, 1995, we found a local ISP at a computer show; we signed for development services and hosting. When we went to give the ISP a diskette containing our web site in ASCII text, we found that the Main Street office building listed on its sales literature was only its mailing address. Its actual office and computer facility occupied the

storeroom at the back of a motorcycle repair shop in an industrial zone.

Less daunted than we should have been, we edged past a fellow who was up to his greasy elbows in a Harley, and delivered the disk. A couple weeks later, the ISP sent back the HTML version of our pages for review. The ISP's HTML guy had taken the liberty of revising some of our grammar into conversational pidgin. Still suspending disbelief, we made printouts, edited corrections into them, sent them back, and waited for the next draft to come back.

Instead, the next thing we knew, "our" site was live on the Web, with a whole new set of grammatical errors. We fired the ISP and told it to take the site down. It did--most of it. Two months later, two callers said they'd found an order form for our newsletter floating on the Web. The ISP, it turned out, had taken down our site except for an order form for the newsletter and an e-mail box that captured these orders--a box to which we no longer had access.

At the opposite end of the spectrum are the people who think big--big hardware, big bandwidth, and a big excavation in your budget. AT&T Worldnet, for example, which offers very competitively priced (\$19.95/month) personal web access, charges \$300/month for its smallest web site, with a minimum size of a hefty 100 mb of disk storage. We found a few others with starting prices as high as \$400/month for web hosting on shared servers.

Web site consultant Wilson, in an article titled, "How to Shop for an Internet Service Provider to Host Your Business's Web Pages,"* lists two URLs to help find a commercial web site ISP. One's a Yahoo* list, the other a specialized list of about 3,500 ISPs called The List*. Wilson suggests you start with a checklist of services you need, and offers a sample.

We developed our own list of perceived needs and searched. The first perceived need--that the ISP be local or offer local dial-up access--was not a criterion in our final choice, but it did guide most of our search.

Yahoo turned up only one business ISP in our area code. The List did better, turning up 91 ISPs claiming service in our area code. Its search results also give brief summaries of services and prices of each, with e-mail addresses and hypertext links to their web sites. We tried to visit all 91 for more information; we got through to most, and to a number of others which were resellers of the listed sites' services, reaching about 90 in all. The 20+ hours we spent on the Web visiting and e-mailing ISP web sites yielded as many lessons about web site design (see below) as it did about selecting a provider.

What it did not yield was a decision on an ISP.

So we e-mailed Wilson, the Internet consultant, who referred us to a page on his own web site* listing four ISPs with whom he has placed clients. One of the four, Hiway Technologies,* Boca Raton, Fla. at first seemed a perfect match for us on the basis of sturdy hardware and systems, high bandwidth, low prices, a list of 11,000 big and small business customers, and the most intelligently presented (in our view) web site of all the ISPs we visited. But Hiway doesn't do CGI scripts or other content services. So its sales staff referred us to Pick Internet, which is both a web site developer and a reseller of space at the Hiway computer farm.

Be prepared to spend a bit of time thinking and rethinking the question of what you really need in ISP services. It's probably the biggest cost issue in putting up a web site, and it's a lot easier to answer once you've settled on the basic framework of your web site and talked to ISPs about what they offer. Consider:

1. Bandwidth of every connection (between Internet and the server, between you as administrator and the server, between in-house users and the server, between community-based caregivers on your intranet and the server, and between the public and the server),
2. Duration: do you or anyone need a 24-hours-a-day connection? This can be the single biggest cost question in setting up your web site. Expect to pay \$225/month minimum just for the

phone hookup for the lowest-bandwidth dedicated connection.

3. Number of concurrent connections you need. We considered this unimportant; with a specialized audience, we expect relatively low traffic. But your local public is bigger; you don't want to offer a service to MDs and find them crowded out by visiting high school kids. On the other hand, a T1 line that supports 53 concurrent users will cost at least \$1,000/month by itself. Similar cost-vs.-need issues apply to server capacity. If you start small and find your system overtaxed, most business ISPs offer no-loss upward migration paths.

