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The

XML

Shockwave

What every CEO and CIO needs to know
about the key technology of e-Business

Contents

More detailed information about XML is available at our Web site: www.softwareag.com. You are also invited to view our landmark Web conference at www.xml4e-business.com.

Just a year ago, nobody could have predicted the shockwave that eXtensible Markup Language (XML) has generated in the software industry. Today, decision-makers are flocking to XML because it's the technology they've been searching for—a truly open, non-proprietary language that makes it possible to exchange any kind of data with any other company via the Web.

XML is a standard developed and recommended by the World Wide Web Consortium (W3C), and it's endorsed by a host of industry heavyweights such as IBM, Microsoft, Software AG, and many others. To understate the case, XML is the most significant change in computing since the invention of relational databases and SQL. It has quickly become the key enabler for Web-transacted business.

With XML, enterprises can transform their existing hardware and software into an asset and derive revenue growth and productivity benefits in the electronic business boom and beyond.

If you don't know enough about XML to make the move, your business might be outplaced by the XML revolution.

Why Electronic business is taking off now

e-Business is the future of any business and XML is the breakthrough technology that makes it possible. Budgets and programming resources are now being focused on turning information technology into a powerful marketing and sales tool, and the battle for market share will be fought on the Internet. Those without the ability to conduct business electronically are unlikely to survive.

Global companies are vying for leadership in the age of "e."   Early leaders such as Amazon.com and eBAY are ramping up their marketing and infrastructure to prepare for the onslaught of industry giants such as General Motors, Nike, AOL/Time-Warner and Sony, who have the budgets and brand recognition to build the largest commerce sites in the world.

XML Technology components are now available

In the pre-millennium Internet, most e-Business projects had very long implementation cycles due to the lack of enabling technology. With the rapid adoption of XML, it has finally become cost effective for small and medium corporations to get into the game and integrate their offerings with the biggest single market ever—the Internet. Implementation cycles for robust, secure and easy to use e-applications have been cut from years to months.

The shift in expectations

As we move into the Internet age, companies are faced with a completely new consumer generation. The young people who grew up with computers have a whole different outlook.

With this group, global shopping and instant gratification are taken for granted. They're extremely demanding; they have a lack of patience and they expect perfect availability, traceability, and reliability. They're already customers, and it won't be long before they're decision-makers. Companies that aren't Web-savvy or that don't understand the new marketing process will be skipped right over. Businesses that play into the market research skills of this new generation will thrive.

The XML tide is rising

There are three reasons why XML is transforming the software industry at break-neck speed:

1. XML defines an open and flexible standard for storing, retrieving, publishing and exchanging *any* kind of information. This allows business information to be made independent from proprietary data formats and to remain readable forever. This is a radical innovation for companies suffering from the database chaos that was created by 40 years of fiercely competitive differentiation on the part of data management vendors.
2. XML is easy to understand and apply because it's written in language that's human-intelligible. People and machines can interpret XML information without much effort. This is a radical departure from the past!
3. XML is a standard driven by W3C, the organization that is setting the overall direction for the Web. Of equal importance, end-user companies are getting directly involved in setting the parameters for their own industry groups.

Major industry leaders are putting hundreds of millions of dollars into building system technology and applications based on XML. XML brings huge benefits to any organization that is ready to make the transition along with them.

Web Speed Ahead!

The benefits of XML can be summarized in one word . . . SPEED: faster reaction to customer needs; faster publishing of information to clients and business partners; faster processing of orders and shipments. And, SPEED means Storing, Publishing and Exchanging Electronic Documents.

Storage: Relational database technology is not capable of dealing with the enormous storage needs of today's business. Documents, images, sounds, digital signatures, etc. wind up being "flattened" into 2-dimensional structures and the complex relationships between them are lost. Fortunately, XML offers a way out. Forward-looking companies now offer native XML databases that allow the storage of all types of electronic information in a Web-speed filing system: an XML information server.

This allows you to store, retrieve, manage, search, distribute and exchange your electronic business information from a single source while preserving those complex relationships. Your investment in hardware, software and the actual databases you've built over the years is safe. And, it's easy to set up an "information firewall" that exposes only the information to which you want others to have access.

Publishing: Just as Gutenberg's revolutionary development of moveable type made it possible to publish printed materials for mass audiences, the revolutionary development of XML makes it possible to publish any type of information for any audience at the push of a button, regardless what technology is in use at your end or at the other end. Web browsers simply examine an XML document, find the appropriate style sheet information and automatically format the information properly for that user.

XML figures out what the user wants and serves it up as a display on a monitor, output for a printer, Braille, large-type or audible speech through a cell phone.

Make no mistake, as users become more accustomed to the fact that they can be online all the time, they'll demand that you to send them the relevant information wherever they are, and with the correct level of detail. XML makes it possible. Meet this demand and customer satisfaction and loyalty will follow

Exchange: Up until now, most CEOs and CIOs have thought of information technology as something internal to their corporation—users sitting in front of screens, entering, evaluating and formatting information. In the Age of "e," however, IT moves up to a mission-critical status by providing the mechanisms and standards for the exchange of information, a global business environment based on the Internet.

It's unlikely that your existing enterprise resources can meet this challenge and forget about the dime-a-dozen startup shops that offer Web services. They simply don't have the degree of sophistication necessary for automated transactions such as warehouse shelves talking to restocking systems or assembly lines calling for parts or power plants contacting emergency response systems.

