

Web Standards

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Abstract

What are Web Standards and why is it important to know for all Web Developers. This will allow Web Developers to reduce the footprint of their pages makes it easier to make templates. With the templates it would be easier to change the overall layout and design in the future without having to change each individual page or with minimal changes. By reducing the footprint of the web page will reduce the amount of server space, amount of bandwidth, and makes the web page load faster for the end users.

This can be done by using DIVs and SPANs for layout instead of tables and separating content from layout and design by using Extensible HyperText Markup Language (XHTML) 1.0 Strict and Cascading Style Sheets (CSS).

Introduction

What are web standards? In reality there are none and this creates problems when a web page works for one browser and doesn't work in any of the other browsers. World Wide Web Consortium (W3C) does make specifications and recommendations that give developers something to work with. They are the ones who makes the recommendations for current and future web related technologies for example Cascading Style Sheets (CSS), Hypertext Transfer Protocol (HTTP), HyperText Markup Language (HTML), Extensible HyperText Markup Language (XHTML), and Extensible Markup Language (XML). [7]

For clarification, specifications are rules of a language that is still being developed. [7] Recommendations are specifications that have been finished and consensus have been reached among W3C members that it is appropriate for widespread use. [7] Standards are recommendations that are mandatory and are enforced, if it does not comply to the recommendations then it will not and cannot be shipped and this is something that W3C cannot do. [3]

The reason for switching from HTML to XHTML is to reduce the redundant formatting that is used for layout and design of a page. Another thing that helps reduce the footprint of a web page is to use DIVs and SPANs instead of tables for layout, and then use CSS to style it the way you want. Tables were originally and still should be meant for tabulated data exactly the same as any article or book.

By separating the content from the layout and design could also give the opportunity for a Graphical Designer to make a nicer looking web page for the user to look at. The Web Developer will only have to worry about the way the web page functions and not have to care about the looks. Then you have a writer and editor that deliver the content for the Web Developer to put into a web page.

The main thing to keep in mind is the reason for the web page to exist. Who is the audience, why are they going to the site, and what you want the users to know about. In most cases people are looking at web sites for the content not the design. The easier it is for them to find what they are looking for the better.

Research

XHTML

XHTML is the successor to HTML and modeled after XML to allow XHTML pages to work with XML documents and other XML based applications. This also separates layout from content in web pages. This is a good thing because writers should not have to deal with the design of their page; just the content and designers shouldn't have to deal with content when they are designing a web page layout.

Currently there are 3 recommendations from W3C for XHTML 1.0:

- XHTML 1.0 Strict: Used for clean structural mark-up that is free of any mark-up associated with layout. Used together with W3C's CSS language for style and

- layout.
- XHTML 1.0 Transitional: Used for transition from HTML to XHTML with small adjustments and allowing the use of CSS.
 - XHTML 1.0 Frameset: Used when you want to use frames to partition a browser window into multiple frames.

The main differences between HTML and XHTML are the introduction of DIVs and SPANs and all open tags must have a corresponding closing tag.

CSS

CSS stands for Cascading Style Sheets. This is the design and layout mechanism that is used with an XHTML page to move the content to the location where the graphical designer wants it. CSS is essentially a bunch of rules that are given in the internal and external CSS file that can be reused in the same page to save time and bandwidth. The more a rule is reused the more it will help shrink an XHTML page.

One thing to keep in mind is the differences between the final outcome of a design on different browser versions as well as browsers. This is where it would be much easier if there was a standard and not recommendations.

An example of what CSS files can do to the same XHTML page is the CSS Zen Garden [1] with different layouts and designs just by switching the CSS file and the same thing can be done with any site that is using CSS for all of its' layout and design.

Layout & Design

The use of tables for layout and design on non tabular data can bloat HTML files and can be done the same using less code with DIVs and SPANs to encapsulate the text and using CSS for styling it.

So what are DIVs and SPANs? DIVs are block layout containers and SPANs are inline layout containers that help out to wrap around specific text or areas for the purpose of design and layout.

In table layouts essentially does the same thing but it takes more time to create a table and if the content changes the table will have to be reconstructed to fit the content. Another problem to think about is what the user is using to brows the web page. We now have PDA's (Personal Digital Assistant) and cell phones that can brows the web. Now the standard viewing screen is no longer 800 pixels X 600 pixels and tables will no longer flow together.

A DIV Layout is just a structure around the content with the CSS file to apply the layout. If the CSS was turned off it would be just a bunch of headers with paragraphs and can easier to read on a cell phone or PDA with a smaller screen. A printer friendly site can be done with a printer CSS file that can change the looks of the site when it is being printed.

Validators

Both XHTML and CSS can be validated on W3C's site to help developers make sure that they are developing their pages following the recommendations correctly and if they missed any open or closing tags. This can help with the transition from HTML to XHTML and how to use CSS.

Bandwidth Costs

According to the prices from SCVNET, an Internet Service Provider, for the average costs of bandwidth per month for their sites (see Table 1). [6] This will be used for data on how much it could cost if so many people visit their site.

Table 1: Average Bandwidth Prices from SCVNET

<i>Bandwidth per Month Average(Gigabytes)</i>	<i>Peak (Kbytes/Sec)</i>	<i>Monthly Payment</i>
5	8	\$100.00
10	16	\$200.00
30	48	\$600.00
0	192	\$2,400.00

Epic System Redesign

Epic Systems Corporation, a technology vendor for health care systems based in Madison, Wisconsin, was nice enough to provide their home page to be rebuilt in XHTML 1.0 Strict with CSS and in a DIV Layout. [2] The web page source and images were copied locally from their page as of, September 26, 2004 (see Appendix D).

XHTML & CSS

The redesigned page took roughly 12 hours to remake from scratch only keeping the original text and some of the images that couldn't be replaced with text or replaced with an image that could be reused or made smaller (see Appendix C). The title and section titles were put in header tags and the text was put into paragraph tags. Both of the menu links were put into an unordered list and put wrapper DIVs around each different section so that the layout and style could be applied. Without the CSS files the site looks like a text only page with a few images.

