AberdeenGroup

Microsoft .NET: A Foundation for Connected Business

An Executive White Paper

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A Foundation for Connected Business

Executive Overview

Today's business has an almost overwhelming choice of technology tools to choose from — probably more than at any other time in the history of enterprise. Affordable computer systems and easy-to-use applications automate many of the procedural and complex tasks associated with running a business, while Web-based sources of content, data, services, and global e-mail communications are widely available to help enterprises exchange ideas and interact with customers and suppliers as never before.

The medium enterprise segment comprises companies with 500 to 8,000 employees and with revenue of $50 million to $800 million annually. This segment also includes divisions of enterprise-size organizations that operate relatively autonomously and that are empowered to make their own technology and business application decisions.

This segment is a critical market for technology suppliers — one that needs to be approached with the right combination of product, price, and functionality. The people managing these organizations are nothing if not pragmatic, and they demand technology that is able to adopt to rapidly changing business requirements and that adds real value to their day-to-day business activities.

The revolution in technology and business organization has affected both the large enterprise and the medium enterprise business, but the benefit to the latter segment has been especially significant. While some of the technology needs of this key market have already been adequately addressed, other products and technologies continue to emerge and are adopted into more widespread, mainstream usage as they prove their value. Accounting and financial management application packages, for example, are widely used and enable the medium enterprise to manage the financial and operational aspects of their business on par with their enterprise counterparts. Customer Relationship Management (CRM) applications have also made their way into this market and are beginning to bring critical functionality to the medium enterprise. Like accounting and business management software, CRM applications hold the promise of being able to do more with less: to use computing and information as a tool to manage better, sell more, and leverage information — wherever it is located — to optimize efficiencies and maximize profits.

The Internet and Web-based technologies have proven to be especially valuable resources for the medium enterprise. They have given this type of company the virtual reach of larger ones, helping to bring new customers into their grasp and opening up new, global opportunities to companies that previously had only a local presence. To one extent, the Internet has fulfilled its promise: Global communications is now assumed as a given, and a company's Web site in North Dakota may be visited by potential customers or partners as far away as New Hampshire or Nepal. At the

same time, the Internet has not turned out to be the cure-all or panacea that some thought it would be. The integration of Web-based, e-Business functionality into mainstream desktop business management applications has been more challenging than many companies anticipated, and most of the Internet usage has focused on fairly simplistic applications such as e-mail and Web sites.

The Internet — at least as it is commonly used in mainstream business today — is simply one of the building blocks being put into place as businesses build a real foundation for agile, effective, and global business applications. To leverage the true power and presence of the Internet, a more robust, intelligent, and easily integrated architecture is needed, one that has been designed around the use of the Internet almost as an extension of the operating system and the business application.

An Internet application architecture is needed under which hundreds of Web-based sources of information, applications, and data — Web services — will be available in a common format and will be supported as a set of tightly integrated functionality across business applications. To build on this foundation, a vision needs to be put in place that will enable broadly dispersed, but widely available, services across the Web for both applications and for people, i.e., for real users. Perhaps most important, these services have to provide tangible, measurable value. They will do this by being available, by being usable, and by being useful.

Microsoft announced an initiative designed to integrate the Internet and Web-based applications — what Microsoft defines as XML (eXtensible Markup Language) Web services — into mainstream business usage. This initiative is called .NET, software that connects information, people, systems, and devices. It is nothing less than a new approach to business computing and, if successful, will change the way medium enterprises use computing and Internet technologies to run their businesses.

This Aberdeen *Executive White Paper* describes, in non-technical terms, what .NET is and how it fits with other technologies in use by both the midsize business user and the enterprise. It also describes the .NET vision by illustrating how .NET-connected applications and services can be used to augment existing business applications and processes and provides several tangible examples of how .NET-connected applications are, or will be, taking shape. If Microsoft is successful in promoting its vision of .NET and XML Web services, .NET will become a foundation for building agile, effective, Internet-centric business applications.

