Introduction

Since the dawn of the computer age, technology has been constantly reshaping and refining the way business is conducted. Each advancement in hardware and software has provided a new level of power and functionality that has helped businesses streamline operations, increase employee productivity and improve profitability.

Out of this sea of technology, there's one advancement that promises to have the single greatest impact on business since the computer was invented decades ago: the Internet/World Wide Web (the "Web" or WWW).

Understanding the Internet

To fully appreciate the wide-sweeping change that the Internet is bringing to business, it's important to understand what the Internet is and how it operates. Originally developed for, and by, the Department of Defense in 1969, the Internet is the world's largest network of computers.

Current estimates are that the Internet links more than 100,000 networks in 186 countries. Although these networks are administratively independent from one another, they work together via a common suite of protocols (TCP/IP) that make it appear as though it's a seamless, integrated global network.

In 1989, Switzerland-based CERN developed the WWW to simplify the retrieval, referencing and display of information on the Internet. This distributed hypertext system operates on a client/server model and uses software called a browser that allows users to download information of any data type from Web servers. The volumes of information and wealth of entertainment available on the Web has made it the driving force behind the rapid growth in Internet usage.

The benefits of using the Internet are many. First, it allows users to quickly and easily access information from anywhere and at any time. In addition, it expands communication capabilities by providing a way for users to communicate with others via e-mail, bulletin board and on-line services. Additional benefits will be discussed in the pages that follow.

Changing The Way People Do Business: The Lawson Vision.

Although business use of the Internet is still in its infancy, Lawson has already identified three primary ways in which the Internet is redefining "business as usual."

First, companies will begin to use the Internet as their virtual business network. The primary reason for this is that the Internet is an affordable alternative to custom WANs. The savings come in the form of significantly reduced hardware costs, the ability to use an inexpensive browser instead of proprietary client-based application software and the elimination of version control by using client browsers as universal interfaces.

The second way Lawson sees the Internet changing business is that the common protocol suite allows companies to operate as virtual entities, regardless of differing technology architectures. As a result, clients can be installed independent of technology platform and business relationships can be leveraged to share application and information access.

Finally, the Internet will deliver on the promise of electronic commerce. The keys to making this a reality are customer and employee self-service through home page information access coupled with the integrated on-line marketing services, sales, order processing and fulfillment.

The Lawson Internet Strategy

Lawson has developed a comprehensive strategy to help it reach its goal of being the industry's leading provider of client/server applications over the Internet. This two-prong strategy involves providing customers with a solution that allows Lawson's applications to be deployed through both private, corporate Web sites called "Intranets," or through the public Internet. This flexible arrangement provides employees with true, "any time, anywhere" access to Lawson applications and the data they contain.

With the release of LAWSON INSIGHT 7.0, Lawson propelled itself into the future -- and away from its competition -- by becoming the first client/server solutions provider to deliver web deployable applications.

The Difference Technology Makes

Lawson's ability to provide web-deployable solutions long before its competition lies in its unique 3-Tier Architecture. Unlike 2-tier or legacy architectures, which have heavy network bandwidth dependencies and static features/functionality, Lawson's advanced distributed architecture is ideal for Web applications. Its independent software layers make it possible to deliver existing and new application services quickly over the latest Web technology options. In addition, Lawson application functions are insulated from each Web desktop activity option, protecting the customer's investments in skills, applications and hardware.

Integrated Web Technology

In addition to its unique architecture, Lawson applications feature integrated Web technology to enhance functionality on the Web. The WebPage Generator, which is integrated into Lawson applications via the active object repository, generates hypertext markup language (HTML) for all Lawson interfaces as dynamic graphical Web browser forms. This provides a wealth of benefits including:

> * Unprecedented "self-service" access to information, forms and reports

> * The ability to maintain, update and distribute internal information more efficiently and cost-effectively

> * The convenience of having all of a company's computers communicate under a common interface across multiple platforms

Lawson's WebPage Generator is discussed in more detail later in this document.

