Overseeing the Development of Your Corporate Web Site

INCLUDING DESIGN & DESIGNERS, PROGRAMMING, MARKETING, ADVERTISING, SECURITY, BACK-END SYSTEMS, HOSTING AND MUCH MORE!

BY

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Table of Contents

Introduction

I would first like to thank you for buying this book. I strongly believe that after reading these pages thoroughly, you will have learned all that you need to know to start a web site, update it, market it to the world and protect it from hackers. I have also included pricing wherever possible to make sure that your pockets are protected along the way.

I've also done all that I can to make this book friendly, easy to read, and not too technical. In doing this, I have been forced to leave out some methods and technology that a computer expert may scold me for. I assure you, this was done intentionally in order to give you an all around picture of the internet and web world and was not meant to be used as a technical reference manual.

There may also be many schools of thought out there regarding the ideas and suggestions that I have made. These suggestions are based on my 15 years of programming experience and the information provided to me by my highly skilled employees. We have seen many companies come and go for reasons like over-tech'ing themselves (spending too much on equipment and manpower), lacking security, overspending on frivolous web sites and simply being robbed by development companies and service providers. This book is a compilation of lessons learned by my clients and passed on to us as well as our observations from the outside. Follow these examples and you are already far ahead of the game.

I also would like to mention right up front that this book talks about my company quite a few times. I hope not to come off sounding like we are the only reputable web company available. This is surely not the truth and is not meant to sound that way. If you choose a developer carefully, the odds are, they will do what they say they are going to do and will do so in a timely manner. Hopefully this book will be as neutral and objective as possible.

Thank you again and I sincerely hope that you enjoy this book and gain lots of valuable knowledge from its pages.

Sincerely,
Erik Ickes

About Erik Ickes and Diversified Programming Enterprises

Erik started programming in 1988 while attending engineering school. His first experiences in programming were before the days of the world wide web, so his work took the form of installed computer games, calculators, and even an interactive psychiatrist program that would welcome the user to the computer and ask questions about their day, adding levity as often as possible. Once graduating from school, Erik started working in a steel warehouse, doing forklift work in the morning, and then coming upstairs to do programming in the afternoons. The result of this programming was Steel Weights Online, a program that accurately estimated the weight of various steel alloys in various shapes and sizes down to 1/1000th of a pound (or kilogram). The program was initially used to help the sales staff calculate shipping costs. Almost as soon as it was released, clients expressed an interest in the program to estimate the weight of their aircraft (Lockheed Martin was the first buyer) or their ship (Watervliet Navy Depot was the second buyer). Erik started working on the program full time until leaving to join the Army himself. After an injury during Infantry training, Erik worked for the company commander until his discharge in 2002. After leaving the Army, Erik went to work at his first Internet client, Kultur/Whitestar/Duke Video, writing their e-commerce web sites and handling all of their internet and computer requests. Erik left Kultur after two years to start an internet department at a graphic design firm called Pulsar Graphics. Pulsar was well established in the print world but saw a decline in sales and wanted to diversify into the internet market. Erik hired interns out of college, trained them in web techniques and code writing, and set about creating no less than 100 interactive and e-commerce web sites. When Pulsar closed due to internal problems, Erik started Diversified Programming Enterprises to service Pulsar's existing clients.

Diversified Programming Enterprises, llc. Is now a major player in the programming world. While other companies fought to bring in design business and try to keep programmers from leaving to take better offers, Diversified continued to offer advanced programming services to the public as well as encouraged other web design companies to work with them instead of hiring in-house programmers. Instead of fighting the competition, Diversified Programming serviced a need in the industry and now works with dozens of the top design, marketing and hosting companies around the world. Many clients have had work done by Diversified without ever knowing that such a company exists. Erik calls this 'Ghost Programming'. The clients that work directly with Diversified include the largest law firm in the US, major telecommunications providers, large trucking companies, every aspect of media and hundreds of other businesses in virtually every industry.

More recently, Diversified Programming has spun off a new division working strictly with radio stations and major media outlets called RatingsLink. The programmers at Diversified put together an impressive suite of applications, wrapped them into one affordable package and is now selling licenses and updates on a daily basis while generating additional work for Diversified and it's contracted designers and hosting providers.

Erik is a Master Cold Fusion Programmer, a Master HTML Developer, a Master CSS Developer, a Macromedia Partner, and a certified Technology Consultant. Erik was a member of Team Allaire (a prestigious group of programmers that tested new versions of Cold Fusion and its related programs and helped new programmers develop their skills) and a Senior Member of Allaire's user forums. Diversified Programming is a preferred programming vendor for Greater Media and many government agencies.

To contact Diversified or RatingsLink, call 877-749-8744 or visit www.divprogram.com.

How the internet works

In order to ask the right questions, make the right decisions, and pick the right vendors, you will need to have at least a working knowledge of the way the internet works and why things are the way they are. I will attempt to explain the basics without getting too technical. Feel free to ask technical questions at any of our seminars!

The internet works on IP (Internet Protocol) Addresses. These are essentially your internet 'phone number'. No two people can have the same IP address on the internet at one time, although your IP probably changes regularly without you even knowing it. Hosting providers always keep the same IP Addresses. They buy them in blocks (or Classes). An IP Address looks like this: 216.27.35.12. The 216 is a Class A, the 27 is a Class B, etc. Each of these classes is owned by a company and this is how the internet finds you. More information on this in just a second but lets talk about Domain Name Services first.

When you buy a domain name for your company (the 'YourName' part of www.yourname.com), the hosting provider will tie your domain name to a particular IP Address. This is like calling a person by their name instead of by their Social Security number. DNS or Domain Name Service servers are the computers that look up a domain name, and then translate it into an IP Address. Every internet provider has DNS servers and so does every hosting company. Most have dozens just waiting for you to type in a domain name!
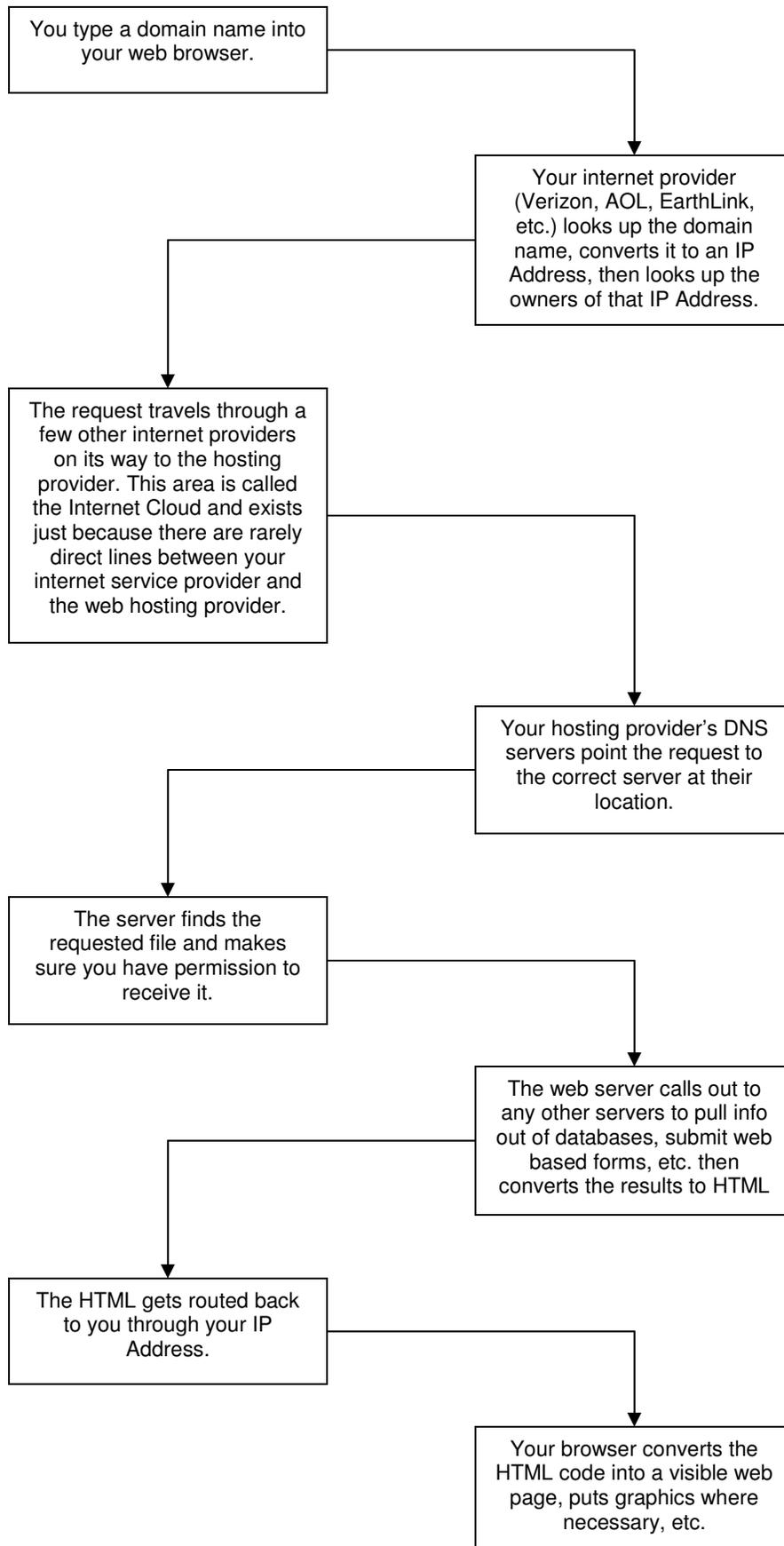
When you type a domain name into your web browser (Internet Explorer, Netscape, Opera, etc.), your hosting provider (AOL, Verizon, EarthLink, etc.) will look up the owners of the Class A of that name (usually a major connectivity provider like Qwest, called a backbone provider) who will tell them who own the Class B. The Class B owner tells them who owns the Class C and so on until your request is routed to the proper hosting provider and your web site appears.