Microsoft, .NET, and Business Applications

Overview

In 2001, Microsoft announced a business strategy, a set of technology architectures and products, and a renewed developer and partner initiative called .NET. Simply put, .NET is software that connects information, people, systems and devices. It-

provides the framework for an Internet-centric industry standard that makes it easier to tie together applications, information, data sources, and services across the Web using XML Web services. .NET-connected applications will access XML Web services, providing important business functions such as automated credit verification or dynamic mapping and route planning. Internally, within the organization, .NET makes it easier to integrate business applications with each other, as well as with outside sources of data or information. Credit verification services, for example, can be accessed as a Web-based service and integrated dynamically — and simply — with an order entry application on the desktop.

.NET has been designed not only as a technology architecture and developer initiative, but also as a business strategy that will encourage developers and business service providers to build .NET-connected applications. The companies providing these .NET-connected applications will have the technical functionality and financial incentive to open up their applications or information via XML Web services — either for free or for a fee — across the Internet.

Perhaps most significantly, the business strategy of Microsoft .NET is part of Microsoft's initiative to provide the de facto infrastructure for connecting with Web services. .NET and some of its related technology and service offerings — such as .NET Passport, Microsoft Great Plains Business Solutions, Microsoft CRM, and others — are part and parcel of Microsoft's evolution toward XML Web services. If .NET is successful, these Web services — some initially provided by Microsoft, but the growing majority to be developed by and provided by Microsoft development partners and alliance companies — will become so compelling, valuable, and ubiquitous that they will usher in a new way of thinking about how business will use and access information.

What Is .NET?

.NET is software that connects information, people, systems, and devices through the use of XML Web services. From a technology perspective, .NET is an Internet-centric architecture and technology offering that defines how different applications, sources of data, or devices can integrate with and share information with each other. .NET is not a new type of user interface or piece of business application that a user needs to learn or worry about. Even though there are some user interface components to .NET — what Microsoft describes as "user experiences" — for the most part, .NET is a technology layer that sits "under the hood" of the application and enables it to exchange information with other .NET-connected applications over a Web-based communications layer.

.NET is built on top of XML, an application industry standard, and represents Microsoft's commitment to XML as implemented in an Internet environment. .NET includes several software components used to build .NET-connected applications and services. These components include, for example, the developer tools of Visual Stu-

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dio .NET and the .NET Framework; .NET client software for the Windows XP or Windows CE environments; a set of XML Web services including MapPoint .NET for geographic-based information; and a set of applications and/or services that Microsoft calls "experiences," which include .NET-connected products such as Office, MSN, Microsoft Great Plains Business Solutions, and others. Again, the end-user organization does not need to worry about the components of .NET per se; .NET should be thought of as a distributed application that enables XML Web services.

In this Web services environment — which the technologists would define as a rich, loosely coupled model of distributed computing and Web services — information can be made available to any application or device type. These types of application-to-application transactions are called "Web services," meaning that they are conducted over a Web- or Internet-based communication link either within the business or outside of the business with .NET services providers. What is unique about using these services is that .NET-connected applications will automatically find, connect, and collaborate with them, making knowledge workers more productive and informed.

.NET Business Drivers

From the broader perspective of business, there are a number of economic, business, and technical factors pushing the adoption of standardized Web services. These technology drivers include the following:

- *Integration*: Integration between applications, the Internet, and sources of data can be complex, expensive, and time-consuming. Using a standard XML framework reduces the time, cost, and expertise required to tie together disparate applications. It is important to note that this integration can be used to integrate applications with external sources of data or information, as well as to tie together applications "within the firewall" — i.e., for internal use within the business. Note that this integration applies not only to external sources of information or data, which an enterprise needs to acquire or purchase as part of its business. This integration can also be used to more tightly tie the enterprise into the business of its key customers or favored suppliers.
- *Pervasive computing and mobile devices*: As the computing power of handheld devices such as PDAs (personal digital assistants) and cellular telephones grows, their presence as a mandatory tool for business will also become more pervasive. Adherence to a common application interface will enable these disparate devices to integrate with applications and data much more easily. In the future, adherence to a .NET standard by data or information providers and sources will help to ensure ease-of-access to information by mobile workers.