Differences in the original HTML and CSS files vs. the XHTML 1.0 Strict and CSS files are drastic (see Table 2 or Appendix C) for the change in the size of the images, the HTML and the CSS files. One thing to note is that the way that Epic System's CSS file was spaced out more than mine and would account for a significant difference in file size for the CSS files (see Appendix A and Appendix B or Table 2).

Table 2: File Size Differences Between Original Site and Redesign

	HTML & CSS Files		Images	
Differences	6,855 bytes	40.40% Smaller	14,918 bytes	25.35% Smaller
Differences (Compressed CSS)	4,753 bytes	31.97% Smaller	14,918 bytes	25.35% Smaller

Differences in the image size difference were mainly because not as many were used (see Appendix C or Table 2). The original site had mouse over images for the menu on the top of the page and the JavaScript image switcher was replaced with text that has CSS hover over to have the same visual appearance.

The redesign also has a printer friendly CSS file that will be applied to the site when it is being printed to the printer and can also be seen in the print preview. This removes the need for a separate printer friendly page when the looks can be changed completely from the original looks of a web site.

Bandwidth Costs

These calculations are estimates and will not be the exact amount that any site owner would save because of the number of visits to a site is almost never the same as well as the amount of the pages, images, and CSS files are cached. Using the bandwidth calculations (see Table 3) using the file sizes in bytes (see Appendix A, Appendix B, and Appendix C) assuming the average cost for each Gigabyte of Bandwidth per month is \$20 (see Table 1), 10,000 visits to the front page each day, 30 days in a month, and 12 months in a year.

Table 3: Bandwidth Calculation

$$\frac{((\langle \text{imageSize} \rangle + \langle \text{HTML_Size} + \text{CSS_Size} \rangle) * \langle \text{VisitsPerDay} \rangle * \langle \text{DaysPerMonth} \rangle) / (1,024 * 1,024 * 1,024)}{1} = \text{Gigabytes Per Month.}$$

With the redesign with the assumption that their cache was cleared before each visit would save 6.08 Gigabytes of bandwidth each month (72.96 Gigabytes per year) or \$121.60 per month (\$1,459.20 a year). But having people clear their cache every time they visit a page (0% cached) is unrealistic so if the images were cached 70% of the time the front page would use 9.67 Gigabytes per month using the original site and 6.51 Gigabytes per month for the redesign saving 3.16 Gigabytes per month or \$63.20 a month savings (\$758.40 a year) for just the front page alone.

Although this is just accounting for the front page and gets hit the most but is not viewed more than all of the rest of the pages. This may also be seen as skewed because it does not count for the total count on the server and if we assume the front page accounts for 2% of the total bandwidth usage it would mean that they would save 158 Gigabytes per month (1896 Gigabytes per year) \$3,200 of monthly savings (\$38,400 per year).

Summary

Epic Systems front page can be smaller, look the same as a table layout, printer friendly, and easier to change the layout and design in the future.

Also from looking at the rest of their site they are using the same header and footer as the front page for most of their pages and they are using a template so that they can change the navigation in one file instead of each page individually. This means that they can save more money than just changing the front page by replacing the header and footer with the same code used in the redesign.

Recommendations

Although converting a current site from HTML to XHTML 1.0 Strict can be costly and time consuming at first; but this can save money over time on server bandwidth, server storage, maintainability for future design or content changes, and WYSIWYG, What You See Is What You Get, HTML editors since there aren't any that can do this correctly and efficiently. All of the coding has to be done by hand in a text editor.

There are some books that can help people learn how convert HTML to XHTML such as Eric Meyer on CSS by Eric Meyer [5], Designing with Web Standards by Jeffrey Zeldman, Cascading Style Sheets: The Definitive Guide by Oreilly, and HTML & XHTML The Definitive Guide by Oreilly. There is also Zvon.org [8] that took W3C's recommendations and removed all the explanations to show the specifications of each attribute and what values can be assigned to it with an example using it.

Another thing that some web designers have problems with is finding content to test out their site and Lorem Ipsum [4] is a site that generates an industry standard dummy text to the length that you want and the number of paragraphs. This can help by not only giving some dummy text to use but also removes the distraction of actual text for the designer.

Over all it takes time to learn how to make a web page's foot print smaller and it requires someone with the ambition to do so. Since there are no programs out there that can make XHTML 1.0 Strict web pages and optimized CSS files it has to be done in a text editor and can take more time to set up at first. But the benefits out weigh the negatives because it lowers the cost to maintain a web site, customers/users can enjoy a faster loading web page, printing out the site can be designed completely different than the web page, changing the looks of the site in the future will be faster and a company/person doesn't have to pay for an HTML program.

References

- [1] *CSS Zen Garden*. Retrieved November 01, 2004, <http://www.csszengarden.com/>
- [2] *Epic Systems Corporation*. Retrieved September 26, 2004, from <http://www.epicsys.com/>
- [3] Holzschlag, Molly E. *Molly.com*. Retrieved October 26, 2004, from What is a Web Standard <http://www.molly.com/2004/10/26/what-is-a-web-standard/>
- [4] *Lorem Ipsum*. Retrieved August 01, 2004, <http://www.lipsum.com/>
- [5] Meyer, Eric. *meyerweb.com*. Retrieved October 26, 2004, <http://www.meyerweb.com/>
- [6] *SCVNET Internet Connection and Bandwidth Pricing*. Retrieved November 2, 2004, from <http://www.scvnet.net/connection.html>
- [7] *World Wide Web Consortium*. Retrieved November 2, 2004, from <http://www.w3.org>
- [8] *Zvon.org*. Retrieved August 01, 2004, from <http://www.zvon.org/>

Appendix A

The compressed CSS is using the same formatting as the Appendix B's CSS by removing all white spaces that are not needed and any returns between the brackets.