This works exactly the same for email, instant messengers, streaming music and everything else you do online.

There is one more thing I should mention before we talk about how hosting providers work. That would be Ports. The internet assigns specific port numbers to specific types of requests. Port 80 is all world wide web traffic, Port 110 is email going out, Port 25 is email coming in, and Port 21 is FTP (File transfer protocol, a way to move large files between computers). There are about 10,000 others. This is how your hosting provider's servers determine whether a bunch of information traveling to them should go to the email server or to the web server.

When a request for a web site comes in to your hosting provider, that hosting provider first determines if the site resides on their servers, or if the request should go to someone else. This is why email can be hosted at one provider while FTP or WWW is at another. Assuming that the request is staying here, the server essentially opens the HTML file that you are requesting, cuts it up into little pieces (called Packets) and sends it back to your browser through the same IP Address method. Your computer then puts it all back together and your browser displays the page as it sees fit.

Again, email and other traffic work the same way. Not so complicated right? In case we lost you somewhere, there is a graphic on the next page.

You type a domain name into your web browser.

Your internet provider (Verizon, AOL, EarthLink, etc.) looks up the domain name, converts it to an IP Address, then looks up the owners of that IP Address.

The request travels through a few other internet providers on its way to the hosting provider. This area is called the Internet Cloud and exists just because there are rarely direct lines between your internet service provider and the web hosting provider.

Your hosting provider's DNS servers point the request to the correct server at their location.

The server finds the requested file and makes sure you have permission to receive it.

The web server calls out to any other servers to pull info out of databases, submit web based forms, etc. then converts the results to HTML

The HTML gets routed back to you through your IP Address.

Your browser converts the HTML code into a visible web page, puts graphics where necessary, etc.

Internet Terms:

Below you'll find some other jargon you might hear while working with hosts and developers. This is by no means an even remotely complete list but will get you started. At the moment, the most complete reference is at http://www.webopedia.com/.

Bandwidth, Connectivity or Line Speed: These terms refer to the amount of traffic that an internet connection can handle (See 'K' below). Most small businesses will have broadband (DSL, Cable or Satellite access) that will run at about 200 kilobytes per second, medium sized businesses will have a T1 line which is 1.544 Megabits per second, large businesses will have a DS-3 running at 45 Mbps, or even higher. By the way, OC means Optical Carrier and DS means Digital Signal.

Hops: These are all the servers that see your request while the internet figures out where the site you are looking for resides. Depending on the geographic location of your hosting provider in relation to you, the request may hop between as many as 30 servers before it finds what you need. You can speed up your web site's load time by finding a provider that is centrally located or located in a major hub like New York, North Carolina, Los Angeles, etc. or is located near your client base. If you are a local business, you'll probably want a hosting provider nearby if you can find one that is reliable. If not, find one in a major hub that has fast connectivity like a T3 or better.

K, or Kilobits: This is simply a file size. Your internet connection used to be 56K which means 56 Kilobits can pass through the line in any given second. Theoretically, a document or web page that is 1 megabyte (1024 kilobits) would take about 19 seconds to load on this modem. Nowadays, internet connections are around 300K (or Kb).

Meg or Megabyte: This usually refers to a file's size. It's another unit of measure followed by the Gigabyte, the Terabyte, the Petabyte, the Exabyte, the Zettabyte, etc.

Server: This is a glorified computer. It's called a server because it serves documents to other computers as they request them.

HTML: Hypertext Markup Language. This is one of the dozens of languages that exists on the internet. Since HTML is the most common, most other languages do a bunch of processing, look things up, read from a database or whatever, and then convert the results to HTML so that they can be read by all of the browsers out there. The example below will show you perhaps the world's most simple html code:

```
<HTML>
<Head>
<Title>
This appears way up top in your browser
</Title>
</Head>
<Body>
This is the text on your web page.
</Body>
</HTML>
```

Setting up a web site, the Basics

There are five major considerations when planning a web site. These are budget, purpose, target audience, content and value.

Your budget should be based on two factors, the initial capital that you are willing to put up for the web site, and the yearly recurring amount that you will be able to comfortably put into maintaining and marketing your site. The initial amount is a subjective number but certainly do not scrimp on the amount that you are willing to spend. A web site is the virtual equivalent of a first handshake. You will be judged on appearance, preparedness, and what you offer to the person whose time you are about to take up. On the other coin, if you overspend on a web site, you may not be able to support the long term investment required to maintain a giant site with loads of content that all needs to be maintained.

The purpose of your site needs to be prevalent during every stage of production. The farther that you stray from your initial purpose, the more difficult your site will be to navigate and understand when a customer visits. The purpose should also be specific and use the "To-By" rule. If should be something like "To extend our customer database by encouraging visitors to sign up for our newsletter" or "To sell industrial tools to contractors that may have trouble finding these tools elsewhere by providing a simple interface, an easy search mechanism and details on every tool to help them with their buying decision." These examples are from actual clients, both with continually successful web sites. Put some thought into this and be as specific as possible. This will help you make decisions during site production and will help your designer help you achieve your ultimate goals.

Target audience is very often overlooked when developing a web site. This is because business owners generally stereotype their clients into extremely broad categories like "novice computer users". To create a popular web site that generates a lot of success for you, you will need to know the connection speed of your users, the age and type of computer they are using, why they are looking for you, what keywords they are using to search for your product or service, what other sites they tend to visit, the age range of prospective clients, the geographic location of clients, and as much else as you can think of. I'd also like to take a moment to mention that across the world, product names and descriptions change. We worked on a site for a grain cleaner company that had very little luck when their site originally launched. After doing quite a bit of research, we discovered that the particular grain elevator that they were promoting called a Bucket Elevator was called a Grain Leg throughout most of the rest of the country.

Your web site content is just as important as the look and feel of the site. Open any magazine and make a mental note of which advertisements you take the time to read. In general, it will be the ones with very short sentences broken apart by line breaks or bullets and nicely aligned typography. Within the first two link levels (Home and Products page for instance), you should keep the text very short and to the point. If visitors want to read more, they will look beyond the second level into a Product Details page for instance. E-Commerce sites utilize this strategy through the use of product galleries. A visitor sees the product they want to know more about and will click on it to read the details. Carry this philosophy to Company Profile pages and all of your other site areas and visitors will tend to stay longer and learn more about your company.

A site's value is essentially the reason a person wants to come to your site. Perhaps it is to learn about a product you are selling, perhaps it is to buy that product. I can tell you from experience, the more value that you put into a site, the better that site will perform over the long run. I recently suggested to a radio station that I work with, that they change

their site to more of a web portal than just a page advertising the station and showing photos. We discussed adding news links, a web search box, a daily cartoon, some gossip and a few other items that change every day. As a result of this change the station has shown higher ratings and has increased the visitation on the site exponentially.