4. Redundancy and backups.

5. Security. Everybody claims to have it. What do they really have?

6. CGI bins, database services, and support for a host of other Web add-ons which you may or may not need, depending on what you build.

7. Price.

8. People to service your HTML and CGI code if you need them. They do not have to be on the ISP's staff or yours; many Web authors consult by the hour. CGI script writers generally get more than HTML code writers; we've seen rates from \$65/hour to \$150/hour.

Writing Your Own Web Pages In House vs Paying an HTML Author

Web consultants and vendors of expensive Internet services will try to convince you that you cannot possibly do the job yourself. Certainly they'll do a fancier job at a hefty price.

But paying \$40-to-\$150-per-hour HTML page designers doesn't guarantee that you'll get a better result than your own hospital public-relations department could do. Learning the \$159 list (we paid \$99) Hotmetal Pro 3.0 is like learning a Windows-based word processor. In fact, as an experienced Wordperfect 5.1 user, I found it easier to learn and use than Wordperfect 6.1 for Windows. If you limit the number of tricks you try to hypertext links, e-mail, and file transfers, web pages are easy (especially if you use prefab web structures and template files--see below).

After struggling through the task of shopping 90+ web sites looking for the same sort of information at each, we came to these views on smart web site design:

#1: People have names for things. Use them. The worst shortcoming of a handsome-looking web home page, even more frustrating than clogging it with slow-loading, meaningless graphic-art files, is inventing your own cute little names for such subjects as "services offered" and "price list," making the visitor try to figure out which button to click.

#2: Minimize art work. Most of us get on the Web with 28.8 or slower modems. If you really think that forcing the visitor to download 30 pictures, blinkies, and an audio clip of the CEO just to see your home page is a good idea, please exempt yourself from decisions on design.

#3: Create at least a basic map first. A web site is a logical structure. Whether you write it in house or contract it out, at some point you'll have to put in some hours figuring out what you want to be there and how the pieces should be arranged. By far, the easiest way is to cheat: visit web sites of similar organizations, and do something similar to what the good ones do. Hospitals: start at Hospitalweb* (or at our "Your Site of Sites" page when it's up).

#4: It's time-consuming. To get running quickly, start with a modest site and a structure to which pages can be added. We didn't. After throwing out our first draft of our site, we wrote about 12 of our final pages in Wordperfect, then got three outside estimates for creating the site by converting and creating the hypertext links in the formatted Wordperfect files. The estimates were \$2,200, \$4,000, and \$6,000 for about half the number of pages we eventually wrote in house. Given the hours we spent, the two lower-priced quotes seem quite reasonable in retrospect. And the scale of our site cost us months of startup compared to a more modest site.

Authoring software and writing web pages:

We wrote most of it in WordPerfect 5.1, then converted to HTML with Hotmetal Pro 3.0, a low-priced web site authoring package with a nearly what-you-see-is-what-you-get (WYSIWYG) appearance. Hotmetal 3.0 is an easy learn-as-you-go program. We created static web pages, hypertext links, standard e-mail links, tables, an order form, and pages from which visitors can download files via file transfer protocol (ftp) from a subscribers-only area. Writing the first HTML versions of 22 of the 23 pages took about three weeks. The final page, "Your Site of Sites," with 96 links to other sites, took almost a week, mostly for the research.

One time-saving feature of Hotmetal is that it can be set up to translate specified fonts (14 pt bold, for example) into specific HTML headline sizes. If you create all your pages in a word processor using consistent fonts, you can convert them into consistent HTML pages, saving you from having to clean up the formatted HTML pages manually. All you'll need to do is add the hypertext links, images, and any colors you may want.

Another time saver in Hotmetal is its stockpiles of page templates and art files. We didn't use them because our pages are unusually wordy, and don't fit the templates well. But you might be able to construct much of a web site simply by importing text into a series of templates.