<i>Original Site</i>		
HTML & CSS File	Size (Kbytes)	Size (Bytes)
index.html	11.46	11,741
epicpublic.css	5.10	5,224
epicpublic.css (compressed)	3.04	3,122
Total	16.56	16,965
Total (compressed CSS)	14.51	14,863

Appendix B

<i>Redesign</i>		
HTML & CSS File	Size (Kbytes)	Size (Bytes)
index.html	5.13	5,258
style.css	4.24	4,346
print.css	0.49	506
Total	9.87	10,110


Appendix C

File size of 0 bytes indicates that it isn't used. The changes in file size from the radio_tower.gif and BIK03.gif were from making the white background to be transparent to make the image smaller in size.

Image Name	Original (bytes)	Redesign (bytes)
ambulatory.jpg	5,708	5,708
ambulatory_arrow.gif	132	0
ambulatory_end.gif	201	0
ancillary.jpg	6,898	6,898
ancillary_arrow.gif	127	0
ancillary_end.gif	204	0
arrow.gif	0	73
bottom_arrow.gif	133	0


Image Name	Original (bytes)	Redesign (bytes)
BIK03.gif	2,651	1,320
calender.gif	947	806
clouds.jpg	20,296	20,296
end.gif	0	75
events_tab.gif	432	0
impatient.jpg	5,880	5,880
inpatient_arrow.gif	128	0
inpatient_end.gif	204	0
mb1_clients.gif	771	0
mb1_company.gif	698	0
mb1_contact.gif	649	0
mb1_partnerships.gif	858	0
mb1_services.gif	677	0
mb1_software.gif	728	0
mb1_technologies.gif	911	0
mb2_clients.gif	805	0
mb2_company.gif	714	0
mb2_contact.gif	678	0
mb2_partnerships.gif	896	0
mb2_services.gif	713	0
mb2_software.gif	760	0
mb2_technologies.gif	939	0
news_tab.gif	400	0
radio_tower.gif	1,489	955
submit.gif	371	0
top_logo.gif	1,792	1,792
transpace.gif	49	0
Total	58,839	43,921

Appendix D



[Company](#) | [Software](#) | [Technologies](#) | [Services](#) | [For Clients](#) | [Partnerships](#) | [Contact](#)

Inpatient. Outpatient. Every Patient.



Software

Every Epic application is built to share a single database. Through a single user interface, every user has full, relevant patient information instantly accessible from anywhere in the organization.


Technologies

Epic technology yields the "two requirements for breaking down the traditional communication barriers of place and function: speed and access."


Services

To us, our clients' success is of monumental importance. Everything we do, from our meticulous software design to the unique structure of our support staff, focuses on delivering successful clinical and financial outcomes for our clients.


events

 **HIMSS 2005**
February 13-17, 2005
Booth 4919

news

 **Epic and Philips announce agreement**
to dissolve the boundaries between enterprise IT software, medical imaging, and patient monitoring devices at the point of care.

Best Overall #1
Every year since inception of KLAS Top 20: Year-End Best in KLAS Awards, an Epic product has been named Best Overall #1.



[Home](#) | [Company](#) | [Software](#) | [Technologies](#) | [Services](#) | [Clients](#) | [Partnerships](#) | [Contact](#)

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Appendix E



[\(index.php\)](#)


[Company \(/company/company.php\)](#) | [Software \(/software/software.php\)](#) | [Technologies \(/software/tech.php\)](#) | [Services \(/software/services.php\)](#) | [For Clients \(https://userweb.epicsys.com\)](#) | [Partnerships \(/partnerships/partnerships.php\)](#) | [Contact \(/contact.php\)](#)

Software
(/software/software.php)




Every Epic application is built to share a single database. Through a single user interface, every user has full, relevant patient information instantly accessible from anywhere in the organization. [\(software/software.php\)](#)

Technologies
(/software/tech.php)



Epic technology sets the new requirements for breaking down the traditional communication barriers of place and motion: speed and access. [\(software/tech.php\)](#)

Services
(/software/services.php)



To us, our clients' success is of monumental importance. Everything we do, from our medical software design to the unique structure of our support staff, focuses on delivering a consistent, clinical and financial outcomes for our [\(software/services.php\)](#)



events
(company/events.php)



[HIMSS 2005 \(company/events.php\)](#)
February 13-17, 2005
Booth 4919

news
(/llp.php)



[Epic and Philips announce agreement \(llp.php\)](#)
to dissolve the boundaries between enterprise IT software, medical imaging, and patient monitoring devices at the point of care.

(company/wards.php)



[Best Overall #1 \(company/wards.php\)](#)
Every year since inception of KLAS Top 20: Year-End Best in KLAS Awards, an Epic product has been named Best Overall #1.



Company | Software | Technologies | Services | For Clients | Partnerships | Contact

submit

Software



Every Epic application is built to share a single database. Through a single user interface, every user has full, relevant patient information instantly accessible from anywhere in the organization.

Technologies

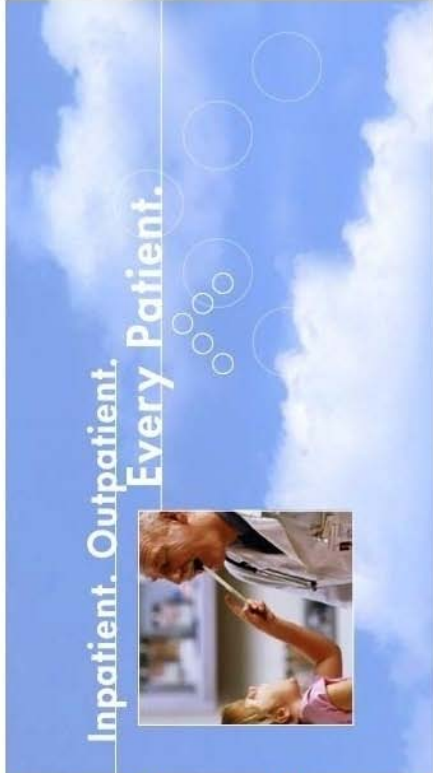


Epic technology yields the two requirements for breaking down the traditional communication barriers of place and function: speed and access.