If you don't think this value strategy applies to you, think again. Interactivity of any kind will keep people coming back to your site. We work with a drilling company that recently added a customer survey onto their site. Whenever they complete a job, this survey is sent out. Just this simple addition helps administrators understand the needs of their clients, helps clients remember the companies name and gives customers a feeling that they are helping to better the company and will try to use our client again to see if their suggestions are implemented.

Before we move on, I think it is important to discuss your Domain Name a bit. The domain name is essentially the nickname of your web site. My primary domain name is divprogram.com. The first step in building a web site is usually securing a domain name if you do not have one already. Your domain should be your company name if it's available. If it is not available, then you have to get creative. For marketing purposes, I suggest to clients that they start with their company name and then add a marketing term afterwards. If A1 Inc is your company name and you make widgets, try for the domain name a1widgets.com. If it's still no good, try a1widget.com (with no 'S') or a1widgetinc.com. When you find one you like, do not hesitate to buy it! Domains are registered every minute of every day and it is not uncommon for a domain to be registered while a buyer tries to decide. I do my domain registration through dotster.com but there are hundreds of domain registrars out there.

One last note on domain names, I suggest that you start with the domain name for two reasons; first, your designer will need to use it to build your site and second, because it ensures that you own the domain name yourself! When you do the registration, put yourself as the primary contact and put another trusted contact at your company as the secondary contact. These contacts may change over time but you need to always make sure that you own the domain name, not your host or developer.

Cost

As I mentioned before, do not try to save money by building a cheap informational web site. You will end up costing yourself a lot of money over the course of the year or two that you keep the site. Build a site that you will be proud to show off to clients and friends instead of making excuses as to why your site is cheap and outdated.

Spend a thousand dollars more and get an administrative area for your site. An administrative area is a hidden, password protected section on your web site that allows you to update the site yourself and keeps your maintenance costs down tremendously. They are very easy to use and will do wonders for the long term success of the site. Even if you choose not to make the updates yourselves, an administrative area will reduce the time that your developers take to make site changes. When your developer charges you $500 to make a change to your site, you'll wish you had spent that little extra up front.

Administrative areas actually help you in a less obvious way too. If you call a development company and tell them that you want to be able to maintain the site yourself through an administrative area and they either don't have the capability to put this together for you, or in extreme cases don't even know what you are talking about, you have just weeded out a bad developer and saved yourself a fortune. Congratulations.

This brings me to my next point, everyone has a friend of a friend who builds web sites. This is called 'Uncle Vinnie' syndrome or sometimes 'The kid up the street' syndrome. Unless they can show you some dynamic examples of work they have done in an industry related to yours, don't work with them! Kids come to me all the time looking for work and will show me sites that they did for their friend's band or sites with dragons and 'cool' stuff on them. This is not my clientele and no matter how neat the site is, it's not what my clients are looking for. Even if a designer does a fake site for a fake company, that is much better than the local death-metal band site.

So what does a web site cost? I can't tell you how many phone calls I've received that start out just like that. There is no set number. I've done sites for $1,000 and I've done sites for $150,000. The difference is interactivity. A $1,000 site is a few pages that tells a client a little bit about you and gives out your phone number. It stinks and is close to useless. A site like that probably does more damage than good for your company. A $150,000 site would include photography (in my case videography converted to a Flash movie), e-commerce, an online order tracking system, integrated shipping and a nice marketing package.

Let's work with the averages though. If you are a medium sized business, you should expect to pay between five and fifteen thousand dollars for a nice sized web site and an extensive internet marketing package. If you are a startup, work out a payment plan with the developer. My company finances web sites through our bank for large projects. Also consider paying by credit card. Buying a large site on your card will get you cash back or a lot of airline miles.

Once the design, development and initial marketing are finished, you'll probably have some maintenance costs. These are essentially the costs associated with picking up the phone to talk to a developer about various items on your site. Sometimes it includes some basic changes to the site and is generally used for fixing any emergencies that may arise. Maintenance is a minor issue and should cost you about one hour of development time per month. Therefore if your developer is $150 an hour, that should be your maintenance amount. If your developer wants you to sign a maintenance agreement, get a guaranteed

response time! Otherwise you've wasted a lot of money for nothing. I would insist on a 2 hour resolution, if the problem can not be resolved in that time, the developer needs to tell you why it is taking so long and what they are doing to keep things moving. As long as they are doing all they can, don't demand a refund or argue with them about it. Remember, the maintenance is for them to help you diagnose the problem and help you resolve it. In 90% of cases, the problem has nothing to do with the programming of the site. It's usually a merchant account, hosting issue, domain problem or something of that nature. The developer will help you figure out what's wrong and steer you in the right direction.

Beyond maintenance, there will be hosting. This is a minor expense, usually around $30 a month for a decent sized site. This includes hosting the site and providing a certain number of email addresses for you to use based on your domain name. To find a good hosting provider, there is a great trick. Call the support line and see how long they take to respond, if they respond at all. Do the same thing with a support and sales email. A good company will pick up quickly and will be responsive when you ask them a generic question like "What kind of server will my site be hosted on? NT or Unix?". It's a useless question that really means nothing but it's asked all the time so why not ask them again. While you've got them, ask them what kind of statistical reporting software they use for clients web sites. This software is what will eventually tell you how many hits you get, what pages people look at, how long they stick around, etc. Write down what they tell you and mention the name to your developer. If you really want to test them out, ask them the average number of sites that they put on a single server. I can tell you that Interland averages over 150 sites on an NT server whereas XFire Web and Gearhost average around 50. The less sites on a server, the more processing time is dedicated to your site and the faster your pages will load.

And not to discourage you, but you'll also have long term marketing costs. These costs are subjective and depend on your industry. A company selling consumer electronics will have a lot of competition and will therefore have to spend a lot more on marketing to see any results than a company that sells silicone depth testing equipment (another client of Diversified). Less competition will let you pay about $200 a year, more competition will bring that number up to as much as $2000 a month.

Choosing a designer & developer

Most web design companies these days are former printers or advertising agencies. While print designers are generally slightly more talented as far as color and imagination than web-only designers, print designers tend to lack the experience necessary to build a web site that will properly fit all computers, monitors and screen resolutions. I suggest that all print materials be developed (at least to the point of a final proof) before web designers take over. Allow your web designers to gain ideas from your print work and encourage the designer to match the look and feel of the printed piece as much as possible. Remember that web designers generally do not have the flexibility of a print designer because we can only work in a handful of fonts and only 256 colors, whereas print designers have 16.8 million colors to choose from. This tactic will also insure that you have the proper brand and logo recognition between your various marketing avenues.

You will also want to make sure that all of the necessary photographs, text and visual elements of your web site are gathered before you give your web designer the final go-ahead. Unlike print work, web design work is one layer. In other words, web designers can not simply turn off or replace a photo once it is incorporated into your web design, in most cases, a web designer has to start from scratch when you change a design element later. This is why it is imperative that you map out your project, your visual requirements, your navigation and all other functionality before you move forward with your web project.

In business, I'm sure that you've realized that deadlines are important, from vendors and customers. This is no different for web designers, in fact, it is generally even more important. A good web designer should be able to give you a rough estimate of the time to completion of your project. This estimate will be based on the work as discussed so if you make changes or do not give approvals when necessary, you should know that the deadline may be extended.

While we are discussing web designers in general, I'd like to take this opportunity to warn you about a very common problem in the web world. Technology. Many web designers are tempted to show off their skills by building in movies, animation, sound or whatever today's latest trend is in the web world. Beware the designer that shows you a 'cool new thing he learned'. This warning applies to you, the reader, too. If you see a cute little animation on a web site or a site that has flying monkeys all over it, ask yourself if it will really help visitors get the point of your web site or if it will detract from the readability of your text.

Perhaps the biggest qualifier of a web site developer is their ability to do programming. You may think all web sites require programming, and to a degree, that is true. But, we web technologists generally define programming as the interaction between the client's browser and the web server itself. This includes things like signing up for a mailing list, e-commerce shopping carts, bulletin boards, classified ad's, membership systems, etc. I can not stress enough the need for your developer to know some programming him or her self AND to have the backup of a very qualified programmer. This does much more for you than may be obvious. First, it allows you the ability to expand your site in the future without the limitations of the developer's talent. Second, it implies that the developer has been around long enough to hook up with a good programmer and that the programmer has enough faith in the developer's abilities to work with him or her on integrating your site with some more advanced systems. Third, it means that your developer knows enough about what's happening behind the scenes to do a good job for you.

