

Creating Dynamic Web Sites

Creating Efficient, Manageable and Content Driven Web Sites

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Introduction

Web sites are the increasing means of marketing, advertising, customer service, and commerce and information service. As our uses for them increases, our reason for designing them matures. One growing trend is the reality that almost all Web sites require the content to change from time to time. The type of web site will determine the frequency of changes. In most cases, Web sites that haven't changed in the past 6 months are considered out-of-date. For marketing purposes alone, the need for updated information is increasingly apparent.

This white paper will discuss one concept to easily keep your Web site up-to-date using the minimum amount of effort and cost for the web site owner. The methods to bring this concept into a working feature can vary by the different technologies available. The technology you choose will depend upon a number of factors that range from what your budget is, how much traffic you expect the site to handle, your host provider, etc. These things won't be covered in detail in this white paper, but will be covered in future white papers.

This white paper is written for someone who is familiar with the Internet, but who is not familiar with what occurs in the background to make websites dynamic. The reader is assumed to know what the terms HTML, JavaScript, content, database, Server, Hosting Service provider, Secure site, and a few other technology related terms mean.

Static Web Sites

Definition

Static Web sites are sites that are created using mostly or all HTML and/or JavaScript. They may contain forms and they may function as very basic e-commerce sites. The main characteristic is that the only way to change the content on the site (items, products, news, etc. is to have someone change the specific HTML page and change the content inside the web page manually.

For example, if you have a new article that you want to incorporate into your Web site, you would need to create a new HTML page that includes the article and then upload the page to the web server. Depending upon how you have your articles catalogued, you may need to change other pages on your web site that link to the new article.

Benefits

The benefit with these types of web sites is that they can be hosted very cheaply. You may find a few free Hosting servers out there that would be able to host your web site (although if you were serious about your Web presence, you wouldn't really want to consider a free hosting service). You wouldn't need much of the more expensive

Creating Dynamic Web Sites

hosting packages that include certain server capabilities that would be required for the Dynamic Web sites.

Drawbacks

The major drawback to dynamic Web sites is that they are very difficult to maintain. You need to download the pages that need updating, adding new html pages and deleting old ones. Once this has been done, you may need to go through the entire site to make sure you haven't created broken links. I have been to many a site where the links were no longer working on that site due to deleted pages.

Another drawback is that if you do not know how to update the web site yourself, or know HTML, you will be required to hire an HTML programmer to update it for you. That is an extra step and another person to convey your information to. You will also be at the mercy of their schedule as to when your web site may be updated. If you have time critical information, that may not work well for you.

For those of you who want to learn HTML, or update the Web site yourself, it can be done easily enough for the more simple Web sites using an HTML editing program such as Dreamweaver. You don't need to be an expert HTML programmer to create some nice Web pages, but in most cases, you will need to go in and tweak some HTML code now and then. In this case, you will have to ask yourself how valuable your time is and where you want to spend it. Do you want to spend it growing your business, or do you want to spend your time becoming a Web page designer?

Dynamic Web Sites

Definition

Dynamic Web sites are Web sites that are based on content that is not stored on the specific HTML page, but content that is stored in another location, such as another file or database. The most popular storage place for content is in a database. In this case, web pages are created on the server based on the content in the database each time that page is called up by the browser on an individual's computer.

For example, if you have a new news article that you want to add to your web site, you would only need to add the article to the database. The next time the page is called, the server, using the content from the database, would automatically create a new listing for that news article when the page is being created. An example of this behavior can be found at <http://www.psiphonconsulting.com/home.cfm>. In this example, the articles listed on the page are actually stored in the database. The two most recent articles are then shown to the user. This feature is very effective because an archive is automatically created of those articles that are older than the two most recent and no additional programming needs to be done.

Creating Dynamic Web Sites

Benefits

The benefits of a dynamic web site are quite numerous. The first and foremost benefit is that fewer web pages would need to be created. What would be created in its place would be a template that would hold specific information contained in a database. For the example mentioned above, a template would be created to hold the contents of a specific news article (such as title, date written, author, and content). The server would then call up the specific article from the database (based on previous inputs from a link or a form, etc.), and fill in the information as the Web page is being created. Instead of creating a separate web page for every article you want on your web site, you would have one template that would be used for all articles. You can see this in action if you click on any of the articles shown on the example page mentioned in the previous paragraph.