Services



To us, our clients' success is of monumental importance. Everything we do, from our meticulous software design to the unique structure of our support staff, focuses on delivering successful clinical and financial outcomes for our clients.



events



HIMSS 2005
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Epic and Philips announce agreement to dissolve the boundaries between enterprise IT software, medical imaging, and patient monitoring devices at the point of care.



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Appendix G

Original source code:

Index.html

```
<html>
<head>
  <title>Epic Systems Corporation</title>

  <link rel="stylesheet" href="epicpublic.css">

  <script language="JavaScript">

  <!--

  image1 = new Image();
  image1.src = "images/nav2/mb2_company.gif";

  image2 = new Image();
  image2.src = "images/nav2/mb2_technologies.gif";

  image3 = new Image();
  image3.src = "images/nav2/mb2_software.gif";

  image4 = new Image();
  image4.src = "images/nav2/mb2_clients.gif";

  image5 = new Image();
  image5.src = "images/nav2/mb2_partnerships.gif";

  image6 = new Image();
  image6.src = "images/nav2/mb2_contact.gif";

  image7 = new Image();
  image7.src = "images/nav2/mb2_services.gif";

  function highlight(iName) {}
  function normal(iName) {}

  var number = null;
  function highlight(iName) {
    document.images[iName].src = "images/nav2/mb2_" + iName + ".gif";
  }
  function normal(iName) {
    document.images[iName].src = "images/nav2/mb1_" + iName + ".gif";
  }

  // -->
```

```
</script>
```

```
</head>
```

```
<body bgcolor="#ffffff" leftmargin=0 rightmargin=0 topmargin=0 bottommargin=0  
marginheight=0 marginwidth=0>
```

```
<form action="/search/search.php" method="get">
```

```
<table border=0 cellpadding=0 cellspacing=0 width=100%>
```

```
<tr>
```

```
<td bgcolor="#B9031C"><a href="/index.php"></a></td>
```

```
</tr>
```

```
<tr>
```

```
<td bgcolor="#94223B"></td>
```

```
</tr>
```

```
<tr>
```

```
<td>
```

```
<noindex>
```

```
<!-- Begin Menu -->
```

```
<table border=0 cellpadding=0 cellspacing=0 width=100%>
```

```
<tr>
```

```
<td width="79"><a href="/company/company.php" onmouseover="highlight  
( 'company' )" onmouseout="normal('company')"></a></td>
```

```
<td width="75"><a href="/software/software.php" onmouseover="highlight  
( 'software' )" onmouseout="normal('software')"></a></td>
```

```
<td width="94"><a href="/software/tech.php" onmouseover="highlight  
( 'technologies' )" onmouseout="normal('technologies')"></a></td>
```

```
<td width="68"><a href="/software/services.php" onmouseover="highlight  
( 'services' )" onmouseout="normal('services')"></a></td>
```

```
<td width="82"><a href="https://userweb.epicsys.com"  
onmouseover="highlight('clients')" onmouseout="normal('clients')"  
target="_blank"></a></td>
```

```
<td width="93"><a href="/partnerships/partnerships.php"  
onmouseover="highlight('partnerships')" onmouseout="normal('partnerships')"></a></td>
    <td width="73"><a href="/contact.php" onmouseover="highlight('contact')"
onmouseout="normal('contact')"></a></td>
    <td align=right rowspan=2>

        <table border=0 cellpadding=0 cellspacing=0>

            <tr>
                <td><input type="hidden" name="ps" value="20"><input
type="hidden" name="o" value="0"><input type="hidden" name="m"
value="all"><input type="hidden" name="ul" value=""><input type="hidden"
name="wf" value="200010"><input type="image" src="images/nav2/submit.gif"
name="Submit" class="subtext"></td>
                <td><input type="text" name="q" size=20></td>
                <td></td>
            </tr>
        </table>

    </td>
</tr>
<tr>

    <td colspan=7></td>
</tr>
</table>

<!-- End Menu -->

    </noindex>

</td>
</tr>
<tr>
<td bgcolor="#cccccc"></td>
</tr>

<tr>
<td bgcolor="#dddddd"></td>
</tr>
<tr>
<td>
</form>

<!-- Begin Main Display -->

```

```

        <table border=0 cellpadding=0 cellspacing=0 width=800>
        <tr>
        <td></td>
        <td></td>

        </tr>
        <tr>
        <td valign=top>

                <table border=0 cellpadding=1 cellspacing=0 width=290>
                <tr>
                <td colspan=2>

                        <table border=0 cellpadding=0 cellspacing=0 width=290>
                        <tr>
                        <td class="Ambulatory" width=100%>Software</td>

                        <td></td>
                        </tr>
                        </table>

                </td>
                </tr>
                <tr>
                <td width=100 height=82 align=center valign=middle><a
href="/software/software.php"></a></td>
                <td class="subtext">Every Epic application is built to share a single
database. Through a single user interface, every user has full, relevant patient
information instantly accessible from anywhere in the organization.</td>

                </tr>
                <tr>
                <td colspan=2 align=right><a href="/software/software.php"></a></td>
                </tr>
                <tr>
                <td colspan=2>

                        <table border=0 cellpadding=0 cellspacing=0 width=290>
                        <tr>
                        <td class="Inpatient" width=100%>Technologies</td>

                        <td></td>