We programmers have an insult that you should be aware of. It is the term "Script Kiddie". A script kiddie is a person who knows nothing about programming at all, but will go online to a site like Matts Script Archive, download a pre-written program, and install it on your site without really understanding the program. The danger of this is best described in an example that I see on a monthly basis. Uncle Vinnie designs a site for you with a membership system that he downloads from a web site. You now want to send email to all of your members announcing your new product. The script that Vinnie used is too basic to allow integration with any emailing program so you need to get one custom written. You will also need to pay a programmer to convert the old, ugly, data over to a real system that allows you do actually do something with your members. You've just spent a small fortune having a programmer upgrade your old data and retrofit a new members system for you into your existing web site. In another quick example, we recently worked with a radio station that found out upon signing up with us that their entire membership database was the property of the company that wrote the pre-made script. They had to print out a list of all the members and manually type them into our system because the company would not give them their own data.

You can avoid all of the issues that I've mentioned by asking a few simple questions. I've compiled a quick list of questions that I'm asked regularly and a few that I wish were asked more often:

Can you give me links to a couple of sites that you've done relating to my industry? How about sites that are not in my industry but maintain the same look and feel that you would build for our site?
(This gets rid of the kid down the street web companies. You may want to ask for references at a few of these companies. Some developers will lie to you by pretending to work on a great site when they had nothing to do with the site at all.)

What types of databases do you work in?
(You don't even need to know what they are talking about when they answer you. As long as they seem to know, they are probably OK. Even if they come back with something like "It depends on the requirements of the application", I'd be OK with that too.)

Can you give me a ballpark price for a site with 10 text pages, an e-commerce shell and a contact form?
(I would ask you a couple of basic questions before answering this question but when all is said and done, I would charge around $6,000 for this site. For a site like this, they should respond between $4,000 and $10,000.)

What types of programming languages do you work in?
(You'll want a response like ASP, PHP, Cold Fusion, Java or Dot Net. Avoid someone that tells you HTML and leaves it at that. I'll probably get some flak for this but you may want to avoid Perl (pronounced Pearl) too, just because it's a very old language.)

Do you have a hosting provider that you work with?
(Most developers will have a hosting provider that they deal with regularly. Don't hesitate to call the host and ask about the developer. If the developer hosts in-house, make sure that you have the option to host elsewhere. I hate working with companies that could potentially hold your site hostage.)

How do we go about updating this site later on?
(Will they build you an administrative area to update the site yourself? Do they have to propose each update which may delay an emergency update? Will they do it on an hourly basis? If so, what is their hourly rate?

What kind of deposit do you require and how do your payment terms work?
(Any decent developer will know this off the top of their heads. Listen for uncertainty.)

What type of technical support you offer? What do I do if I have a problem with the site? Do I have a specific contact at your company? What are your hours?
(Don't disregard them if they don't offer 24 hour support, many companies don't offer this but their hosting providers might)

These are basic questions that 90% of the sales people and developers out there will have answers to and the answers will always sound great. You want to pick a great developer? Test them. Call asking for support at midnight.

Design Factors

There are quite a few factors to consider when planning your web site and when looking at comp's provided by your web designers. It would not hurt to write this list on a board and look over each potential design that you are presented with, considering the feasibility of each of the following factors;

- Expandability: How will this look on a gigantic monitor vs. a small monitor? You may have to ask your designer this question. The technical phrase is "Where will this be sliced to allow for expansion?"
- Updatability: What if we need to add another button later?
- Flow: Can I get from point A to point B easily?
- Location? How do users know where they are and how they got there?
- Navigation: Does a user know where to click to find commonly accessed information without searching?
- Usability: Would a novice user know how to use our web site?
- Marketability: How do search engines pick up your site?

In order to build a great looking web site, you may very well have to sacrifice some piece from the list above. This is often acceptable; just consider the consequences and the goals of the site. If your site is selling computer hardware, you can probably get away with small buttons and no real location tracking. If you are selling books on the basic use of a computer, you will want large descriptive buttons with detailed page headers.

Content and Copy Writing

On the internet, less is more. The average time spent on a web site is seven seconds. This is all the time you have to capture your audience. If you are long winded, you've lost your visitor. Get to the point, one sentence or less then tell the visitor what to do next!

"The finest widgets at the lowest cost! Click our Online Store button for our complete inventory!" That's it! Enough said! That's your Home page! Maybe throw your weekly specials up, a photo of your building, a quote from a satisfied customer, whatever. All of this is extra. Honestly, you don't WANT your visitor looking at it! You want them to do as they are told and click the Online Store button.

If you do have a lot to say, use short paragraphs with a nice space in between. I love using bulleted lists on a site. It's the only way you'll get a visitor to read what you have to say to them.

Good web copy should elevate your search engine rankings, attract traffic, and retain customers. It should also be a virtual salesperson capable of closing deals.

The following principals are important for any web site looking to improve conversions and organic search engine listings.

Vivid Product Descriptions
Product descriptions should create a tangible image in your customer's mind and briefly explain the virtues and benefits of your product or service, even if they include product photos. To describe your product, use the five senses (taste, touch, sight, sound, and smell) when possible. If your business offers a service, use descriptive adjectives to differentiate your service from other businesses. Writing persuasive product descriptions means knowing your customers, their language and styles, and being able to identify and render the imagery surrounding a product or product line. Knowing your target audience tells you what tone to use, what style to apply, and whether to be sober, serious, informal, or over-the-top.

Online stores typically offer two levels of description for any given item. The initial description provides a brief overview of the product. It should be short and sweet, yet enticing. Also, include a more complete description that customers with piqued interest can view by clicking on the product image or a "more details" link. When organizing product copy, always predict customer questions and answer inquiries before they arise. For example, never omit essential details like price or important product specifications unless you have a tactical rationale.

Regular Updates
How often do you want to update your site's content? Who will be responsible for doing so? You can have your designer update content for you, outsource the work to a web content editor, or do it yourself. According to the Persuasive Technology Lab at Stanford University, updating site content gives your site more credibility. Even a small change, such as a new message from you or one of your employees, will tell your visitors that your site is dynamic and changing.

Headlines and Subheads
Headlines attract attention, whet the reader's appetite, and encourage investigation of subsequent text. Subheads break long blocks of text into smaller, less intimidating pieces and provide a content summary to the large number of readers who will scan your text.

They are standard features of articles and brochures, yet remain underused on the Web, where they have an additional advantage: The formatting devices used to distinguish heads and subheads, such as bold print, italics, or a larger font size, give them added weight with search engines.

Keyword-Rich Links
Text links enjoy a privileged status on the Internet. Search engine spiders value the text within them more than ordinary body copy. More importantly, good links direct your readers to the destinations they seek. But when they're poorly composed, your readers may overlook important content or be misdirected to irrelevant pages. Instead of "click here for more information," load your link with appropriate keywords that tell readers what they can expect upon arrival, such as "compare laser printer prices," "features and print speeds," or "download Whiff & Poof's top 10 life science stock picks for the upcoming quarter."

Keep Your Home Page Concise
Today's web surfer has a short attention span. The home page needs to cut to the chase or risk losing the reader. Don't waste a lot of time giving details and background. A good size is 200 to 250 words. That should give you enough space to tout your biggest benefits and also encompass those all-important keywords. Save lengthy, detailed copy for inner pages.

Proofread Diligently
It's easy to find errors in grammar, spelling, and punctuation on the Internet. We've all seen them. But that doesn't make them right. Nothing detracts more from your professionalism than misspelled words or sentences that don't make sense. Typos and broken links decrease a web site's credibility. Proofread your work and ask others to do it, too. An extra set of eyes may catch mistakes you miss.

Make it Exciting
Make sure that your web site is fun and interactive. The fact that search engines can now read text within Flash movies is a big advance in the ability for designers to create interesting and engaging web sites without detracting from the marketability of the site.

Programming & Integration

Besides a pretty company image with some marketing opportunities, a web site can do far more than most people are aware. Your web site can become an expansion of your workflow. The most successful sites that Diversified has ever built are the ones that are used by visitors and employees alike. When a customer calls with a phone order, your sales person should enter the order into the web site. The fulfillment department should update the status of that order on the site and when the order ships, they should enter tracking information right into that same site. Your book keepers should log into the web site to do their billing and then mark the order as complete right then and there.

If you don't think that your company lends itself to this type of programming, think again. We have built web sites for lawyers that allow the attorney or secretary to enter both private internal notes and public notes about cases online. This way the client can log in at any time and check the status of their case. The lawyer can even log in to check on new cases or update cases while sitting at the courthouse via wireless internet. We even built a messaging system to allow attorneys in the field to receive notes from office staff without making a phone call, then respond to those notes in real-time. We've expanded this capability to even allow the attorney to fill out court papers online, print them to a PDF and automatically fax them from their laptop or from home.