Limitations: Hotmetal comes with only a slender printed user's manual and a murky on-line manual, but vendor Softquad, does have very helpful, fast-turnaround e-mail tech support. Another limitation is that it doesn't help write the CGI scripts we needed to work in the background to make the order form and a password database work. A plus: Softquad has also released a new product, Softquad Intranet Publisher, for creating your own intranet.

Microsoft Frontpage,* at \$149, looks like a great bargain, and also looks like the best do-it-yourself HTML authoring package yet. (Caveat: we bought it, loaded it, looked at pages through it, but didn't create anything with it). Frontpage includes a big library of template pages and forms, and ready-made CGI scripts embedded in forms, which might have saved us the \$500 we're spending on CGI scripts. Its screen presentation closely resembles Hotmetal 3.0.

Frontpage also offers a true WYSIWYG web page screen, and it contains two development programs--one which you use to create a map of your site and its component pages, the other to write the web pages themselves. It'll import documents created in other Microsoft programs (which means you can also import a Wordperfect 5.1 file). Also, I found an easy-to-read 960-page manual on Frontpage, Microsoft Frontpage Unleashed, list \$49.95 from sams.net publishing, \$39.95 at CompUSA (with a CD-ROM version of the book included).

A potential drawback to Frontpage, depending on your ISP, is that the ISP must support Microsoft Internet extensions, or some of your work will have to be re-done. But two hosts told us that Microsoft's growing presence is forcing hosts to accept Microsoft-based hosting.

There are numerous other low-priced or free web authoring packages. See Stroud's Review of HTML Editors.* I downloaded a couple, and read about several others. Hotdog gets high marks elsewhere; I didn't like its screen presentation, which shows you the HTML code.

How did we figure out that we could even do this in the first place, without prior experience? Mostly by readings on the Web itself. See these two rich collections of articles and references on most aspects of creating a site, and references to other toolkits and helper sites: the HTML Writers' Guild* home page and the Web Engineer's Toolbox.*

Promotion: Telling Relevant People in the Net Universe Your Site Exists

People can find out about your site--eventually--whether you promote it or not. Some search engines--Alta Vista is one of the most popular--search and index the entire World Wide Web. Alta Vista claims it re-indexes every two weeks, but word on the street is that has slowed. Our own "accidental web site" discussed above was still in the Alta Vista index a month after the last piece was

taken down, suggesting that some indexing in Alta Vista may be at least a month old. So you'll get more response faster if you actively promote:

1. You or the ISP can notify search engines. Most ISPs, for a fee (sometimes included in the setup fee), will notify search engines about your site. For example, our ISP, Pick Internet, offers to notify the top 25 for \$175, the next 25 for another \$125, and 50 more for \$200. A lower-cost alternative you do yourself is to visit the web site of Submit It!,* a company which offers some free submissions to search engines. For a \$59.95/year fee, it will also submit information on your site to targeted lists of additional engines and directories.

2. Swap hypertext links. One of the most common free promotional activities is exchanging hypertext reference links with other web sites visited by the people you want to attract to yours. The easiest way to do this is to send an e-mail offer of an exchange to the administrators of those sites. It's time-consuming, but it also builds professional relationships. Some sites create the link to the other site first, then offer the exchange; if it isn't forthcoming, you can either remove your link to the other site or leave it in place.

3. Hire a web advertising firm to help promote. Visit the very useful web page, "Tips for Promoting Your Web Site.* It lists a few links to paid web advertising services and a number of free promotional resources.

4. Bait the Spider Web. Where to promote is only part of the story. Your keywords and titles are critical. See "How to Promote Your Business Web Page,"* a smart several-page article of insider tips on how to use keywords, what you need to know about how the search engines work, and how (and where) to best title your pages for maximum exposure.

As mentioned above, our web site isn't yet live as this is being written. Maybe the ISP will call up and tell us to send them the rest of the three million bucks cited in the article the salesman sent to us. But I don't think so; I think you really can have a web site for \$1.72 a day, or one with secure transactions and a users-only dial-up intranet for \$6.11 a day.