Following Internet Protocol

Lawson's strict adherence to the communication standards of the Internet is another reason why its applications are so easily deployed on Web. TCP/IP, which is the language of the Internet, is used by the LAWSON INSIGHT Desktop Client. As we have just seen, HTML, the standard user interface on the Web, is generated by Lawson's WebPage Generator. And finally, Lawson employs Java technology.

Developed by Sun Microsystems, Java is a new object-oriented programming language designed to solve a number of programming challenges. It allows users to create interactive programs, independent of the server software, that run on any computer or operating system. It was specifically developed to create small programs that travel over networks to a user's PC on an as-needed basis. In this capacity, it's ideal for bringing animation to Web pages.

Lawson's Java implementation is two-fold. First, WebPage Generator currently supports Java Script to facilitate desktop integration between Web browsers like Netscape and desktop utilities. Lawson is also rapidly developing Java Server capability to further enhance its Web deployable capabilities. Once complete, this will extend browser-based application services across all classes of users and requirements.

Combining the power of Lawson application and workflow services with Java applets will offer exceptional flexibility in meeting virtually any need.

Security on the Internet

By design, the Internet is an open and inherently non-secure public system with no built-in security protocols. While this facilitates the free flow of information, it also raises data privacy and security issues. To protect companies that deploy Lawson applications over internal Intranets or the Internet, Lawson has integrated several top security technologies including socket servers, data encryption, public/private key pairs, user IDs, passwords and a firewall-compatible design.

Before examining each of these in greater detail it is important to note that WebPage Generator is only as secure as your Web browser and Web server. The industry standard for data encryption across the World Wide Web is the Secure Sockets Layer (SSL). This standard is incorporated by most of the industry's Web browser and Web server software providers. SSL allows for encrypted transfer of Web pages, forms data, and threaded discussion groups.

For those users employing the LAWSON INSIGHT Desktop Client, the Lawson Socket Server is a solution that provides a socket-based connection between the server and the client presentation software. This sets up the communication between LAPM and the LAWSON INSIGHT desktop software. In this capacity, it monitors incoming connection requests from any number of clients. Requests come in packets that specify the type of client, the client's user name and password plus an encryption type identifier that is used throughout the session. Once packets are received, the socket server initiates a platform-specific client handler for each connection.

Within this process, there are several underlying technologies that work in tandem to provide secure data transfers. The cornerstone of these is data encryption. The "Morse Code" of computers, data encryption provides security by coding information so that only the socket server and appropriate client can decipher it. In the Lawson implementation, the International Data Encryption Algorithm (IDEA) is employed.

Naturally, in order for communication using encrypted data to occur, a mechanism must be in place that allows both the client and the server to know the encryption key that allows encrypted data to be deciphered. This key must either be known in advance or exchanged between the client and server prior to its use on either side.

Here's how it works. When the socket server is initiated, it generates an RSA public/private key pair. (As the name implies, the public key can be used by anyone. However, any data encrypted with a public key can only be decrypted using the corresponding private key.) The client handler returns the socket server's RSA public key to the client. If the client has implemented data encryption, it creates an IDEA session key and encrypts it with the RSA public key. It then uses the session key to encrypt the user's user name, password and data packets being transferred between the client and server. The server then decrypts the IDEA session key using its RSA private key, then decrypts the other information using the client's session key.

For domestic communications and installations, the IDEA session key is 128-bits in length, which provides the tightest encryption available. Per U.S. State Department regulations, a 32-bit key is generated for international use.

Lawson offers a variety of other security solutions that allow us to custom-tailor a solution for your company. Contact us for additional information.

Firewalls

The term firewall is usually associated with buildings and motor vehicles to refer to a barrier that prevents the spread of fire. In the world of the computing, a firewall is a specially-configured router that safeguards a network from equally dangerous elements.

Firewalls work by simply blocking ports of access on the network. This protects a network in a number of ways. First, it keeps important data out of the hands of unauthorized users. In addition, it guards the network against hackers who might want to destroy it using a virus. A firewall can also be used on an Intranet to limit employee access to sensitive areas on the LAN such as R&D and Human Resource files.