Diversified's sister company, RatingsLink uses the following slogan, "Increase your ratings through interactivity". This applies to non-media sites as well. You can capture more demographic information on your users if you encourage your users to interact with your web site. Have them fill out quick questionnaires or post messages to a bulletin board and before you know it, you will discover that your visitors may be from completely different backgrounds than you ever thought they would be.

E-Commerce

Do you know why the Dot Com crash occurred in the late 90's? It is because there were so many sites doing exactly the same thing that people who spent hundreds of thousands of dollars building a web site could not compete with a guy in his basement that had a few extra hours and decided to build a web site. I hate to say it, but it's almost impossible to be the cheapest person on the internet. There will always be auction sites, local vendors, foreign markets, and unemployed fortune seekers that will undercut you.

So how do you make money selling products online? Here are my rules:

If you offer the best selection so that a visitor can fulfill all of their needs on your site without paying multiple shipping costs from other places, they are more likely to buy from you.

Use lots of pictures. They are the only substitute for going to the store to buy something and you won't sell anything unless people can see it first.

If you give them the most information on the product they are purchasing and are still in the same price range as your competitors, they are more likely to buy from you.

If you offer a value added feature like guaranteed 24-hour shipping or guaranteed instant customer service, they are more likely to buy from you.

If the visitor recognizes your company name or reputation, they are more likely to buy from you.

If you advertise free shipping, clients will feel that they can buy more without paying extra to get those items.

If your site appears more professional and answers the visitor's questions, they are more likely to buy from you. I will expand on this by mentioning that surprisingly few web sites tell you where your order is being shipped from! How do I know if I want UPS Ground or UPS Next Day if I don't know where the product is coming from?

If a visitor has ordered from you in the past and had a nice experience, they are more likely to buy from you. A follow-up call, mail piece or email helps with this.

There is one sneaky trick that you can use. I really can't condone this and when I happen to notice it, I'll leave the site and buy from someone else, but since the purpose of this book is to tell you everything you can do to win, I'll mention it. You could reduce the price of your products to as low as possible, even lower than all other sites you can find, then increase your shipping and handling price to make up for the difference. Most of the time, visitors will not leave if they have already entered all of their billing and shipping information.

Inventory and Fulfillment

If you are selling online, this is a major consideration that is rarely given enough thought. Most clients that I work with say "Hey, if we get orders, we'll deal with it then" or "Hey, too many orders wouldn't be a bad thing". But the fact is, they are wrong. If your fulfillment is less than 80%, you need to do something about it. Clients hate to place an order just to find out that it can not be filled and they have to reinitiate their search all over again.

My recommendation is to get your web site seamlessly integrated into your inventory systems (with a nice firewall and security system in between, as discussed later). This can be done automatically by polling or querying your inventory database constantly or whenever a transaction occurs which adds or subtracts from your item pool. It can also be accomplished using a simple reporting module whereas the inventory program runs an Excel file automatically at a certain time and writes the file to a fixed directory (via FTP usually), and then the web site searches for a new file in that directory every X minutes.

The creation of an inventory system is pretty easy as long as all of your specifications are spelled out to the developer before the project is started. An inventory system usually consists of the following sections:

- The physical location of the product (warehouse id, shelf, bin, radio frequency ID).
- The bar code or SKU of the product.
- The name of the product and a short description (to verify that the inventory system is synched correctly with your other systems).
- The weight of the product.
- The ability to manually alter quantities if permissions allow the user to do so.
- The quantity in a pack or case if applicable.
- The quantity at this location.
- If the item is back-ordered or reserved and if so, what is the date of expected new inventory arrival?
- The ability to transfer between locations.
- The ability to remove damaged items.
- A complete log of all activity for security audits.
- A complete permissions system to track login activity.
- Lots and lots of reports!

Our popular DivCart software package is generally customized for each client but I'll use our installation at SoccerPost.com as an example of an e-commerce system integrating with an inventory system.

1. The inventory is generated out of the various retail locations a couple of times a day and sent to the main servers where it is parsed into a single database shared by the main office and the web site.
2. An order is placed by a web client.
3. Customer service and the client both receive an email
4. Customer service reviews the order for validity. If valid, they choose from a drop-box where they would like to fill the items out of (this saves shipping if they can pool items).
5. Once items are chosen, each checked item is charged to the client.
6. Upon approval of payment, the order is sent to the store or warehouse along with a pick list for fulfillment.

7. That store or warehouse location's inventory is then altered to reflect the change in stock. If the store is not completely synched to the main office, the staff must manually change their inventory but this is a flaw that should be corrected once all of the stores use the same software systems.
8. The order is picked and packed and shipped to the client.
9. The database is tagged with shipping information and another email is generated to the client with their tracking numbers and expected arrival dates.

Your reports should also allow you quick access to important aspects of your business and fulfillment. For instance, you should know the total weight of the items on one shelf. It sounds strange but this does two things for you. If the weight is too much, you risk the shelf collapsing. But a less obvious reason is that you may have two or three pickers trying to get at the same shelf at one time if your items are overstocked in one area. For this reason, you may also want to show groupings of similar items. If all of your most popular items are in one area of the warehouse, you may have pickers fighting over ladders and access space.

You'll also want to know the rate of fulfillment, the number of manual alterations to the numbers (if the numbers are manually altered very often, you may have a snag in the system somewhere), the number of transactions in a given time frame, etc.

Your business will differ from everyone else out there so these examples may not apply to you at all, but it is important that you really think out your inventory systems and make sure that they tie in with your web site in one way or another. If you are fortunate enough to always have all products in stock all the time, you'll still want to keep some record of the number of transactions and the amount coming in and going out.

Also, please make sure that you practice the principals of Least Privilege and Separation of Duties. Least Privilege means that you shouldn't give a person more access than they absolutely need to have to get their job done. Separation of Duties means that no single person should be able to get into the entire system. So there is never one point of failure that could take down your entire system.

Updating your site

As I mentioned in the Choosing a Developer section above, it is important that you understand the procedures necessary to have your site updated regularly. If your site needs frequent price or text changes, you may want to spend a little more up front and get the developer to program an administrative control panel for you. This is a secure, password protected area on your site that allows you to make minor text and content changes without having to pay or wait for a developer to make the change for you.

If your site is not updated as frequently, most developers will do one of the following; offer a support contract with a certain block of time pre-paid and a guaranteed response time, offer a maintenance contract where you pay a small retainer each month and the developer will make a certain number of changes for you if you need them, or will perform the change and then bill you for them at a pre-set hourly rate. The latter option may sound scary but you should always ask an estimated time or price when a developer is doing hourly work for you.

One other option is one that many clients prefer but I really do not. This is when each requested change is proposed and quoted formally. It sounds great but what happens when you need a change done quickly? Also, how long does it take them to put a quote together? They may get a quote done in an hour now but six months from now when they have 100 more clients, quotes may take two days instead. You may prefer this method, I prefer just telling clients that it's going to take us two hours and cost them a maximum of $270. We then bill the client for the work on a monthly basis.

Hosting

Hosting is a tough choice. I hope to be able to clear a few things up for you here but I can not stress enough how important it is to discuss hosting companies and hosting options with your developer.

The first consideration to look at when choosing a specific hosting provider is whether or not that provider supports all of the technology used to create your web site. If your programmer used Cold Fusion to write your shopping cart, your host will need to have the Cold Fusion software installed and will need to know that you are going to use this technology when your site is turned on. You can easily find out all of the software used by your web site by asking your developer or designer.

The next consideration is they type of hosting that you will need. I'll detail the three primary hosting types and their advantages and disadvantages below.

The most common hosting type is Virtual. This is when your site is on a server with a number of other web sites, all running at the same time. Most times additional functionality like databases and statistical reporting is done on a separate server, leaving the most processing power for serving web sites. You will be limited to the amount of space that you can take up on the server, so keep that in mind when you are building your web site. Virtual hosting runs between $10 and $60 a month depending on the services and languages required.

Co-located is another cost-effective solution for companies that know a bit about computers and have the time to maintain them. Co-location means that you buy your own server and send it to a hosting company who simply plugs it into the wall for you. Most of the time you can get ala carte options like firewall protection, backups, and redundant connectivity with these plans. Since you own the computer, you are the only site on it. This also means that if it breaks, you have to fix it (while your site is down). Co-Location should cost between $100 and $200 a month. It may not sound that great but if you already have an IT staff, this may be the way to go.