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- *Strategic IT as a business tool*: As the use of computing and Information Technology (IT) as a mission-critical, strategic tool for the business continues to expand, businesses — particularly smaller ones with limited IT resources — will want to focus their expertise on solving business problems and addressing business opportunities, rather than on the technical "plumbing" that makes up the IT infrastructure. The use of .NET-connected applications and services will simplify the task of building and integrating complex application and data environments, especially when key pieces of that data are accessed, acquired, or purchased over the Internet.

In business terms, .NET provides XML Web services functionality that will have a positive and measurable impact on the business in the following areas:

- *Application integration*: .NET provides a technology and development framework that makes it easier for applications to integrate, communicate, and share information with each other, and that is particularly designed for use in an Internet — or Intranet — infrastructure. For example, .NET can provide the foundation to link customer-facing applications to order and inventory systems to ensure that a customer placing an order will receive the material within the specified time frame.
- *Information access*: Because .NET defines a standard framework within which applications can share data, .NET based on Web services standards will likely improve and simplify access to dynamic and changing information across the Internet. This information could be licensed from "for pay" data sources that provide, for example, qualified leads and lists of potential customers for a usage or access fee. A .NET-connected application could also provide customers with access to rapidly changing inventory and parts information from a key supplier that "exposes" its data via .NET-connected XML Web services over the Internet. This access to rapidly changing inventory level information could help to ensure that customers or partners placing orders through their own systems are accessing their suppliers' most current pricing and inventory levels. And, this system collaboration will occur within a new standard of security, ensuring that the right data is shared with the right people.
- *Web services*: Finally, the standards on which .NET is based will encourage the development of companies that provide access to Web-based services used to augment or extend the functionality of .NET-connected business applications that reside on the desktop. A company's order management system, for example, could interface with Web-based services such as credit verification services, mapping and location services, or lead generation services. Any or all of these applications would aug-

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ment the order management applications with content, data, or information provided over the Web, enabling a "hybrid" application that includes both the desktop or server-resident accounting application, as well as Web-based data or services.

.NET-Connected Applications

Several .NET-connected applications or .NET-connected Web services are currently available from Microsoft or will be available in the near future. Some of these applications provide business application functionality in the sense that they can help a business conduct a Web-based marketing campaign or more easily connect their accounts receivable (AR) application to their Sales Force Automation (SFA) application. Other .NET-connected applications provide software or access to data as a service, enabling the business to access and use data and information via a .NET-connected interface. Some of the application and services examples currently available or planned for future availability include the following:

- *Microsoft Office XP*: Microsoft's Office suite of desktop applications — including Outlook, Word, and Excel — are .NET-connected and are easily integrated into other .NET-connected applications and services.
- *Microsoft Great Plains Business Solutions*: The Great Plains business management and accounting applications are all planned to be .NET compatible in the latter part of 2002.
- *Microsoft CRM*: Microsoft's CRM suite of applications is scheduled for general availability in Q4 2002 and will be built on the .NET Framework. .NET compatibility will enable Microsoft CRM to access customer information or leads harvested from a Web site, for example, and to then pass those leads on to the sales team as part of the Microsoft CRM package functionality.
- *Microsoft .NET Passport*: .NET Passport is a .NET, Web-based service available to consumers and business users that provides authentication and verification services. A user registers with Passport and provides information such as name, address, e-mail, and other information the user may choose to submit during a Web-based transaction. Passport's use of the .NET architecture makes integration of the Passport facilities into a Web site or Web-based application more straightforward and guarantees compatibility with any .NET-connected application that supports this service.
- *Microsoft MapPoint .NET*: MapPoint .NET is an XML Web service that enables a .NET-connected application to integrate dynamic mapping and location services as an integral part of its functionality. MapPoint .NET can be integrated into SFA, field service, and other commercial applica-

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tions that require access to location and mapping information and can be supported across a variety of .NET devices including PCs (Personal Computers), laptops, and Pocket PC-based handheld devices.