If you need security capabilities that surpass the level offered by LAWSON INSIGHT, installing a firewall should certainly be explored.

Platform Support

Lawson's Web-deployable applications support a complete range of operating systems, as shown below.

Platforms Supported	OED Access via Internet TCP/IP Connection	Lawson Webpage Generator to Netscape	IBM HTML Gateway to Any Web Browser
UNIX	Supported	Announced	N/A
AS/400	Supported	Announced	Supported
NT	2H'96	2H'96	N/A

Lawson's "Internet-Ready" Desktop

Another feature that facilitates Web deployability is Lawson INSIGHT Desktop. It uses the standard Internet protocol suite, TCP/IP, and supports all classes of users. This includes everyone from casual users who need to access forms to customers and vendors who need extended GUI features.

In addition, Lawson's WebPage Generator employs a similar strategy. It capitalizes on Lawson's layered architecture to transparently deliver Web browser support to the underlying application business rules and data. As a result, Netscape users will enjoy all of Lawson's process centric application services including Drill Around™ and active object embedding capabilities.

With its Java Script support, WebPage Generator also handles embedded executable program macros which simplifies integration between Web browsers and desktop utilities such as Microsoft Office.

The active object embedding support, which was pioneered by Lawson INSIGHT Desktop, will also be available through WebPage Generator. Lawson transactions will be captured as business object definitions, data pointers and a Universal Resource Locator (URL) for embedding and distribution to other users. When activated, these objects enforce normal security checks to ensure full data and application security.

A Word About Browsers

The Web browser, which replaces the PC interface with HTML, is a key element in extending the functionality and benefits of client/server computing to all types of users and organizations. It accomplishes this by addressing the value propositions of client/server including.

> * **Easy to use.** Browsers feature a GUI which makes harnessing the power
>   of the Internet as simple as pointing and clicking.

> * **Powerful information access.** Through the browser, users can access
>   search engines that let them find information about any topic imaginable
>   in just a matter of seconds.

> * **Fast application deployment.** Using the Internet and a standard Web
>   browser, applications can be deployed throughout even the largest enterprises in a
>   fraction of the time it used to take. The applications reside on a Web server and are
>   accessed by users via the browser. Today, Lawson solutions can be deployed in a

matter of weeks instead of months or years.

* **Affordable, thin client solutions.** With browser technology, users don't need a lot of computing power on their desktop. A simple workstation is all that's required to access and use Web-deployed applications. Maintenance is also simplified because the browser is all that is remotely distributed.

An Expanding Base Of Users

In the past, the limited extensibility of applications restricted their use to specific classes of users served by a terminal or PC. Critical business application functions were tightly coupled to the display device and applications had to be administered by experienced users who served as the interface between the system and the people needing its services. The advancement of Web technologies presented Lawson with a unique opportunity to revolutionize this system.

Because Lawson employs a multi-tier architecture, it can exploit the advantages of Web technology to provide highly-extensible applications that serve new classes of users.

Type	User Class	Requirements
New	Self Service and Casual or Remote users	• Simple, intuitive forms, no training • Information access on demand with Drill Around • Easy, kiosk like access
New	External Customers, Partners and Suppliers	• Range: Simple to full function GUI • Information access on demand with Drill Around • Substantial application features and linked to workflow
Current	Conventional high volume transaction and workflow users	• Extended function GUI • Information access on demand with Drill Around • Full application and workflow features

Changing Information System Models

Of all the system models that can be used for navigation and retrieval of data, the Intermediary Systems Model is the default. The premise of this system is that users of information -- whether internal or external -- must generally pass through an intermediary to gain access to the data they need. In other words, employees, customers and vendors must talk to people who, in turn, "talk" to computers and relay the information back to the appropriate individual. The primary advantage of this model is that the person-to-person contact allows for a "discovery dialogue" that lets the intermediary determine exactly what information is being sought. The down side is that this model is costly and inefficient.