Resources and References for Creating Your Web site

Finding a Host:

Ventana Press, low-price web site development and hosting, <http://www.vmedia.com>

Pick Internet Services, our ISP, <http://www.pick.net>

Hiway Technologies, also an ISP, owns the Internet farm where Pick's servers are, <http://www.hiway.net>

Verisign, vendor of Secure Socket Layer encryption services, <http://www.verisign.com>

Digex Business Internet, <http://www.digex.net>, or call Cathy Rasel, (301) 847-6438.

Yahoo,

http://www.yahoo.com/Business_and_Economy/Companies/Internet_Access_Providers/Regional/

The List, a list of over 3,800 ISPs, <http://www.thelist/iworld.com>

Dr. Ralph Wilson's four recommended ISPs, <http://www.wilsoninet.com/special/webserver.htm>,

Westworld Internet Services, an ISP which lists its prices, <http://www.westworld.com>,

Asyst Data Group, ISP, also lists prices, <http://www.asyst.net>

Call America Internet Service, ISP, also lists prices, <http://www.callamer.com/>

Hospitalweb, a list of 200+ hospital web sites, <http://neuro-www.mgh.harvard.edu/hospitalweb.nclk>

Web Site Authoring Software:

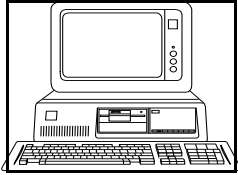
Hotmetal Pro 3.0: the vendor is Softquad, <http://www.softquad.com>

Microsoft Frontpage, <http://www.microsoft.com/frontpage>.

Stroud's Review of HTML Editors, <http://cws.wilmington.net/shtml/htm#htmlled>

Other Web Site Creator Tools and How-To-Create Resources on HTML, CGI, and More:

Dr. Ralph Wilson, Internet small business consultant, <http://www.wilsoninet.com>.



an Inside Healthcare Computing

Special Report:

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Your Own Web Site on \$1.72 a Day, Part 2: Things You May Need to Know But Might Have Forgotten to Ask...

- ! How to Create a Searchable On-Line Library at No Extra Cost**
- ! Mechanics of Getting New Stuff Onto Your Site and Old Stuff Off**
- ! Why and How to Register Your Domain Name Now**
- ! Creating and Installing A Web Password and Username List**
- ! 46 References to Designing a Professional Web Site**
- ! Becoming Visible: More Secrets of Web Site Promotion**

[Editor's note: this report is aimed principally at health care information systems managers who need information to help their staffs can economically create an effective World Wide Web site in house, or to be able to job out the task of creating a site with some knowledge of the costs, level of effort involved, and tricks of the trade. If you missed Part 1, it's available at <http://www.insidehealth.com/wwwtips.htm>]

Free Software Lets You Offer A Searchable Library On Line

Why put publications on line at all?

Health care provider organizations may have 50 or more vital policies and procedures manuals for caregivers, which need regular and often frequent updating, plus any number of other internal publications. Some have tried to cut the costs and headaches of printing and distribution by developing electronic versions using hypertext software packages, and placing them on local area networks. Two years ago, a speaker at our 1995 Healthcare Computing Conference and Expo, Caryn Hewitt, said her organization, Meritcare, expected to save \$100,000/year on the cost of updating P&P manuals alone with that approach.

But since then, HTML has become the default hypertext system; it lacks only an inherent search engine. Filling this gap, some Web search engines offer free "server versions" of their software, so anyone can download the software and create a searchable library of manuals, newsletters, or other ASCII text or HTML documents on a web site or intranet.

A text search engine gives users the ability to quickly search a number of document files for a subject, and to click a mouse on the hits to read or print relevant text with a web browser on a LAN, intranet, or web site.

Architext, vendor of Excite, one of the top Web search engines, claims it takes just minutes to install its server version and set up a searchable collection of documents at a web site.

We tested that claim. It took about three hours, not mere minutes, to get the search engine

running, but most of that time was head-scratching over murky instructions. The creation of search capability itself went quite easily once we figured out the instructions, and worked superbly the very first time. Our three hours also included 1/2 hour spent designing custom search and retrieval pages. We didn't install the software, which our ISP already had on the server. Excite can take up to several hours to build a search index if the documents are voluminous, but the biggest consumer of staff time in creating an on-line library is likely to be the time taken converting your document files to HTML. (See our tips in part 1 and in this report on reducing the time spent converting text files for the Web.)