In addition to the Microsoft-sourced .NET-connected applications listed, several application or technology infrastructure vendors have also announced support for .NET. These vendors include Adobe, Autodesk, Clarus, Click Commerce, Core-change, ESRI, FrontRange, FiServ, Fidesic, IONA, KANA, Plumtree, Reynolds and Reynolds, SunGard, Symantec, and others.

.NET and the Medium Enterprise: Key Points to Consider

With all of the technology and jargon aside, there are four key points to consider when thinking about the needs of the medium enterprise and the promises of .NET and Web services:

1. .NET is being positioned and architected as a new XML-based standard for the way in which users, applications, and information coexist over the Web. While .NET is a relatively new Microsoft initiative, it has already garnered a substantial level of industry commitment to making it a success. This commitment is not entirely due to the initiatives of Microsoft or its partners. Independent technology developers, VARs (value-added resellers), resellers, and the medium enterprise itself all have a vested interest in seeing a Web services standard emerge. Ultimately, if the .NET standard for Web services is successful, companies will have an ever-increasing range of capabilities, services, and functionality to choose from as they try to help their businesses grow and prosper.
2. .NET-connected Web services are ushering in a new model for computing, a model in which the Internet is the core, and everything — applications, computers, handheld devices — is able to be connected. As the universe of mobile and handheld devices continues to grow, the ability for a single application or set of services to talk to anything — laptop, desktop application, handheld device, or "other" — will become increasingly important.
3. Announced about a year and a half ago as a vision, .NET will not happen overnight. There are currently a large handful of applications or services that are .NET-connected, and this number is growing. For the medium enterprise that has limited technical or financial resources, the option remains to gradually adopt .NET functionality within its applications or services of choice while leaving other applications as they are.
4. As time goes on, the medium enterprise is likely to have a growing choice of applications and Web services to choose from and is also likely to have much greater flexibility in terms of the products or services it

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chooses to make accessible on the Internet via .NET. For many medium enterprises, .NET will provide an important new avenue through which they can get their own products and services out to new customers.

Application Scenarios for .NET

The following sections discuss application scenarios that illustrate ways in which .NET functionality can be used. They are targeted specifically to the medium enterprise and are designed to illustrate potential, "real world" capabilities using technologies that are available today or will be available later in the year.

Lead Generation and Service Management: HVAC, Inc.

HVAC, Inc., is a privately owned and operated heating, ventilation, and air conditioning (HVAC) contracting company. By focusing on the acquisition of new customers — in particular, new customers that are expanding their facilities and buildings — and by providing top-quality service over a fairly large geographic territory, HVAC, Inc., has been growing rapidly and currently has nearly 1,000 employees.

HVAC, Inc., is using Microsoft Great Plains Business Solutions' eEnterprise as its primary application for order entry, invoicing, accounts payable and receivable, and parts inventory management. Microsoft CRM is used by the inside salespeople chartered with qualifying and closing new leads, as well as by the customer service department responsible for installation of new customer systems and the maintenance of existing ones. HVAC, Inc., has engaged a firm in Texas that uses the Internet to search for companies that have applied for new building and construction permits nationwide. This information is then sorted by ZIP code, provided as a .NET-connected XML Web service, and sold as leads to a variety of construction and maintenance firms. HVAC, Inc., has signed up for three months of service, which will drop between 100 and 200 new leads per week directly into the CRM system using the .NET facilities of Microsoft CRM.

The leads are then followed up on by inside sales, qualified, and are then passed to an inside engineering group for design and pricing estimates. Estimates for the parts and components needed for each job are generated as a parts list by engineering. This parts list is checked against existing inventory held in eEnterprise, and any additional components or inventory needed to complete the job are automatically put out to bid. Bidding is conducted using a Web-based .NET procurement bid system provided by a third-party company, enabling multiple parts and components suppliers to bid on the project. Once a bid for a job has been accepted and the labor and parts estimate, based on the bids, is complete, the estimate is passed back to the sales team.