```

```
</tr>
</table>
```

```
</td>
</tr>
<tr>
```

```
<td width=100 height=82 align=center valign=middle><a
href="/software/tech.php"></a></td>
```

```
<td class="subtext">Epic technology yields the two requirements for
breaking down the traditional communication barriers of place and function: speed
and access.</td>
```

```
</tr>
```

```
<tr>
```

```
<td colspan=2 align=right><a href="/software/tech.php"></a></td>
```

```
</tr>
```

```
<tr>
```

```
<td colspan=2>
```

```
<table border=0 cellpadding=0 cellspacing=0 width=290>
```

```
<tr>
```

```
<td class="Ancillary" width=100%>Services</td>
```

```
<td></td>
```

```
</tr>
```

```
</table>
```

```
</td>
```

```
</tr>
```

```
<tr>
```

```
<td width=100 height=82 align=center valign=middle><a
href="/software/services.php"></a></td>
```

```
<td class="subtext">To us, our clients' success is of monumental
importance. Everything we do, from our meticulous software design to the unique
structure of our support staff, focuses on delivering successful clinical and financial
outcomes for our clients.</td>
```

```
</tr>
```

```
<tr>
```

```
<td colspan=2 align=right><a href="/software/services.php"></a></td>
```

```
</tr>
```

```
</table>
```

```
</td>
<td></td>
</tr>
<tr>
```

```
<td></td>
<td></td>
</tr>
</table>
```

```
<table border=0 cellpadding=0 cellspacing=0 width=100%>
<tr>
<td colspan=3 bgcolor="#999999"></td>
</tr>
```

```
<tr>
<td width=33% valign=top style="border-spacing: 1px; border-style: dotted;
border-width: 2px; border-color: #CCCCCC; border-left-style: hidden; border-
bottom-style: hidden; border-top-style: hidden;">
```

```
<table border=0 cellpadding=0 cellspacing=0 width=100%
height="122">
<tr>
<td colspan=2 valign=top></td>
</tr>
<tr>
<td width="62"><a href="company/events.php"></a></td>
<td class="textplain">
<a href="company/events.php"><b>HIMSS 2005</b></a><br>
February 13-17, 2005<br>
Booth 4919<br>
</td>
</tr>
<tr>
<td colspan=2 align=right valign=bottom><a
href="company/events.php"></a></td>
</tr>
</table>
```

```

</td>
<td width=33% valign=top style="border-spacing: 1px; border-style: dotted;
border-width: 2px; border-color: #CCCCCC; border-left-style: hidden; border-
bottom-style: hidden; border-top-style: hidden;">

    <table border=0 cellpadding=0 cellspacing=0 width=100%
height="122">
    <tr>
    <td colspan=2 valign=top></td>
    </tr>
    <tr>

    <td><a href="philips.php"></a></td>
    <td class="textplain">
    <a href="philips.php"><b>Epic and Philips announce
agreement</b></a><br>
    to dissolve the boundaries between enterprise IT software, medical
imaging, and patient monitoring devices at the point of care.
    </td>
    </tr>
    <tr>
    <td colspan=2 align=right valign=bottom><a href="philips.php"></a></td>
    </tr>

    </table>

</td>
<td width=34% valign=middle align=center>

    <table border=0 cellpadding=3 cellspacing=0 width=250>
    <tr>
    <td><a href="company/awards.php"></a></td>
    <td class="textplain" valign=top><a
href="company/awards.php"><b>Best Overall #1</b></a><br>
    Every year since inception of KLAS Top 20: Year-End Best in KLAS
Awards, an Epic product has been named Best Overall #1.
    </td>

    </tr>
    </table>

</td>
</tr>
</table>

```

```

<!-- End Main Display -->

</td>
</tr>
<tr>

<td align=center>

<!-- Begin Footer -->

    <table border=0 cellpadding=3 cellspacing=0 width=100%>
    <tr>
    <td bgcolor="#cccccc" width=100% height="6"></td>
    </tr>
    <tr>
    <td bgcolor="#B9031C" align=center valign=middle colspan=2 height=30>
    <font face="arial,helvetica" size=1 style="font-family: Arial,Helvetica,sans-
serif; color: #FFFFFF; font-size=10px;">

        <a href="/index.php" class="foot">Home</a> | <a
href="/company/company.php" class="foot">Company</a> | <a
href="/software/software.php" class="foot">Software</a> | <a
href="/software/tech.php" class="foot">Technologies</a> | <a
href="/software/services.php" class="foot">Services</a> | <a
href="http://userweb.epicsys.com" target="userweb" class="foot">Clients</a> | <a
href="/partnerships/partnerships.php" class="foot">Partnerships</a> | <a
href="/contact.php" class="foot">Contact</a>

    </font>
    </td>
    </tr>
    <tr>
    <td align=center><font face="arial,helvetica" size=1 style="font-family:
Arial,Helvetica,sans-serif; color: #000000; font-size=10px;">
    <p><a href="legal.php" class="sub">Copyright &copy; 2004 Epic Systems
Corporation.</a> All Rights Reserved. 608-271-9000<br>

    </font></td>
    </tr>
    </table>

<!-- End Footer -->

</td>
</tr>
</table>

<map name="nav_map">
<area shape="rect" coords="40,30,135,70" href="/index.php">