With that test completed, Inside Healthcare Computing expects to have a searchable version of the IHC Electronic Library, including most 1996 issues and other references, in the subscribers-only section of our web site within a few days; it'll be expanded to include all newsletter issues published in the past few years as we convert them.

If you want to use the free Excite software, your ISP must first install it on the host server; but it's free to the ISP as well as to you. If you host your own site, or if your ISP needs to know where it is, Excite can be downloaded at <http://www.excite.com/navigate/download.cgi>. Instructions for setting up a searchable library are at <http://www.excite.com/navigate/NT-helpdoc.html>. And you can view searchable libraries others have created by clicking on the "EWS Community" button at the top of any Excite page.

Excite creates the search and retrieval pages on the fly, but allows you to customize their appearance or create your own. The Stanford University School of Medicine's Section on Medical Informatics has an example of a highly customized Excite search page at <http://www-SMI.Stanford.edu>. Or try searching our IHC Electronic Library when it's ready; go to http://www.insidehealth.com/private_dir (have your username and password ready) and click on "excite search". Excite offers maintenance contracts for a fee. You can find a list of links to the web sites of 15 other free web site search software packages in the on-line article, "Pulling the Needles from the Stack: Many Benefits in Letting Users Search a Site" by Whit Andrews in Web Week On-Line, <http://www.webweek.com/96Mar/undercon/needles.html>. Alta Vista, <http://www.altavista.digital.com>, which claims to be the most popular search engine on the Web, also offers a server version of its software, but charges for the software.

Time-Saving Tip: Change Format of Your Print Documents Now

These two formatting steps will save time (or money spent on someone else's time) converting document files to hypertext for posting at your web site:

1. Start listing all the subtitles or headlines (or abbreviated versions thereof, or a table of contents) on or just after the first page of the paper version of your document if you do not already do so. The most logical way to present a hypertext document on screen is to put a list of links on the first screen or on a separate index page; designing them that way in the print version will save time converting.

2. Reduce the number of fonts and headline sizes to no more than three, and have no more than two body type sizes/fonts. This will help automate conversion.

The difference is big; it takes us about 20 minutes to convert an issue of the newsletter to HTML with our new format, based on these rules; older issues take 45 minutes to an hour each.

The Mechanics of Keeping a Web Site Up to Date: FTP

One concern in the back of our minds in developing a web site was: are expensive tools or a lot of time needed to post updates and changes to the site?

It turned out that the basics of managing a web site--getting new files there and removing old ones--is fast and easy. Your ISP should give your staff password-protected access to your site, and should provide both a site map and a tool such as the shareware, WS_FTP.EXE, to move files to and from your site. It uses an Internet transfer mechanism called file transfer protocol, FTP. We licensed the commercial version of WS_FTP.EXE for a minuscule \$42.50, but haven't loaded it or opened the manual because the shareware version is self-explanatory and does the job. It shows you on a split screen the files on a local directory and the files on the web site. Highlight a local file, click the

arrow, and it's sent to the site.

In addition, our ISP provides a series of password-protected pages with which we can remotely view web usage statistics and control access to the site at any time of day or night.

Generating, Updating, and Posting Passwords and Usernames

Many MIS systems generate and maintain usernames and passwords for staff. But do you want your staff using the same usernames and passwords for intranet or Web access as they use for other purposes? If so, fine, you have a ready-made password list. But if not--and if your system won't generate multiple usernames and passwords for the same individual--then you have to find a way to invent, enter, and update passwords and usernames for a number of people that may be dozens to thousands, depending on the size of your user group.

A second issue: how to get these usernames and passwords to the web site and install them?