The Internet, thanks to its information access standards, easy-to-use GUI-based browsers, and global reach, can fundamentally change this customer-service model to a self-service model. Using the Internet and Lawson's web-deployable applications, for example, information consumers can directly access the information repository from virtually anywhere in the world. This offers several advantages.

By providing customers with full, instant data access, the entire information retrieval process is streamlined and simplified. Customers no longer have to wait in queues to speak with someone; vendors don't have to tie up accounts payable personnel with inquiries regarding invoice status; and employees on all levels of the organization can spend less time tracking down people to get the information they need.

This process can be further enhanced by building in the discovery dialogue that takes place in the intermediary systems model into the self-service user application metaphor. The end result is a quicker, cheaper and more efficient method of doing business.

Lawson's Product Direction

As mentioned, WebPage Generator is the cornerstone of the Lawson web-deployable solution. This innovative software interfaces a Web server into Lawson applications and is fully integrated with the Lawson active object repository. The outcome is a solution that provides users of Lawson's Open Enterprise 6.1 and LAWSON INSIGHT 7.0 with an unprecedented level of benefits. Including:

> * Unparalleled access to on-line information, forms and reports
>
> * Effective, cost-efficient distribution and maintenance of internal information
>
> * The ability for all of a company's systems to communicate under a common
>   interface across multiple platforms
>
> * Better employee collaboration on projects
>
> * Lower cost of ownership -- companies use the public network as their virtual business network
>
> * The ability to capitalize on electronic commerce to expand markets
>   and services
>
> * It lets casual users retrieve and input information without extensive training or
>   having full access to all of the functionality of an application or form
>
> * Improved operations and productivity through effective, timely, accurate
>   information sharing
>
> * The ability to view and use on-line forms and reports through any standard
>   HTML-compatible Web browser such as Netscape
>
> * The ability to create custom forms and reports

WebPage Generator Key Features At-A-Glance

* On-line report access

* Drill Around capabilities for on-line analysis

* Web browser capabilities at the desktop

* Data extraction capabilities for decision support

Designed for today ... and tomorrow.

Lawson is developing a number of self-service modules designed to bring added value and functionality to its Web-deployable solutions. These LAWSON INSIGHT modules will facilitate greater interactions by casual users and simplify transactions for more powerful workflow processes. Users can use any or all of the self-service modules to meet their specific needs and little or no training will be required. Options will include:

* **Employee Service Center.** Provides employees with a self-service way to receive and/or maintain personal information such as number of tax deductions, change of address and phone number, benefit options, etc. Employees can add, change or delete information to keep their profile current -- all without involving their supervisor or Human Resource personnel.

* **Supervisor Service Center.** Using this vehicle, supervisors and managers can directly access their employee's personal, HR, payroll or benefits information, as well as corporate policies and other pertinent information. By using this service, managers can more effectively manage their workforce.

* **Internal Procurement Center.** This self-service module allows employees to more effectively and efficiently manage internal requests for maintenance, repair and operating supplies (MROs).

* **Customer Information Center.** This tool provides customers with immediate, direct access to timely information pertaining to order status, as well as allow them to place orders through secured action.

* **Vendor Information Center.** Provides a vehicle for vendors that lets them "help themselves" to information pertaining to invoice payments, inventory status, and general profile data. This significantly reduces the time spent answering questions over the phone.

The Lawson Advantage

There is no doubt that the Internet has the capability to dramatically change the way business is conducted around the globe. As with adopting other technologies, companies who are first to exploit the capabilities of the Internet will gain a substantial competitive edge over their competition.

While other vendors are struggling under the weight of inflexible 2-tier and legacy architectures, Lawson's unique N-tier architecture has allowed it to quickly and effectively integrate Web technology into its applications.

This has not only positioned Lawson as the undisputed leader in Web-deployable solutions, it has allowed its customers to distance themselves from their competitors by tapping into the wealth of benefits only the Internet can provide.