Another benefit is that the information on your Web site can be updated in real time. As soon as you change the information in database on the server, your web site will reflect that change immediately. Properly designed Web sites will make it easy to change the information in the database without having to download and upload the Database. An example of that behavior is shown <http://www.psiphonconsulting.com/poll.cfm>. When you add your opinion on what you think PsiPhòn means, you will be able to see your opinion in the survey results page.

The resulting benefit is that you yourself can now change your own web site very easily without having to hire an outside programmer to change the Web site content for you, or needing to become an HTML expert to update the site yourself. You can spend your valuable time on other things. If the site were designed properly, all that would be required would be to fill in a form, or modify the data through a form. Once that form is submitted, the changes are immediately reflected in the Web Site.

These immediate and easy changes save large amounts of \$\$\$ in maintaining your web site, but more importantly, it will allow you to keep your Web site up-to-date by giving you a competitive advantage over your competition that uses static web sites.

Drawbacks

Most of the drawbacks of using dynamic web sites are up-front, before the Web site is ever deployed. Designing dynamic Web sites requires more back end programming (programming required to be done on the Host Server Machine). The timesaving benefits in programming a dynamic Web site depends upon the complexity and size of the Web site. If there is a large number of items to be displayed on the site, programming a dynamic web site will take less time. If there is a small number of items to be displayed, then the initial programming would take more time and be more expensive than a static site, but the savings would definitely be experienced down the road when future changes would be required, and when the advantages of fresh content begin to produce monetary rewards.

Creating Dynamic Web Sites

Another drawback is that you would now require, a back-end programmer (the person writing the code that connects the database to your Web site), and a database designer in addition to an HTML/JavaScript programmer. In many cases one person would have many or all of these skills but that may not always be true. A static web site would typically only require an HTML/JavaScript programmer.

One last drawback is that most of the hosting services that would be required to have the services to accommodate dynamic Web sites typically cost a bit more to host. If your site's content changes at least once a month, your cost savings of not needing hire someone else to change the web page each time, would more than make up for the cost difference of hosting. <http://hosts.business-webtools.htm> is a small list of hosting companies that have the capability to host dynamic web sites.

Uses for Dynamic Sites

The uses for dynamic Web sites are wide and varied. Any site, which has content that changes on a regular basis, would be a good candidate for implementing a dynamic Web capabilities. Some of these benefits include the ability to allow the site to grow with the business or organization, e-commerce, mailing lists, minimizing the ongoing maintenance costs of keeping the web site content current, thus providing better customer service and support, and a host of other benefits.

Some types of dynamic Web sites are discussed below.

E-Commerce

These are Web sites that typically implement some sort of shopping cart and an ability to purchase on-line some type of product or service. The customer would usually select an item or items listed on the Web site, place them in a temporary location until the customer is ready to purchase the item. In most cases, the items are usually purchased with a credit card or some sort of on-line payment service, such as [Paypal](#), or a regular merchant account.

In this case, the inventory, or the items to be purchased are usually kept in a database for quick and easy access. If the price changes, or the item color changes, or an item is no longer carried, etc. then the database would be updated to reflect the change. Any customers accessing the database (via a catalog function on the Web site) at a later time would instantly see the change.

Other information, such as the customer orders can also be stored in the database for later retrieval to use in customer service situations such as questions about previous orders, billing and inventory uses, or data mining to determine customer trends. You can see this last example at Amazon.com. Whenever you purchase a book, they always tell you what other books people have purchased who have also purchased your

Creating Dynamic Web Sites

book. This information was gathered using data mining techniques on all of the purchases all customers have ever made with Amazon.com.

Content Management

You may not have a web site for e-commerce, but you may have one to provide better customer service, or promotional purposes for your company. One example could be a real estate agent that has an inventory of houses and wants them displayed on the web site. Statistics about each house, an image of the home, square footage, garage info, # bed/bath, school district, etc. can easily be posted to the web site. A surfer on your site may even be able to search for the homes available based on specific terms such as price, #bdr, #bth, etc. Since the inventory of homes changes frequently, the agent would need to reflect the constantly changing availability of the homes on the web site to provide the greatest customer service. Additional information can be included, such as the current interest rates, news information related to the real estate industry, or local area, for example.

