

What a Non-Technical Business Person Needs to Know About Java

By Paul Carney

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Paul Carney
info@ishtot.com

Describing Technology for Business <http://www.ishtot.com/article0219.htm>

No business person today, whether considered technical or not, can escape the need to understand technology and how it affects business. It is my continuing effort to help business people not only learn about technical terms and concepts, but how they can be applied to business.

"Java", since its inception in the early 1990's, has been hailed as the "universal programming language" that would allow all developers to speak the same language. Within the past three years, it has become a major force in building Internet web sites. What is it and how is it used to help you do business? Let's find out.

Java: Neither an Island nor Brewed Coffee

Even though it shares its name with an island in Indonesia and that cup of "get-up-and-go" that greets you each morning, Java the programming language stands by itself. In basic terms, it is an object-oriented programming language used to create applications that run via the Internet.

Java gets its "universal" qualities from the fact that the same set of code will run on any computer. In general, any software applications that are written for one operating system (like the Apple OS, Unix, Linux or Microsoft Windows) will only work on that operating system. A separate set of code has to be written and maintained for each operating system platform.

So the quest has always been to produce one set of code that can run on any operating system. This has two benefits:

1. A Reduction in Development and Maintenance Resources
2. A More Efficient Software Distribution Mechanism

Understanding the Virtual Machine

Java solves this issue by producing one set of code (called "bytecode") that is interpreted by each operating system. The key is that each operating system has something called the "Java Virtual Machine" that knows how to translate the Java bytecode into a functional application.

It works like this: Java "source code" (written by developers) is compiled into "bytecode" (which the Virtual Machine understands) and interpreted into "machine code" (which the operating system

understands). The interpretation of the "bytecode" into "machine code" is done by the Java Virtual Machine (also known as the "JVM").

Okay -- that's enough techie speak. Here is a real-world example: Imagine that you are creating traffic signs to post on the roads and you need one to indicate "No U-Turn". You could use the words "No U-Turn", but it may not be understood by non-English speaking people.

So you create a universal symbol of an upside-down arrow in the shape of a "U" with a red circle around it and a slash going through it. This symbol will then be translated by the driver into his own language and the concept is understood.

You took your "source code" (the concept of "No U-Turn"), converted it to "bytecode" (a universal symbol), which is interpreted into "machine code" (the driver's native language) in order to convey the idea. The "Virtual Machine" in humans is the ability to figure out what a symbol is trying to tell you, like the concept of a "red circle and slash", which indicates an action that is prohibited. Java works exactly the same way.

Java and JavaScript

Remember that Java is a full-fledged programming language. "JavaScript", on the other hand, is called a "scripting language" because it is much simpler to use and has much less functionality. The main purpose of JavaScript was to enhance the operation of HTML web pages by adding some interactive elements.

For instance, a simple HTML form on a web page cannot validate that you have entered something in the "First Name" field. JavaScript can be used to validate and present you with an "alert box" asking you to fill in the "First Name" field before you can move on.

And in other cases, JavaScript can be used to dynamically change an aspect of the web page. For instance, if you select an option on the page, a JavaScript "script" can change another attribute of the web page based on your selection.

All of this is done without having to make a call to an Internet server because the logic needed to process your request now exists in your browser in the form of JavaScript. As you can imagine, this will decrease your processing time.

Java Enhances Business

The benefits that Java brings to a business is that it can be used to create universal programs that are independent of computer operating systems and browsers. That is not only an advantage to software companies creating computer software, but to all companies who have a web presence.

By using Java technologies, your business can create more functional web sites. "Java Applets" are Java-based programs that will download to a user's computer via the Internet. These applications generally include dynamic data and graphics and allow your company to create more interactive elements into the presentation.

Even better, all of the processing logic is downloaded to your browser (similar to the JavaScript example above) so that all requests you make (clicking on a link, selecting items, etc.) within the applet will be processed on your computer rather than making a request across your Internet connection to a server. And Java allows more functionality than JavaScript, since it is a full

programming language.

Since the Java Virtual Machine runs like a separate computer within your computer, Java Applets are safe because they cannot download viruses nor can they access anything on your computer outside of the Virtual Machine's world. In addition, all of the major browsers, from version 4 and higher, will run Java Applets.

Concept Review

"Java" has become a common base on which companies are developing Internet-based software applications. Just as "XML" (<http://www.ishtot.com/article0147.htm>) has become the standard for sharing data, Java is the standard for sharing applications.

Your business will benefit by using Java to create more interactive web site features that will allow your visitor's to do more than view pictures and fill out forms. Java applets that offer chat, online help and interactive data presentations will help you to better serve your customers, and hopefully win new ones!

Until Next Time,

Paul Carney

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