The default method of managing usernames and passwords that came with our web site space rental was that we had to individually enter each pair. Our ISP, Pick Internet Services, wrote a CGI script (cost: \$65) that we can run remotely to encrypt and install usernames and passwords from an ASCII delimited list. We send the ASCII list to the site, run the encryption and installation script, then delete the ASCII list. The ability to do such custom CGI scripts on short notice is an important qualification to look for in an ISP.

Also, we didn't have any software to automatically create usernames and passwords. With over 1,000 users, that could have left us a data entry and maintenance problem. Our quick-and-dirty solution--to use scrambled data from our subscriber billing system (the rough equivalent of your ADT system)--might be a useful approach for your staff. To create passwords and usernames, we export real names, addresses, and randomly generated customer order numbers to a dBase III file. We wrote a dBase "PRG" file (a plain-text file that executes dBase commands), to mix data from demographic fields into new fields. (For example, one could combine the random order number with a letter or two from other fields into a password field.) It takes about 30 seconds to run the PRG file and create or update 1,000 usernames and passwords. The usernames and passwords are then exported into an ASCII delimited file containing just these two fields, sent to the web site via FTP, and installed. The whole process takes about five minutes. If you want something more sophisticated, the Defense Department has a public "Password Management Guideline" at <http://bilbo.isu.edu/security/isl/cscst285.html>.

Register Your Domain Name Before Someone Else Takes It

Registration of your domain name is something an Internet Service Provider will do for you, but it's often emphasized that you should register as soon as possible, because it's "first come, first served" with domain names, and if someone decides to name his web site after your organization, you could be stuck. You might also save a little bit of money by registering yourself. ISPs have quoted rates to us as high as \$250 to send in the registration of a domain name, in addition to the \$100 fee for the first two years which your organization will be billed by Internic, <http://www.internic.net>.

Here's More on Designing a Professional Web Site...

...In fact, this may be more than you can digest: Internet Consultant Dr. Ralph F. Wilson has posted links to 46 articles, papers, and even government guidelines on designing business, professional, and corporate web sites, at <http://www.wilsonweb.com/webmarket/design.htm>. The page includes links to articles on costs, do's and don'ts, and more, including his own "Should You Outsource Your Web Pages or Do Them Yourself?"

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The principal route to visibility on the Web is the search engines, and Alta Vista, owned by Digital, which claims 23 million searches a day, seems to be the most widely used. Alta Vista says its engine indexes a page by boring down about 150 words deep. However, my own searches on Alta Vista seem to suggest that the best strategy for being noticed is to have the one best keyword located at the very top of the document--not in the visible headline, but before that, in the very first element of the HTML document: the "document title," the first part of the document header, which is invisible to the person viewing the document on a browser. (You can see the title if you click on "document

source" in Netscape when viewing an HTML document.)

Since some searches yield hundreds or more documents, and Alta Vista displays only about 10 per search page, you'll want to be at the top to be noticed. Spiking the document title with the right keyword seems to be a key for being on top in Alta Vista.

Secure Standards for Data Encryption Still Hanging

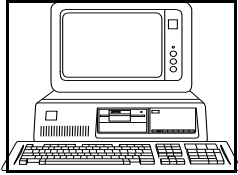
Standards for encryption to ensure security of data during transmission of data are fluid, the Los Angeles Times reported last week. Our own effort to obtain a secure ID are stymied so far. We created an on-line order form so a visitor could transmit an order for our newsletter to us and send credit-card payment, securely encrypted against theft. The form, and the CGI script which makes it work (created by our ISP) both work; but a secure ID needed to encrypt the data during transmission hasn't arrived. The vendor of secure IDs, Verisign, seems to be dawdling and hadn't responded to our most recent e-mail as of this writing. So we've replaced the on-line form, temporarily, we hope, with a faxback form. (While a health care provider probably wouldn't have any reason to take credit card payments over the Web, you might need to similarly encrypt sensitive medical data before sending it on an Intranet or across the Web.)

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an Inside Healthcare Computing

Special Report:

Vol. 7, No. 4. Jan. 6, 1997

Your Own Web Site on \$1.72 a Day, Part 2: Things You May Need to Know But Might Have Forgotten to Ask...

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