A Dedicated solution means that the hosting company buys you a server, configures it, installs it and maintains it for you. You can configure options just like a co-located server but instead of your own internal staff performing updates, upgrading hardware and patching software, the hosting company will do this for you. A good rule of thumb is that any hosting company that has the capability to offer dedicated hosting is a pretty good company. Dedicated hosting starts at about $200 a month and goes up from there.

A hosting provider can also handle your email and off-site backups as well. Check with your host to see how many email addresses you are granted and how to configure those addresses. If you want to host your own email server in-house, they can usually help you set that up as well.

Another and perhaps the most important consideration when choosing a hosting provider is the statistical reporting that they offer. Statistical reporting tells you how many hits you received in a given time period, where those hits came from, how long they stayed, what pages they visited, etc. The more information the better! LiveStats for example allows you to see general information on who's on your site at any given time and look up demographic information on that person's IP address. A host that doesn't provide statistical software is not even worth talking to.

Even though your developers will probably recommend a hosting provider, you should NOT blindly accept their recommendation. In many cases, their recommendation will be just fine but we have seen more cases than I care to mention that have paid double or triple what they should have been paying for hosting.

You may also want to beware of developers that will also host your site themselves. They can resell the hosting and you'll probably be just fine but you are always better off working with two distinct companies. This way, if you have a falling out with either of the two, your site will not be held for collateral. Again, this is far too common a practice among developers and hosting providers to be ignored.

Marketing

Once your site is launched, you won't have much success unless potential clients can easily find you. This starts by putting your domain name on all of your company literature and is then followed up with an internet marketing program. The basis for any such program is submission to the search engines.

All search engines work a little bit differently but I will discuss the most common type which is called the Spider or Robot. Spiders and robots are little programs that are sent to your web page in order to read what you have to say and then will report back to a bigger program on their results. The bigger program parses that information and decides where to list you in their gigantic databases. If your site is all about silicone density testing, the search engine will put your in their big list of silicone density testing web sites just waiting for a visitor to search for that term.

This may sound straightforward but in most cases, you aren't the only web site competing for a particular keyword or key phrase. This is where it gets tricky. Some search engines rank your site based on how many other sites point to you under the assumption that the more others that link to you, the better you must be. Others rank you based on seniority. Still others rank you based on how many times a keyword appears on your site (but if it appears too much they consider that cheating and will ban you from the list).

There are probably a thousand different ways that search engines decide to rank you, many are well protected secrets. The general rule of thumb is that if you have an informative web site that is coded in such a way as to welcome spiders and robots, you will rank highly.

After constructing your site, you'll need to announce to the search engines that you exist. You can do this using a web site like Inktomi.com or using a piece of marketing software like Web Position Gold. Generally, your developer will take care of this for you but stay on top of them and get specific dates when it is done. It's easy for a developer to forget this essential service.

I would like to take a moment to mention that search engines almost always take your domain name into account when ranking your site. They assume that if your domain name is widgetmanufacturers.com, that someone searching for the keywords "widget" and "manufacturer" is going to be happy if they see your site first. It's not a bad idea to register a few domain names for your company. I own divprogram.com, designers.us and about ten others that mention various keywords in their titles. Some developers even suggest that you create small web pages, separate from the main site, to target specific key phrases. These pages discuss the keyword a bit and 'suggest' that the visitor check out your site as well. This is banned by many search engines if done incorrectly so be careful if you are trying this strategy. It must be a real site with real information in order to be acceptable.

If you don't do so well in the search engine rankings using a simple submission, most search engines subscribe to a (or have their own) pay-per-click program. This is an auction for keywords. You log into a service like Overture.com and deposit a sum of money into an account with them. Overture then tells you what other people are bidding for the keywords that you want your site listed under. You can then choose to bid against your competitors for these words. If you bid $.15 for the keyword "Widgets", each time a search engine user searches for widgets and then clicks on your domain name, fifteen

cents is deducted from your account. These are good programs and work well as an addition to normal search engine marketing programs.

I mentioned a few paragraphs ago that many search engines rank you based on how many other sites link to your site. This is called Link Popularity and is a phrase you should remember and think about regularly. Amazon.com and Barnes and Noble have fought over link popularity for years. Have you seen their little 1"x1" box ads on web sites that you have visited? Usually it asks you for a search term right in the box. Sometimes it automatically searches for a term based on the site you are visiting (i.e. Camping sites will send you over to Amazon with the keyword camping already requested). This technique is so powerful on so many levels that I highly recommend this strategy. Each time you see that banner on a web site, Amazon gets one point of link popularity which raises their rank in the search engines. They also get the revenue when a visitor buys a book. They have only to pay a small commission to the linker upon purchase, a very small price to pay for a new client and higher rankings!

You can increase your link popularity by constantly submitting your site to free Links Directories and blogs, posting messages to online discussion groups, joining web communities, purchasing banner ads, and more. Use your imagination and the links will come.

Another way to increase your link popularity is through a reciprocal link program with another web site. This is simple, they link to you and you link to them. Each of you benefits. In all actuality, it doesn't even matter if your sites are related. Visitors will assume that there is some relationship between the two companies subconsciously and probably won't give it a second thought.

There is a new way to increase your marketing which costs a pretty penny but seems to deliver satisfactory results. This is called Paid Inclusion. Essentially you pay the search engines to list your site at a particular spot in the rankings. I like to recommend this service to my clients simply because it is less than many clients spend in paper advertising and yet when a client 'reads' your ad, they get an entire web site full of information.

Many clients are also producing corporate videos and product demos to post on YouTube and other video sites with their domain names in the titles and credits. Some also produce audio snippets and interviews to play as Podcasts. We recommend that our clients also set up mySpace pages and BLOGs for their companies and products. All of these creative methods will help to improve your web site visibility and your link popularity.

META tags

META tags describe your web site to the search engines. Essentially, they tell the search engine spiders which keywords that you would like to be listed under. If a search engine agrees with you, META tags also tell search engines how to describe you. This said, the two most common META tags are Meta Keywords and META Description. You may ask yourself how search engines decide whether to agree with your suggestion or not. Well, it's all based on the writing within your site. If your Keywords are "Candy, birthday, wedding, party, favors" and your web site is about Wedding Cake, the only thing you're going to be listed under is 'wedding' because it is the only word that appears both in the META tags and the body of the site. This is further reinforced by keywords located in your domain name and in other pages on your site besides the Home page. In fact, the actual name of the pages themselves helps you! If you have a page on your site called 'weddingcakes.htm', search engines will assume that the page is about wedding cakes and will help build your case even stronger.

The following example is a copy of an actual header from a client's web site. I will describe what is happening below the example. The parenthesized numbers to the left are not part of the code, just line numbers to help with the example.

1) <!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN">
2) <html><head>
3) <TITLE>Ice Machine: Commercial Ice Machine, Commercial Freezer, Commercial Refrigeration, Ice Making Machine, Restaurant And Bar Equipment, Scotsman Ice Machines, Commercial Freezers, Manitowoc Ice Machines</TITLE>
4) <META NAME="KEYWORDS" CONTENT="Ice Machine,Commercial Ice Machine,Commercial Freezer,Commercial Refrigeration,Ice Making Machine,Restaurant And Bar Equipment,Scotsman Ice Machines,Commercial Freezers,Manitowoc Ice Machines,Refrigeration Commercial,Delfield,Delfield Refrigerators,Ice Machine,Bar Equipment,Scotsman Ice Machine,Traulsen,Manitowoc Ice,Manitowoc Ice Machine,Scottsman Ice Machine,Bar And Restaurant Equipment,Traulsen Refrigerators,Commercial Refrigeration Equipment,Ice Maker Machine,Bar Supplies And Equipment,True Commercial Refrigerators">
5) <META NAME="DESCRIPTION" CONTENT="Ice Machine: Specializing in Commercial Ice Machine, Commercial Freezer, Commercial Refrigeration, Ice Making Machine, Restaurant And Bar Equipment, Scotsman Ice Machines, and Commercial Freezers">
6) <META NAME="ROBOTS" CONTENT="INDEX,FOLLOW">
7) <!-- Ice Machine: Commercial Ice Machine, Commercial Freezer, Commercial Refrigeration, Ice Making Machine, Restaurant And Bar Equipment, Scotsman Ice Machines, Commercial Freezers, Manitowoc Ice Machines -->

Line 1 tells the user's browser that this is a Transitional type of web page, meaning 'go easy on the interpretation of the code'. If the browser sees something it doesn't understand, it just bypasses it instead of throwing an error.