As part of the sales process, a proposal is generated automatically from the engineering estimates, and the system automatically contacts a credit verification ser-

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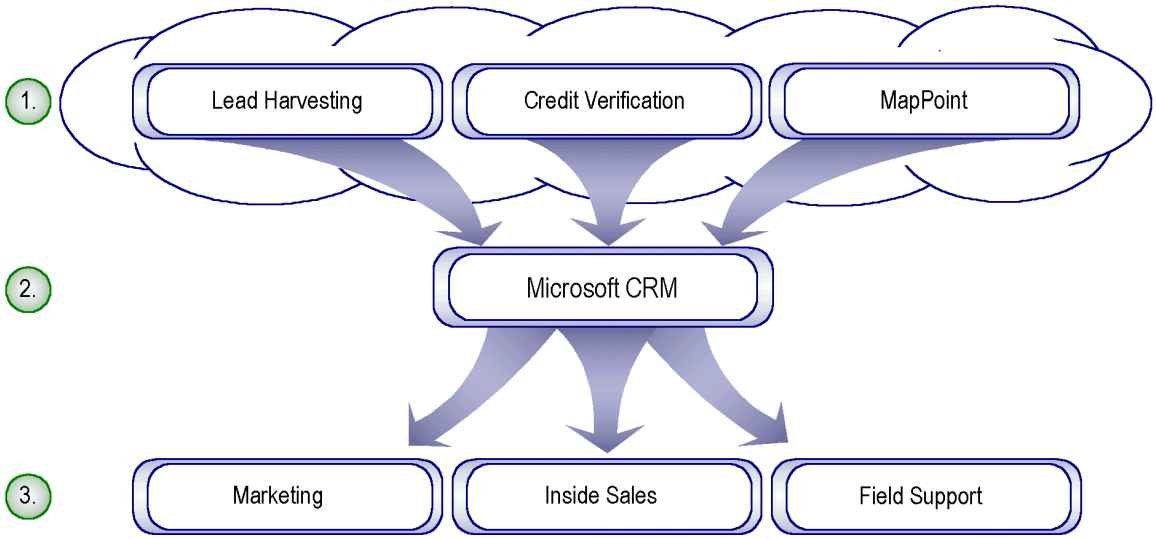
vice over the Web to do a credit check for the estimated amount of the work. HVAC, Inc., has used two or three different credit verification providers in the past and continues to shop the .NET directory for the best available credit service provider.

Once an order is processed and a new system is ready for implementation, the service department — which is fairly busy and understaffed at the moment — uses MapPoint .NET, an online mapping service that links to eEnterprise using a .NET interface, to find the location of new customers and to plan the routes and work schedule for the week. eEnterprise automatically prints a map of the customer's location, a copy of the original sales order, and an invoice for the service person to drop off when the system is installed and operational. HVAC's .NET business processes are illustrated in Figure 1.

Figure 1: A .NET-connected application: HVAC, Inc.



HVAC, Inc. uses .NET services to locate, close, and implement a new customer:

1. Lead management service is located through the Web and provides qualified leads to telemarketing via links for pre-qualification.
2. Microsoft CRM passes lead on to inside sales group where the customer is qualified, credit verification is processed in the background, and the order is cleared and entered.
3. Field support organization is notified of a new customer via Microsoft CRM, and uses MapPoint.NET links to the customer record to identify location and plan the best route for several customer implementations.

Source: Aberdeen Group, June 2002

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Sales and Inventory Management: Flowers, Inc.
Flowers, Inc., is a privately owned floral company that has developed a major regional presence by acquiring competing florists throughout its region. This acquisition strategy has made it the largest florist in its area, and Flowers, Inc., continues to grow through acquisitions, as well as through organic growth within its expanding customer base. The company prides itself on the unique types of flowers and arrangements it offers: Much of its fresh cut flowers, orchids, and blossoms are sourced internationally and delivered daily to multiple Flowers, Inc., locations. The company is also known for its quality customer service and for its ability to respond quickly to customer orders. Flowers, Inc., takes orders through its Web site, as well as over the phone at a centralized call center. These orders are then provided to the nearest Flowers, Inc., florist for fulfillment and delivery.

