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Brave New Wireless World

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Wireless Application Protocol (WAP) is the "HTTP" of the wireless Web browsers that are being incorporated into cell phones. The consortium of companies that formed the WAP standard and the development channel (http://www.phone.com) have been working to improve this protocol, and anticipate its widespread use in devices such as PDAs, Web appliances, and wristwatches.

What is WAP?

The Wireless Application Protocol is a standard developed by cellular phone manufacturers to enable the use of microbrowsers, which are incorporated into the firmware of cell phones. The WAP standards board includes companies such as Nokia, Sprint Spectrum, Alcatel, and Bell Atlantic (for a complete list of members, visit http://www.wapforum.org/who/members.htm). Members of the board have been lobbying for the standard use of WML, which is based on XML (eXtensible Markup Language), in place of the older HDML (Handheld Device Markup Language).

What is the Difference Between WAP and WML?

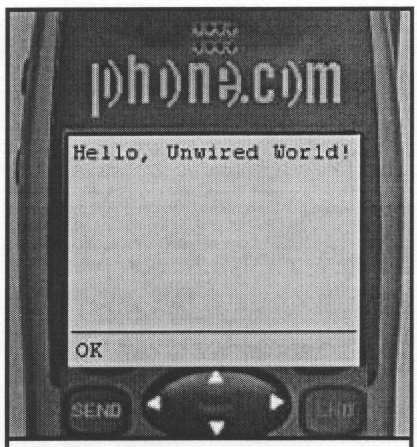
WML, or Wireless Markup Language, is a result of the WAP forum standard. It is a prototype status language based on XML. The standard HTML in the current Web landscape uses the term "page" to describe a unit of material presented to the Web via a browser. WML uses the term "card" to describe a unit of material that is displayed by way of a microbrowser. I consider WML to be in the "Lynx" stage right now (Lynx was the original text-only browser for the World Wide Web, found on UNIX systems), because it can only display 2-bit images (two color) and up to four lines of text (including any navigational hyperlinks).

Below is an example of a WML card for use with the 2.0 microbrowser found in most modern phones:

```
<?xml version="1.0"?>
<!DOCTYPE wml PUBLIC "-//WAPFORUM//DTD WML 1.1//EN"
"http://www.wapforum.org/DTD/wml_1.1.xml">
<wml>
<card>
<p>
```

```
Hello, Unwired World!
</p>
</card>
</wml>
```

As you can see, the first required tag in the document is XML. The second DOCTYPE tag is also required for the WML standard.



Output from UP.Simulator under Windows NT 4

The above card simply displays "Hello, Unwired World!" on the first line in the microbrowser. A single WML document may comprise several cards. Navigation can be accomplished by way of the standard HTML hyperlinks. The main differences betweem WML and HTML concern the quality of graphics and lines per page.

There are drawbacks to WAP. For example, to view your WML page requires a simulator, which installs a microbrowser on your computer. You can obtain a simulator -- called a UP.Simulator -- from http://www.phone.com. However, to ensure that your page will look right, it must be viewed from an enabled Web server using a WAP gateway to get your page onto the Internet. This, of course, uses considerable air time. Also, developers should be aware that not all phones are able to handle WML at this point, and some don't even follow a standard in their microbrowser software. Thus, there is no current guarantee that a page will appear as intended on every phone.

I recommend a strong HTML background before breaking into this "brave new world" of Web development. XML experience is also helpful. For additional resources, you can join the WML developer community at http://developer.phone.com.

The June 2000 issue of *Linux Journal* featured an article on configuring Apache with WAP and WML mime types. I would recommend this article to any serious developer. In a nutshell, the article describes how to have Apache 1.3.x determine whether it is talking to a microbrowser or a Web browser, and then dispatch the proper page for the platform. For example, I have my WML-enabled site with the typical index.html page, but I develop an index.wml counterpart; the Web server recognizes identifiers in the code, and serves up the WML to microbrowsers, and the HTML page to standard Web browsers (Netscape or IE).

The future of WML is very bright. Because it is a subset of XML, it is a good candidate for becoming the standard markup language for portable devices. Though it is in its infancy, WML will take off like the early browsers of the Web if it gains adequate support. Getting in on the ground level of a new facet of Web development ensures future development of even better protocols, and spawns the seeds of creative

innovation in our high-tech world. It doesn't hurt our futures as Web developers, either.

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