```

</map>

</body>

</html>

epicpublic.css

/*Cascading Style Sheet for Epic Systems Corporation*/

/*Copyright 2001. All rights reserved.*/

```
A      {
        color:#CC0000;
        text-decoration: underline;
        font-size: 11px;
      }
```

```
A:Visited  {
        color:#CC0000;
        text-decoration: underline;
        font-size: 11px;
      }
```

```
A:Hover    {
        color:#CC0000;
        text-decoration: none;
        font-size: 11px;
      }
```

```
A.sub     {
        color:#cc0000;
        text-decoration: underline;
        font-size: 10px;
      }
```

```
A.sub:Visited  {
        color:#cc0000;
        text-decoration: underline;
        font-size: 10px;
      }
```

```
A.sub:Hover   {
        color:#cc0000;
        text-decoration: none;
        font-size: 10px;
      }
```

```
A.Mad      {
        color:#9C0000; text-decoration: none;
        font-family: Arial,Helvetica;
      }
```

```
font-size: 11px;
}
```

```
A.Mad:Hover {
color:#9C0000; text-decoration: underline;
font-family: Arial,Helvetica;
font-size: 11px;
}
```

```
A.Mad:Visited {
color:#CF0000; text-decoration: none;
font-family: Arial,Helvetica;
font-size: 11px;
}
```

```
A.LNav {
text-decoration: none;
color:#000000;
font-family: Arial,Helvetica;
font-size: 12px;
}
```

```
A.LNav:Visited {
text-decoration: none;
color:#000000;
font-family: Arial,Helvetica;
font-size: 12px;
}
```

```
A.LNav:Hover {
text-decoration: none;
color:#CC0000;
font-family: Arial,Helvetica;
font-size: 12px;
font-weight: bold;
}
```

```
A.foot {
text-decoration: none;
color:#FFFFFF;
font-family: Arial,Helvetica;
font-size: 10px;
}
```

```
A.foot:Visited {
text-decoration: none;
color:#FFFFFF;
font-family: Arial,Helvetica;
font-size: 10px;
}
```

```
A.foot:hover {
    text-decoration: underline;
    color:#FFFFFF;
    font-family: Arial,Helvetica;
    font-size: 10px;
}

BODY {
    background: #FFFFFF;
    font-family: Arial,Helvetica;
    font-size: 12pt;
}

.textplain {
    color:#000000;
    font-family: Arial,Helvetica;
    font-size: 11px;
}

.subtext {
    color:#000000;
    font-family: Arial,Helvetica;
    font-size: 10px;
}

.BodyTitle {
    color:#FFCC33;
    font-family: Arial,Helvetica;
    font-size: 22px;
}

.BodySubTitle {
    color:#888888;
    font-family: Arial,Helvetica;
    font-size: 12px;
    font-style: italic;
    font-weight: bold;
}

.bodytext {
    color:#000000;
    font-family: Arial,Helvetica;
    font-size: 12px;
}

.SoftTitle {
    color:#CC0000;
    font-family: Arial,Helvetica;
    font-size: 18px;
}
```

```

    }

.SubNavTitle {
    color:#CC0000;
    font-family: Arial,Helvetica;
    font-size: 18px;
}

.SubNavHeader {
    color:#000000;
    font-family: Arial,Helvetica;
    font-size: 12px;
    font-weight: bold;
}

.HMTitle {
    color:#FFFFFF;
    font-family: Arial,Helvetica;
    font-size: 14px;
    font-weight: bold;
}

.legal {
    color:#000000;
    font-family: Arial,Helvetica;
    font-size: 12px;
    /*font-weight: bold;*/
}

input {
    color:#000000;
    font-family: Arial,Helvetica;
    font-size: 10px;
}

table.SubNav {
    /*background: #FFFFFF;*/
    border-spacing: 1px;
    border-style: solid;
    border-width: 1px;
    border-color: #CC0000;
    border-right-style: hidden;
    border-top-style: hidden;
    border-bottom-style: hidden;
    padding-left: 5pt;
}

td.Ambulatory {
    color:#FFFFFF;
    font-weight: bold;
}

```

```

                font-family: Arial,Helvetica;
font-size: 12px;
background: #F7AE11;
                padding-left: 5pt;
        }

td.Inpatient    {
                color:#FFFFFF;
                font-weight: bold;
                font-family: Arial,Helvetica;
font-size: 12px;
background: #FF6600;
                padding-left: 5pt;
        }

td.Ancillary    {
                color:#FFFFFF;
                font-weight: bold;
                font-family: Arial,Helvetica;
font-size: 12px;
background: #CC0000;
                padding-left: 5pt;
        }

/* Include id's for all your layers here, with commas between.
   Set width, left and top */
#lyr1, #lyr2, #lyr3, #lyr4, #lyr5, #lyr6 { position:absolute; visibility:hidden;
left:180px; top:230px; width:300px; z-index:100 }

```

epicpublic.css – compressed

```

/*Cascading Style Sheet for Epic Systems Corporation*/
/*Copyright 2001. All rights reserved.*/

A {color:#CC0000;text-decoration:underline;font-size:11px;}
A:Visited {color:#CC0000;text-decoration:underline;font-size:11px;}
A:Hover {color:#CC0000;text-decoration:none;font-size:11px;}
A.sub {color:#cc0000;text-decoration:underline;font-size:10px;}
A.sub:Visited {color:#cc0000;text-decoration:underline;font-size:10px;}
A.sub:Hover {color:#cc0000;text-decoration:none;font-size:10px;}
A.Mad {color:#9C0000;text-decoration:none;font-family:Arial,Helvetica;font-
size:11px;}
A.Mad:Hover {color:#9C0000;text-decoration:underline;font-
family:Arial,Helvetica;font-size:11px;}
A.Mad:Visited {color:#CF0000;text-decoration:none;font-
family:Arial,Helvetica;font-size:11px;}
A.LNav {text-decoration:none;color:#000000;font-family:Arial,Helvetica;font-
size:12px;}
A.LNav:Visited {text-decoration:none;color:#000000;font-