Science fiction stuff? Nope. These applications exist now. It's just that, prior to Java and XML, it was almost impossible to achieve this kind of automated machine-to-machine interchange of information. Just as Java frees applications from the shackles of proprietary hardware and software architectures, XML frees information from the shackles of proprietary data formats.

Electronic: We live in the age of "e:" e-Mail, e-News, e-Literature, e-Government and e-Business are here to stay. If your enterprise is not fully Web-empowered, you may be looking at an e-Mergency a lot sooner than you think!

The e-Hype has nothing to do with the Web *per se* and it has nothing to do with what computer hardware you have installed, or which programming model you follow. It really has nothing to do with putting people in front of Internet browsers so they can type in an order. There are still many companies that claim success in e-Commerce, but they're still faxing the order forms received from their Web site to their suppliers who then have to retype them!

"Electronic" in the context of electronic business should be defined as *the complete automation of a transaction across business boundaries*, including of course, Internet access so that customers can simply use their browsers to enter orders or process other transactions. The most important supporting aspect of electronic processing, however, is the ability of machines to talk to other machines without compatibility issues. And, that's what XML is all about.

Documents: Business is based on the exchange of documents. Electronic or not, orders, invoices, status reports, contracts and brochures must be prepared, sent, received, sorted, tracked and queried. As more and more of these documents have become digital, their complexity has increased exponentially. On top of this, the volume of electronic documents is exploding as more and more users link up to the Web and drive up the demand for electronic documents.

In many industries there's a legal obligation to store business documents for decades and to ensure that they'll be readable 30 years from now. If it was only simple A-B-C and 1-2-3 information, perhaps the task would be manageable, but the complexity of today's electronic documents is another story. XML offers a brilliant solution because it can be used to describe the content, relationship and meaning of any type of document, no matter how complex. Readable foreve,r even if the applications that created it are long gone.
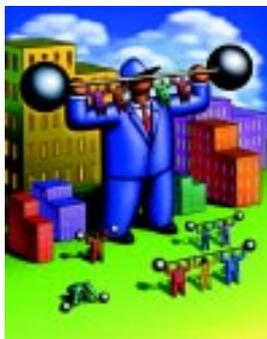
XML-powered Web applications —the power of XML

A library would be rather useless without a librarian to sort out the books and put them where they belong and a catalog to help you find what you're looking for. In technology terms, your XML database management system is the librarian and the XML meta data function is the catalog. Following are several examples of the types of applications that will be completely transformed by the raw power of XML.

Data Interchange to the power of XML

Electronic Data Interchange (EDI) has floundered because it depends on a uniformity of processing that simply does not exist in real life.

For centuries, humans have done business by exchanging easy-to-create, cheap, and readable documents such as purchase orders, invoices, bills of lading, bank-notes, prescriptions, user manuals, and so forth. The reason that these documents work for any commerce is because *they don't require the parties involved to know about one another's internal processes.* It's perfectly clear that the same ease of use is sorely needed in electronic commerce.

In a word, that's what XML is all about.

Document and knowledge management to the power of XML

Ever since the advent of personal computers, there has been geometric growth in the number of documents being produced, edited, sent, received, stored, managed and distributed. The notion of the paperless office is a joke; in fact, we seem to have more paper on our desks than ever before!

To deal with this phenomenon, vendors have sold us various knowledge management technologies—a big improvement over our old physical filing systems but so limited by proprietary imperatives that it's been impossible to swap information with a department just down the hall, let alone a business partner on the other side of the globe, without spending huge amounts of money for conversion programs.

Hold onto your hat, XML is blowing that approach right out the window!

Data warehousing to the power of XML

Data warehousing is the process of extracting information from operational data stores so that decision-makers can evaluate and use it to advantage.

Data warehousing is a great concept; however, the past decade has shown that, on a practical level, data warehousing projects tend to be cumbersome and extremely costly because of the incompatibility of the database infra-structures. Most database developers have actually gone out of their way to differentiate their products as much as possible in order to hold their audiences captive . . . all at the expense of standardization.

With XML I can read your data and you can read mine. It's as simple as that!

Multimedia to the Power of XML

Multimedia content isn't just for Web-based entertainment, (although the commercial potential is enormous). As wide bandwidth connections proliferate in homes and businesses, including audio and video in your documents may also become commonplace.

Regardless whether the content is just for fun or for serious business purposes, multimedia is headed our way. Up to this point, finding what you're looking for in a multimedia document is worse than looking for the proverbial needle in a haystack, but that's about to change. Synchronized Multimedia Integration Language (SMIL and aptly pronounced "smile") is an XML-based markup language that can combine video and audio clips along with text and images.

Just sit back and ponder the possibilities of that breakthrough. (And smile!)

SQL and XML Databases

SQL is the *de facto* DBMS standard for distributed applications and will continue to drive many applications for decades. XML has created a new database standard by adding the capabilities of content management and information publishing to information storage, transaction processing, error recovery, and decision support.

Numerous vendors of SQL databases have rushed to jump on the XML bandwagon with "XML-enabled" products by overlaying their existing applications with an XML "translator." While better than no XML at all, this is not an acceptable long-term solution. As compared to a native XML database, this approach is inherently slower and prone to broken links.

Be Bold. Be Smart. Be Fast. Go Native.

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Software AG, based in Darmstadt, Germany, is one of the largest and most highly respected system software companies in the world and the premier provider of database management technology. With products and services in use globally, our focus is on mission-critical electronic business applications linking heterogeneous platforms, and our commitment to and support for open-standard XML technology is absolute.

Software AG is a founding member and active participant in the World Wide Web Consortium (W3C) and the Organization for the Advancement of Structured Information Standards (OASIS).