Line 2 is just standard HTML code.

Line 3 is the Title of your web site. This will appear all the way at the top of the visitor's browser and really helps with marketing.

Line 4 contains all of this site's keywords. Notice there are a lot of them? We put in a bunch but don't overdo it because too many is suspicious to the search engines.

Line 5 is the site's description. It's loaded with keywords and will appear in the search results when a user searches for Ice Machines (see example below).

Line 6 tells search engine spiders that they can list your entire site and that no pages are private.

Line 7 is a programmer's comment. Search engines sometimes read these lines and again, they help reinforce the keywords that you are requesting.

This is the way Ice Machine Factory appears on Yahoo:

Ice Machine: Commercial Ice Machine, Commercial Freezer, Commercial Refrigeration, Ice Making Machine, Restaurant And Bar ...
... Welcome to Ice Machine Factory. Quality Equipment for Your Business. The Ice Machine Factory provides high-quality ice and refrigeration equipment to hospitals, churches, nursing and ...
www.icemachinefactory.com

Web Site Security

I am fairly certain that most people will skip over this section. I know this because it is perhaps the most overlooked and under budgeted piece of any web project. Most people don't know anyone that has had their site hacked or information stolen and most people still consider the hacker to be a mythical figure.

These observations are absolutely untrue. Most people don't even know that they've been hacked and if they do, certainly don't want to publicize it to the world. The notion of the hacker as a myth is exactly what keeps a hacker going. Hackers want to be legendary and attempt to make their mark on the world by sending your corporate secrets to your competitor in an attempt to make a couple dollars. In most cases, hackers simply find out information and then post it on the internet. You want to get a great stock tip? Ask a hacker. If you don't believe me, just log onto http://www.internalmemos.com/

The fact is, hackers do exist and are more prevalent than you think. I would venture to say the half of the kids in any city have hacked into a web site or company using one of the dozens of methods that I will discuss later in this chapter. I often log into CNN.com to search for the word Hacker for a never-ending stream of exciting short stories.

So let's get to the heart of the issue. How do you protect your company and yourself from security exploitation? Since this is a manual on web sites, let's start there.

Your developer is probably looking to get your project done as fast as possible so he or she can be paid and move onto the next client that has been screaming about not seeing any progress on their site. When developers rush, the first thing they leave out is security checking code and the second is error testing. I'll give you an example of a poorly formed web site as an example of this mistake.

The following link will show you a product at a client's web site:
http://www.mydomain.com/products/products.asp?productid=123

A hacker can use a technique called SQL Injection Hacking to delete your entire product database simply by typing:
http://www.mydomain.com/products/products.asp?productid=123;DROP TABLE Products

Or can see all of your usernames and passwords (and therefore complete, unrestricted access to your server) including those of your site's visitors by typing:
http://www.mydomain.com/products/products.asp?productid=123 UNION SELECT user-name, password FROM USERS

Of course once they have your user's information, they know that most people use the same username and password combinations for everything so they will add this information into a file called a word list. The hacker will then go to Amazon.com or wherever they want and will use your client's information to buy books and games, opening you up to a lawsuit for not properly protecting your client's information.

I wouldn't try this if I were you. Hackers spoof (falsify) their identities by stealing someone else's login information and hacking all they want while pretending to be that person. This is the basis of the now commonly advertised Identity Theft, which is probably the least threatening type of hack existing, but it's the only type that Credit Card companies can make a dollar at, so it's the only type you know about.

So, to reduce your exposure to hackers, make sure that your developers are not rushed. At the end of the job, tell them that you will pay them for three extra hours if they will thoroughly run through your site's code and make any necessary security changes. There is a chance that they will take your money and do nothing, so ask them for specific changes that were made once the work is completed. You can even tell them that you've had issues in the past and need to make sure that the site is hack-proof.

Beyond that, you can hire a company like Virtual Rhino (www.virtualrhino.com), one of my side ventures, to test your site for potential hacker risks. My basic price is $500 for a complete (automated and manual) scan. It won't guarantee security but it will stop any amateurs and will send most experts on to search for easier targets.

Social engineering

Have you ever heard of social engineering? If not, you've just never heard that particular term before, but you know the concept. A car salesperson will use social engineering to find out how much you are worth. They'll use phrases like "What kind of car do you have now?" and "What does your spouse drive?" or even "What do you like in a car?"

You may think that the social engineering that I'm writing about is more technical than a car salesperson but it really isn't. Kevin Mitnick, the world's most famous hacker who was recently released from prison, explains social engineering as;

"A social engineer, rather than manipulating technology, manipulates people who have access to technology or information to perform a particular task or reveal information that gives the attacker an advantage. Oftentimes, the social engineer impersonates somebody who he's not, and is able to convince his or her target that based on their role that they're playing, that they're authorized to make a request for information or an action item."

Got that? It's a kid from 1000 miles away calling your network guy to ask for his password. It's a guy claiming to work for your hosting provider asking for your login information. It is even a guy showing up for a job interview and writing down everything he sees on your desk, including the phone number or password that you have sticky noted to your monitor (he'll use that phone number to claim he's you later on by the way).

The only way to stop social engineers is to train your staff to be vigilant. Don't give out anything personal to anyone via telephone. Some of my clients have even set up code words that are based on the day of the week and that rotate regularly. One client writes the code word on a dry erase board each morning so that only people within the building know the code. It even became a sort of joke at the company and every employee thinks about it every day!

I'm going to make a list of all of the hacking types that I can think of. You can educate yourself by typing any of these phrases in to Google. Trust me when I tell you, it is very interesting and may save your company.

- Identity theft
- Brute force
- Social engineering
- Denial of Service
- Virii (virus)
- Spyware
- Trojan/backdoor
- Worm virus
- Mail bomb
- Web site defacement
- Dumpster diving
- Hoax
- Honeycomb
- DNS redirection
- IP/Mail spoofing
- Web spoofing
- Cyber-terrorism

- Zombie virus for denial of service attacks
- Physical security (laptop theft)
- Email spoofing

The easiest way to protect your web site and your customers is by purchasing a Security Certificate for your web site. You may have seen banners on sites that say "Verisign 128bit Encryption" or a picture of a padlock on a shopping cart page. These certificates are codes that allow sensitive information to be sent over the internet without third parties being able to intercept the information. The higher the Bit rate, the more secure the data will be.

Backup and Disaster Recovery

Your hosting provider will generally do some sort of backup on a weekly or monthly basis but it is ultimately your responsibility to insure your ability to recover from any sort of disaster.

A disaster in the computer world does not necessarily mean snow, tornado, explosion, etc. Disasters can include hackers, failed hard drives, line outages, computer crashes, etc. You need to remember that a disaster can happen any time when dealing with a computer that is handling millions of processes all at once.

The best way to back up your data is to gain FTP access to your web site. FTP, as I mentioned before, is the way that you or your web developer put files onto or take files off of your web server. You can use a program like WSFTP or Bulletproof FTP to easily connect and download your data.

There are some files, however, that FTP can not give you access to. In order to get a complete backup of your web site and all of your data, you will need to download your databases as well. While smaller sites may not have a database at all, larger sites will most certainly have an independent database program running to keep track of visitors, orders, inventory, etc.

There are two ways to back up databases. The first way is the most technically demanding method which is to connect to your web server using a "Client" program. This is a program installed on one of your computers that has permission to access the web server at any time and to modify your databases. The standard Client program for the mySQL database is called mySQL Control Center. The standard Client for Microsoft SQL Server is Enterprise Manager. To back up using one of these programs, simply connect to the server and choose Backup from the menu options. The drawback to this method is that it is not automatic (you must manually open the program, back up the data regularly, and exit without deleting any data yourself) and many hosting providers do not allow Client Program access to their web servers.

The second method for backing up is to have the hosting provider back up the data on a schedule and place the backup file in a directory that you can access via FTP. This way, if you ever have a catastrophic failure, you can take that data to another hosting provider or send it back to the current provider when their systems are back up and running. The only drawback to this method is that any transactions that occurred since the last backup will be lost and unrecoverable if the database server fails.

You are probably asking, how do the big guys backup their data then, if neither of these methods are fail proof? The answer is redundancy. Major web sites and large companies recognize the potential for failure in any one system so they diversify their data storage. The way this works is, whenever a transaction is written to their primary server in North Carolina, it also writes to another server in California. In many cases, this happens in four or five different locations. This method is called Mirroring and at the moment, is the best way to back up and stay up.