```

```

family:Arial,Helvetica;font-size:12px;}
A.LNav:hover {text-decoration:none;color:#CC0000;font-
family:Arial,Helvetica;font-size:12px;font-weight:bold;}
A.foot {text-decoration:none;color:#FFFFFF;font-family:Arial,Helvetica;font-
size:10px;}
A.foot:Visited {text-decoration:none;color:#FFFFFF;font-family:Arial,Helvetica;font-
size:10px;}
A.foot:hover {text-decoration:underline;color:#FFFFFF;font-
family:Arial,Helvetica;font-size:10px;}
BODY {background:#FFFFFF;font-family:Arial,Helvetica;font-size:12pt;}
.textplain {color:#000000;font-family:Arial,Helvetica;font-size:11px;}
.subtext {color:#000000;font-family:Arial,Helvetica;font-size:10px;}
.BodyTitle {color:#FFCC33;font-family:Arial,Helvetica;font-size:22px;}
.BodySubTitle {color:#888888;font-family:Arial,Helvetica;font-size:12px;font-
style:italic;font-weight:bold;}
.bodytext {color:#000000;font-family:Arial,Helvetica;font-size:12px;}
.SoftTitle {color:#CC0000;font-family:Arial,Helvetica;font-size:18px;}
.SubNavTitle {color:#CC0000;font-family:Arial,Helvetica;font-size:18px;}
.SubNavHeader {color:#000000;font-family:Arial,Helvetica;font-size:12px;font-
weight:bold;}
.HMTitle {color:#FFFFFF;font-family:Arial,Helvetica;font-size:14px;font-
weight:bold;}
.legal {color:#000000;font-family:Arial,Helvetica;font-size:12px;/*font-
weight:bold;*/}
input {color:#000000;font-family:Arial,Helvetica;font-size:10px;}
table.SubNav {/*background:#FFFFFF;*/border-spacing:1px;border-
style:solid;border-width:1px;border-color:#CC0000;border-right-style:hidden;border-
top-style:hidden;border-bottom-style:hidden;padding-left:5pt;}
td.Ambulatory {color:#FFFFFF;font-weight:bold;font-family:Arial,Helvetica;font-
size:12px;background:#F7AE11;padding-left:5pt;}
td.Inpatient {color:#FFFFFF;font-weight:bold;font-family:Arial,Helvetica;font-
size:12px;background:#FF6600;padding-left:5pt;}
td.Ancillary {color:#FFFFFF;font-weight:bold;font-family:Arial,Helvetica;font-
size:12px;background:#CC0000;padding-left:5pt;}

/* Include id's for all your layers here, with commas between.
   Set width, left and top */
#lyr1, #lyr2, #lyr3, #lyr4, #lyr5, #lyr6
{position:absolute;visibility:hidden;left:180px;top:230px;width:300px;z-index:100;}

```

Appendix H

Redesign source code:

Index.html

```

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">

```

```

<html xmlns="http://www.w3.org/1999/xhtml" xml:lang="en">
<head>
<meta http-equiv="content-type" content="text/html; charset=iso-8859-1" />
<title>
Epic Systems Corporation
</title>
<link rel="stylesheet" type="text/css" media="screen, print" href="style.css" />
<link rel="stylesheet" type="text/css" media="print" href="print.css" />
</head>
<body>
<div id="main">
  <div id="banner"><a href="/index.php"></a></div>
  <div id="subMenu">
    <!-- Begin Menu -->
    <h2>Contents</h2>
    <ul id="topMenu">
      <li class="first"><a
href="/company/company.php">Company</a></li>
      <li><a href="/software/software.php">Software</a></li>
      <li><a href="/software/tech.php">Technologies</a></li>
      <li><a href="/software/services.php">Services</a></li>
      <li><a href="https://userweb.epicsys.com">For
Clients</a></li>
      <li><a
href="/partnerships/partnerships.php">Partnerships</a></li>
      <li><a href="/contact.php">Contact</a></li>
    </ul>

    <form action="/search/search.php" method="get" id="search">
    <fieldset>
      <input type="hidden" name="ps" value="20" /><input
type="hidden" name="o" value="0" /><input type="hidden" name="m" value="all" /
><input type="hidden" name="ul" value="" /><input type="hidden" name="wf"
value="200010" />
      <input type="submit" value="submit" class="submit" /><input
type="text" id="submitBox" name="q" size="20" />
    </fieldset>
    </form>
  </div>
  <!-- End Menu -->
  <div id="topSeperator"></div>

  <!-- Begin Main Display -->
  <div id="top">
    <div id="left">
      <div class="leftSection" id="yellow">
        <h2>Software</h2>
        <a href="/software/software.php"></a>

```

<p>Every Epic application is built to share a single database. Through a single user interface, every user has full, relevant patient information instantly accessible from anywhere in the organization.</p>

<div class="buttonYellow"></div>

</div>

<div class="leftSection" id="orange">

<h2>Technologies</h2>

<p>Epic technology yields the two requirements for breaking down the traditional communication barriers of place and function: speed and access.</p>

<div class="buttonOrange"></div>

</div>

<div class="leftSection" id="red">

<h2>Services</h2>

<p>To us, our clients' success is of monumental importance. Everything we do, from our meticulous software design to the unique structure of our support staff, focuses on delivering successful clinical and financial outcomes for our clients.</p>

<div class="buttonRed"></div>

</div>

</div>

<div id="right"></div>

</div>

<div id="bottom">

<div class="left">

<h2>Events</h2>

<h3>HIMSS 2005</h3>

<p>February 13-17, 2005</p>

<p>Booth 4919</p>

<div class="arrow"></div>

</div>

<div class="center">

```

        <h2>News</h2>
        <a href="philips.php"></a>
        <h3><a href="philips.php">Epic and Philips announce
agreement</a></h3>
        <p>to dissolve the boundaries between enterprise IT software, medical
imaging, and patient monitoring devices at the point of care.</p>
        <div class="arrow"><a href="company/philips.php"></a></div>
        </div>

        <div class="right">
        <h2>Awards</h2>
        <a href="company/awards.php"></a>
        <h3><a href="company/awards.php">Best Overall #1</a></h3>
        <p>Every year since inception of KLAS Top 20: Year-End Best in
KLAS Awards, an Epic product has been named Best Overall #1.</p>
        </div>
</div>
<!-- End Main Display -->

<!-- Begin Footer -->
<ul id="bottomMenu">
    <li class="first"><a href="/index.php">Home</a></li>
    <li><a href="/company/company.php">Company</a></li>
    <li><a href="/software/software.php">Software</a></li>
    <li><a href="/software/tech.php">Technologies</a></li>
    <li><a href="/software/services.php">Services</a></li>
    <li><a href="http://userweb.epicsys.com">Clients</a></li>
    <li><a href="/partnerships/partnerships.php">Partnerships</a></li>
    <li><a href="/contact.php">Contact</a></li>
</ul>

<div id="footer">
    <p><a href="legal.php">Copyright &copy; 2004 Epic Systems
Corporation.</a> All Rights Reserved. 608-271-9000</p>
</div>
<!-- End Footer -->
</div>
</body>
</html>