The scope of content is almost limitless, as is the way in which it is used. Anyone from Real Estate Agents, to Recruiters, to PR Agencies, to news and information sites can benefit from the use of dynamic Web sites. Anyone who is responsible for the web content can now update the site themselves, and they don't need to farm that task out to an outside individual or company, or hire an additional person to do web site maintenance. If they do decide to farm out that task, they can farm it out at a lower cost because it doesn't cost as much to hire a data entry person as it does to hire a web programmer.

Customer Personalization

Many times a site will want to keep track of the users/customers that use the site. Sites such as Yahoo and Excite have a place where you can log into the site and use it based upon your own preferences. These sites keep track of customer preferences such as what kinds of news they want to see on their site, where their home zip code is (to get local movie listings), which stocks they want to keep track of, etc. All of this information is stored in a database with the username and password. When the customer logs in, that information is retrieved based on the username, and the web page is built based on the customer's specifications. Each user will see something different based upon their preferences, and will provide greater customer service.

Another purpose for identifying users based on a username is to allow different kinds of users different access privileges to the Web site. You may have a site that provides different capabilities or features based upon which access group the user belongs to. For instance, you may have a site that provides your investors with certain financial information, your resellers access to certain technical documents, and your employees access to certain company policy documents. All of this information could be kept on the same server but each group would have a different "key" to access different portions of the site.

Creating Dynamic Web Sites

Required Software/Hardware Pieces

In order to create a dynamic Web site that is easy to maintain and is effective, certain elements need to be in place to take advantage of this type of architecture.

Server Side

On the server end, or at the Host server. To begin, you will need to decide what type of architecture you want to use; i.e. what language do you want to use to connect your database to your web site. You will also need to decide what type of database you want to use. Deciding what kind of site you will have, how big it will be, how much traffic your site will generate, and what your budget is for web site development will play a factor in determining what kind of Host service you need for your Web site.

There are a number of databases to choose from, you have the whole gambit to choose from in terms of price range. Everything from MySQL, which is a good database that is free, all the way up to Oracle, which costs considerably more, and may be overkill for what you intend to use the site for. Other databases include Sybase, Microsoft SQL Server, Informix, Ingress and Access. Each one has their plusses and minuses.

Once you decide on a database, you will need to determine the type of programming language you will use to connect the database to your web site. A number of languages exist: PHP, which is also free, Perl, Cold Fusion, ASP, Java, and BroadVision to name a few. You will have to determine which language you will be able to afford, how quickly you will be able to get up an running, what you need it to do, what databases it can connect to (which usually isn't a problem if the database comes with the proper server connectors).

Once you have decided upon your database and programming language, you will be able to look for a Host server. Hosting servers run on many different types of platforms. They run on Windows NT, Unix, Linux, Solaris (Sun Microsystem's Unix-type platform), and even on some Macintosh OS platforms. You will then need to decide the hosting server based on which host servers are hosting the database platform you have chosen, and the programming language you have chosen to use to connect to the database.

Other things you will need to consider in choosing your host server include; do they provide the bandwidth I will need for my business? Do they provide enough disk space to host my web site? What are the monthly costs to hosting my web site? Of course, customer service should also play a key role in the selection of your web site. If your site goes out to lunch at 2:00am Saturday morning, you don't want to have to wait until 8:00am Monday morning to have it fixed, especially if you are in Philadelphia, and your particular server is located in San Diego. Make sure you have access to your host server over the weekends in some way or another. If you aren't running a mission

Creating Dynamic Web Sites

critical web site, then you can be a little less selective on the customer service issue. If you want to run a major web portal, then you probably want to go with someone that has technical support 24/7. You can see a list of some of the different hosting companies and links to their respective sites at <http://hosts.business-webtools.com/>.