Beyond simple mirroring redundancy, there is another, even more powerful solution. This is called Load Balancing. Load balancing is best described in a diagram so take a look at the drawing below and then read on.
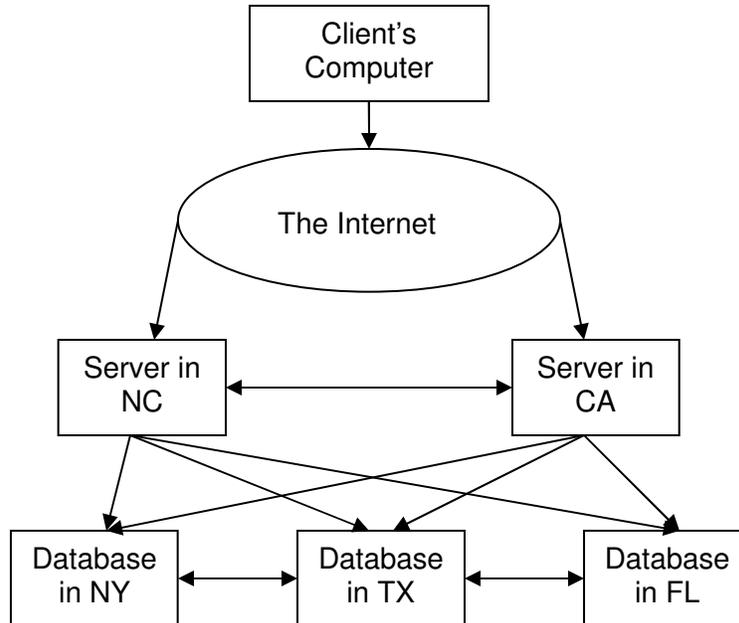
There are a couple of ways to do load balancing but let's just stick to the basic method known as Internet Determination or sometimes Name Server Balancing. This method starts at your domain name. When you register a domain name, one of the questions asked is "Name Server 1" and "Name Server 2". This question tells the internet where to point visitors when they type in your domain name. If you put Name Server 1 as your location in NC and Name Server 2 as your location in CA, the internet will attempt to connect to NC first. If it can not connect for any reason, it will then try to connect to CA. Now you see where we are going with this, don't you? At this point, it is just a matter of getting the data to sync up. If a person places an order in CA, and another person places an order at the NC server at the same time, the data has to mesh somewhere. This is done by writing the data to servers at still more locations across the world.

Nowadays, they have machines that do your load balancing for you. If you have a few thousand dollars to spend and the staff to run it, these servers are a great way to keep your data fresh and clean and make sure your site never goes down. Oh, did I say a few thousand? The cheapest I've seen is $10,000 for the base model router.

Business Internet and Networking

One of the most important new inventions in the world of the internet is the Instant Messenger or IM. It allows two people to find each other quickly from any location, ask a question, and get a response immediately. Many businesses employ or encourage staff members to utilize some sort of instant messenger like AOL IM, ICQ, Yahoo Messenger, MSN Messenger, etc.

You may already see one major problem with this technology. That is, users can easily get distracted talking to family and friends or chatting with coworkers instead of doing work.

There is another flaw in the Instant Messenger system. For that analysis, we will look at the case of eFront.com. The following text is taken from CNet News;

> *"Last week, hundreds of pages of the ICQ instant messaging logs were posted on the Web and copied onto various sites, creating the kind of information security breach that has become one of the worst corporate nightmares of the digital age. The logs, which were apparently snatched from a PC used by Sam Jain, CEO of eFront, have nearly paralyzed his company and created a personal nightmare for Jain."*

This case is the perfect example of the misuse of an IM application. This CEO was communicating sensitive information to employees and friends using ICQ while a hacker listened in via the ICQ Log Files on his computer. This data was then posted online (for no reason other than the hacker's ego) and the whole world was privy to sensitive corporate information and personal remarks from the CEO.

You can secure instant messenger applications with the help of a talented I.T. person so don't be discouraged. Weigh the pros and cons of the application and decide whether to use it or not. Remember, you can always control who is able to use it and who is not.

While on the subject of security, I would like to discuss an unpleasant topic; that is, keeping an eye on your employees. I feel that it is important to mention this because the security division of my company spends most of it's time tracking down saboteurs and information leaks. We have been astounded to find that nearly 80% of the cases that we have worked have been employees of the company they are against.

We were recently given a case to investigate regarding an anonymous person who was posting company information on electronic bulletin boards and chat rooms and telling other users never to deal with my client because they are a scam. When we caught the perpetrator, he turned out to be a sales team leader in one of the company's most productive offices. He made over $100,000 a year and was up for a promotion shortly. The company sued him for ten million dollars and eventually settled out of court in an undisclosed agreement. When the subject confessed to the crime (simply because he wanted to know how we caught him) we found that he had been uploading information to a web site right from his desk to a webmaster who was posting the messages for him.

The point of this story is that you never know who you can and can not trust. The only protection that you have is your own vigilance. Do not be distrustful but do not allow your company to be hurt by an employee with his or her own agenda.

The law says that you have the right to protect the integrity of your company by reading an employee's email, Instant Messenger posts, internet usage statistics, and even listen in on phone calls (as long as those calls are not personal, once deemed personal, an employer

must hang up!) as long as the surveillance does not violate the employees personal privacy.

The best way to protect yourself is to create a general memo or add to an employee's handbook the stipulation that certain activities may be monitored without notice and will be done so as a precautionary measure and is not necessarily dependant on specific information related to a crime. You should also add that employee privacy is a major concern and any information obtained of a private nature will be disregarded and avoided.

From a technological standpoint, your Information Technology staff can set up a Firewall to block certain traffic in and out of your building. A firewall is a necessity and is the backbone of any network security system. The great benefit to a firewall is that it creates a traceable log file of every transfer made in and out of your offices.

Internal Security & Intrusion Detection

As I mentioned in the previous section, a properly configured firewall will virtually eliminate the possibility of a hacker infiltrating your systems through brute force. There is another great way to utilize a firewall. This method is very rarely used. In fact I may even be the only guy out there recommending it. I choose not only to fight off hackers, but to welcome them. I set up my firewall to block all but the most professional hackers but it is impossible (this has been proven countless times) to completely block a professional hacker team. Instead, I allow expert hackers into a very heavily protected area of my servers that has been doctored and set up specifically to feed misinformation to a hacker. When the person "breaks" into my servers, they are directed to what I call a Honeycomb directory. This directory has a few folders in it containing files with names like "annualreport.xls" and "networknames.txt". A hacker will take these files and leave behind a trail of IP addresses and host names. You see, every move that is made in the Honeycomb directory is tracked so well that in most cases, the hacker is still in the directory while my staff is alerted and tracing has begun. I have even been known to load the Honeycomb files with viruses of my own. All is fair in love and war.

So what happens if you are hacked? The first thing that you will want to do is assess the <u>potential</u> damage. Do not touch the machines. In fact, if they are redundant machines, quarantine them. If the machines affected contain valuable information, call the FBI immediately. If client data or credit card information has been stolen, you should also contact the Secret Service (they are in charge of internet fraud). Back up all of your firewall log files and collect all of the evidence that you can and burn it onto a CD or DVD. The police will have other instructions for you once they look into the situation.

If you would like to take matters further, you can hire a company like mine to do a damage assessment, cleanup and can even have that company attempt to track the hacker down. In most cases, we do not have the bureaucracy restrictions that a police organization would, or the heavy caseload. My company has an 89% success rate in tracking offenders.

In Conclusion

I hope that this book has informed you, taught you a few tricks, and given you a few important things to think about. I hope that you are not confused about any of the information that you've read in this book. If you are, don't be discouraged. There is so much to learn about the internet, computers, networking, communications and security that no one person could ever know it all. The purpose of this book has been to give you a general idea of the way things work so that you are never taken advantage of by vendors, customers or your own staff.

I encourage you to read this book again, maybe even a few times. This book is a compilation of more than 15 years of experience summarized into 25 pages. Each time you read this; you will be enlightened a bit more and will read something that perhaps you skipped over the first time.

I also welcome your comments. If you would like me to spend more time on a particular subject in a future edition of this book, please, let me know and I will certainly build upon your suggestion.

If I or my company can help you in any way, please do not hesitate to contact me via my web site at www.divprogram.com where you will find the most updated contact information.