```

style.css

```

body {margin:0;font-family: Arial, Helvetica;}
a {text-decoration:none;background-color:transparent;color:#C00;}
a:hover {text-decoration:underline;}

```

```

html>body #main { min-width:905px;margin:0 auto;}
#banner {background-color:#B9031C;border-bottom:2px solid
#94223B;height:60px;}
#banner img {border:0;}
#subMenu {margin:5px 0;font-size:0.75em;font-weight:bold;letter-spacing:0.5px;}
#subMenu h2 {display:none;}
#topMenu {margin:0 0 0 15px;float:left;}
html>body #topMenu {margin:0 0 0 -18px;}
#topMenu a {color:#9A9A9A;background-color:transparent;padding-left:10px;}
#topMenu a:hover {background-image:url("images/arrow.gif");background-repeat:no-
repeat;text-decoration:none;}
#topMenu li {display:inline;border-left:2px solid #9A9A9A;padding:0 9px 0 3px;}
#topMenu li.first {border-left:none;}

#search, #search fieldset {margin:0;padding:0;}
#search {margin:-5px 0 0 0;float:right;width:250px;}
html>body #search {width:235px;}
#search fieldset {border:0;}
#search .submit {font-weight:bold;font-size:0.9em;background-
color:#999;color:#fff;border:1px solid #B3B3B3;padding:1px 3px;margin-
bottom:3px;}
#search #submitBox {font-size:0.9em;width:103px;margin:3px 75px 3px 2px;}

#topSeperator {clear:both;background-color:#DDD;color:inherit;border-top:2px solid
#CCC;height:15px;margin-top:-5px;}
html>body #topSeperator {margin:0;}

#top {width:905px;margin:-2px 0 0 0;padding:2px 0 5px 0;}
html>body #top {padding:2px 0 1px 0;}

#left {float:left;width:291px;margin:0 -2px 0 0;}
html>body #left {margin:0 1px 0 0;}
.leftSection {position:relative;clear:both;padding:3px 0 0 1px;height:110px;}
.leftSection h2 {margin:0;padding:2px 0 2px 7px;font-size:0.75em;background-
image:url("images/end.gif");background-repeat:no-repeat;background-position:right;}
.leftSection img {position:absolute;top:50%;margin-top:-23px;margin-
left:19px;border:0;}
.leftSection p {position:absolute;font-size:0.65em;width:64.5%;right:0;}
#yellow p {margin-top:3px;}
#orange p {margin-top:16px;}
#red p {margin-top:2px;}
#yellow h2, .buttonYellow img {background-color:#F7AE11;color:#fff;}
#orange h2, .buttonOrange img {background-color:#F60;color:#fff;}
#red h2, .buttonRed img {background-color:#C00;color:#fff;}
.buttonYellow, .buttonOrange, .buttonRed
{position:absolute;width:23px;height:7px;bottom:3px;right:0;}
.buttonYellow img, .buttonOrange img, .buttonRed img {border:0;margin:0;}
#red img {margin-top:-18px;}
#red .buttonRed img {margin-top:11px;}

```

```

#right { margin:8px 0;padding:3px 0 0 0;}
html>body #right { padding:0;}

#bottom { position:relative;border-top:5px solid #999;font-size:0.7em;margin-top:-
4px;height:122px;}
#bottom h2 { margin:0;font-size:1.2em;font-weight:bold;text-
transform:lowercase;background-color:#999;color:#fff;width:60px;background-
image:url("images/end.gif");background-repeat:no-repeat;background-
position:right;text-align:center;padding-right:8px;}
#bottom h3 { font-size:1em;margin:20px 0 0 0;text-decoration:underline;}
#bottom img { border:0;position:absolute;top:50%;}
#bottom p { margin:0;}

#bottom .left, #bottom .center, #bottom .right { width:33%;position:absolute;border-
right:2px dotted #CCC;height:100%;}
#bottom .left { left:0;}
#bottom .left img { margin:-20px 0 0 5px;}
#bottom .left h3, #bottom .left p { margin-left:72px;}
#bottom .left h3 { margin-top:29px;}

#bottom .center { left:33%;}
#bottom .center img { margin:-25px 0 0 0;}
#bottom .center h3, #bottom .center p { margin-left:57px;}
#bottom .center h3 { margin-top:29px;}

#bottom .right { right:0;border:none;}
#bottom .right h2 { display:none;}
#bottom .right img { margin:-35px 0 0 40px;}
#bottom .right h3, #bottom .right p { margin-left:95px;width:45%;}
#bottom .right h3 { margin-top:23px;}

#bottom .arrow { position:absolute;width:23px;height:7px;top:111px;right:0;}
#bottom .arrow img { margin:0;background-color:#999;color:#fff;}

#bottomMenu { clear:both;border-top:7px solid #CCC;}
#bottomMenu { padding:5px 0;background-color:#B9031C;color:#fff;text-
align:center;margin:0;}
#bottomMenu a { background-color:transparent;color:#fff;font-size:0.6em;}
#bottomMenu li { display:inline;border-left:1px solid #fff;padding:0 2px 0 5px;}
#bottomMenu li.first { border-left:none;}

#footer { font-size:10px;text-align:center;}
#footer p { margin:1.5em;}
#footer a { text-decoration:underline;}

```

print.css

```
@page { size:8.5in 11in; margin:0.5in;}
```

```
div {float:none; position:relative; display:block;}
```

```
#main {width:100%;}
```

```
#topSeperator {height:1px;border:1px solid #000;}
```

```
#right {display:block;clear:both;}
```

```
#search, #bottom .arrow, #bottomSeperator, #bottomMenu, #footer{display:none;}
```

```
#bottom, #bottom .left, #bottom .center, #bottom .right {width:100%;  
left:0;border:none;position:relative;}
```

```
a:link:after, a:visited:after {content:" (" attr(href) ") ";font-size:90%; color:#520;  
background:transparent;}
```