Flowers, Inc., integrates a variety of applications and technologies to provide its business with a competitive edge and to respond quickly to pricing and availability changes in the flower market. Flowers, Inc., uses eEnterprise to manage its general ledger, invoicing, accounts payable, supply chain, and payroll operations; has outsourced its Web design and hosting to an outside firm; and has also developed some of its own applications software. The company manages all of its own purchasing and sourcing of flowers and arranging of bouquets and floral pieces and maintains and operates its own fleet of delivery vehicles.

Flowers, Inc., faced several challenges as it grew rapidly. Because the company relies on a variety of suppliers outside of the U.S. for its flowers, the ability to access timely and accurate information from these suppliers regarding the type, quality, quantity, and price — in U.S. dollars — of the flowers was critical. As the company grew, it was no longer able to rely on a series of telephone calls, e-mails, and faxes to these suppliers. Furthermore, due to continuous fluctuations in exchange rates, the cost basis of Flowers, Inc.'s, inventory — and its invoicing and accounts payable — had to reflect the exchange rate at the time the transaction was made.

The first challenge to address was related to the supply chain, because the type of flowers offered is one of the company's key differentiators and because the cost of these flowers also represents the company's single biggest expense item. Today, Flowers, Inc., does much of its ordering and sourcing online through a variety of suppliers located in Holland, Mexico, Asia, and California. .NET-connected technology enables the eEnterprise supply chain module to connect with the different inventory management software packages that Flowers, Inc., suppliers use. That enables the company's purchasing agent to review the latest availability and pricing from all of its sourcing locations and to shop for the best price for specific types of flowers from its multiple suppliers. Any orders that will reduce inventories or shipments that will increase the stock are entered through and automatically reflected in the eEnterprise system, enabling the Flowers, Inc., florists at any of the

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company's multiple locations to see which flowers will be arriving the next day and to make delivery commitments to customers based on anticipated inventory.

Flowers, Inc., now uses a multicurrency XML Web services outsourcer to provide up-to-date currency exchange rate information and services. When an order is executed online, a Flowers, Inc., supplier will simultaneously check the exchange rate at the .NET multicurrency Web services company, convert the cost of goods being ordered on a local currency basis into U.S. dollars, reflect the cost of goods in dollars in the eEnterprise inventory system, and will also cut checks (in U.S. dollars) to the supplier for flowers ordered online that day.

Flowers, Inc., also takes orders through its Web site and enables customers to authenticate themselves using Passport. Once a user is authenticated and identified as a current, repeat customer, the Web site offers a special "arrangement of the day" not available to other customers at the same price. The transaction is completed with a few clicks of the mouse, and a Flowers, Inc., delivery person, using a handheld device and MapPoint .NET to find the location of new customers, delivers the arrangement within two hours.

Aberdeen Conclusions

Today's medium enterprise has a bewildering choice of technologies to choose from to support its business. Web services built on a .NET infrastructure and using services provided by Microsoft and by Microsoft alliance partners and developers have the potential to fundamentally change the way the medium enterprise thinks about business computing.

The Web is obviously a valuable tool for basic communications and commerce activities, but has been generally under-utilized by the medium enterprise. The real value to the medium enterprise lies in using .NET-connected integration capabilities to access dynamic, changing data such as customer leads or inventory levels; to leverage and use services such as personal authentication or credit verification services; and to integrate Web-based content and information with day-to-day business activities.

Microsoft's .NET strategy, partnerships, and technology hold the promise of providing a standard architecture that a large number of application developers, Web service companies, and Web content providers can design to, build to, and integrate with. If Microsoft and its partners are successful in building out their vision, .NET could provide a foundation for what will become a new model for Web-based computing — and a new model for agile business applications.

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Aberdeen Group is a computer and communications research and consulting organization closely monitoring enterprise-user needs, technological changes and market developments.

Based on a comprehensive analytical framework, Aberdeen provides fresh insights into the future of computing and networking and the implications for users and the industry.

Aberdeen Group performs specific projects for a select group of domestic and international clients requiring strategic and tactical advice and hard answers on how to manage computer and communications technology.

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