Software

The software required to run these types of web sites include a Web server, a database server, and a server program to process the code that connects to the web page to the database. Unless you are running your own Web server, this software is usually available on the Web hosting company's servers. The only software required on your end is a Web browser, perhaps an email program, an integrated development environment to develop your back end programming, and the database software to develop your back end database. If you plan on farming that work out to someone else, then you will only need to worry about the Web browser and email program. If you would like to talk to someone about this kind of work, you can contact <mailto:info1@psiphonconsulting.com>.

Basic Architecture

The basic architecture to develop a dynamic web site is a bit more complex than a static web site. To make the site as simple as possible, and to allow easy updates of content will require additional up-front cost and time in developing the site. We will go over the major parts required in dynamic sites.

Main Site

This part typically includes the front or main page. The content is driven by the contents of the database. The functionality of the main site depends upon the purpose. This is the part of the site that interacts with your public audience, and the purpose of your interaction (why you want a site) should be very clear and obvious to the user. The main page can be used to register new users, to get users to buy something, or to list specific subject related content. You can go [here](#) to find resources on how to format your web site content to get a better response rate on your web site.

Admin functionality

The big question is "How do I change the information in my site easily without directly accessing the database?" Properly designed Dynamic sites do not require any direct access to the database to change the web content. A section of the site must be added to allow the user to change the information. This usually involves creating a form that can read from, and write to data in the database. In many cases, the same template that displays data can be used to change data.

Creating Dynamic Web Sites

Deciding what kinds of administration forms to create will depend upon the data (content) that needs to be changed. Everything on the Web site doesn't need to be stored in the database, especially if it doesn't change, or changes very rarely (like contact information, or your company's "About Us" information). Once you determine the information that you would like to be able to change, you can determine the kind of administration functionality you will need.

Administration functionality can range from modifying things such as, your web site members, member privileges, content, menu choices throughout the site, etc. Which admin functions you choose will have an impact on the database design, so this should be decided in the early stages of developing your dynamic web site.

Finally, you should decide or determine who should have access to change the information. Should it be one person, or a group of people? And what areas of the site are they able to change? You may have some sales and marketing people responsible for maintaining the products, but customer service people responsible for maintaining the clients. Both groups of people would have different access privileges to different parts of the site. These choices will also have an impact on the database design and should be decided early in the development cycle.

Database

This is the main engine that drives the web site. The database holds the content of your web site. There are many different types of databases out there and they will all serve the same function. The purpose of your web site and your budget will determine what kind of database you will need. If you foresee hundreds of simultaneous hits to your database at one time, you probably want to go with something a little more robust than MS Access. If you foresee light to moderate traffic to your database, and you don't see the traffic changing greatly in the near future, you can probably get by with a lower end database system.

The database design should be robust and allow for growth. Putting in a few extra dollars in getting a good database designer will save you money down the road. The designer should be included in your plans for the growth of your web site so this growth can be designed into the database. A proper design will save you not only \$\$, but time, and headaches. There is nothing more frustrating than waiting a long time for search results on a web site because the database wasn't designed efficiently.

Costs Involved

The costs involved can vary based on the complexity of the site. In the Denver Metro area, a good web developer will cost around \$60/hr, a good back end programmer will cost around \$70/hr and a good database developer will cost around \$60/hr (costs

Creating Dynamic Web Sites

based on salary.com salaries for the Denver Metro area, conversion from salary to contract rate)

In observing these costs, to update your site, you would pay someone about \$60/hr to change your information periodically. If you have minor changes only twice a year, the costs will probably be quite reasonable. However, if you are only changing your web site twice a year, you may want to rethink your Internet marketing strategies.

For those with constant changes to their web sites, these \$60/hr costs will add up. If you have about 10 hours of changes every month, that is about \$600/month. If you spend an extra \$2400 up front to develop a dynamic web site, you will have made your money back in the 5th month. You can see that spending a little bit more in the beginning can save you a lot of dollars down the road.

Conclusion

Dynamic web sites may not be for everyone, but the market trend is moving in that direction. Those sites with old and out of date information will soon discover they will need to incorporate dynamic technologies in order to survive. Using dynamic technologies will offer a better customer experience, and will streamline your business processes, saving you time and money in the future.

Psiphon Consulting does consulting work in web site programming, business integration to the Internet, and web site promotion. They can be reached at 877 399 2016 or at info1@psiphonconsulting.com