An Overview of Microsoft® Visual Studio® 2008

White Paper

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OVERVIEW

Microsoft® Visual Studio® 2008 delivers on Microsoft's vision of smart client applications by enabling developers to rapidly create connected applications that deliver the highest quality, rich user experiences. With Visual Studio 2008, organizations will find it easier than ever before to capture and analyze information to help them make effective business decisions. Visual Studio 2008 enables organizations of every size to rapidly create more secure, manageable, and reliable applications that take advantage of Windows Vista™ and the 2007 Office system.

Visual Studio 2008 delivers key advances for developers in three primary pillars:

- Rapid application development
- Effective team collaboration
- Breakthrough user experiences

This white paper discusses the different customer experiences that deliver on these three pillars through the following seven technology areas.

- **Developing Smart Client Applications.** Visual Studio 2008 delivers new and easy ways for developers to build smart clients. It provides a comprehensive set of tools and classes that simplify integrating smart clients with new or existing Web applications, and it enables local data caching for disconnected scenarios.
- **Creating Microsoft Office Applications.** Visual Studio Tools for Office (VSTO) is fully integrated into Visual Studio 2008 Professional Edition. Developers can now customize various Office applications, such as Outlook® and PowerPoint®, to improve user productivity and simplify deployment.
- **Building Windows Vista Applications.** Developers can easily leverage new platform technologies, and deliver more compelling applications to their customers, by effortlessly incorporating new Windows Presentation Foundation features into both existing Windows Forms applications and new applications.
- **Handling Data More Productively.** The introduction of Language Integrated Query (LINQ) and other data-access improvements enable developers to apply a consistent programmatic approach to data handling, perform data access with new data-design surfaces, and use built-in classes for the occasionally connected design pattern.
- **Enabling New Web Experiences.** Developers can easily create efficient, interactive Web applications with Visual Studio 2008. Seamless integration of the familiar ASP.NET AJAX programming model enables more efficient client-side execution, giving end users a more responsive Web interface. JavaScript IntelliSense and debugging further improve the development experience.

- **Gaining an Improved Overall Developer Experience.** Visual Studio 2008 delivers a better developer experience overall through the combination of significant product quality improvements, and changes to the way the most popular design surfaces return errors to the user. In addition, Visual Studio 2008 simplifies the user's ability to adopt the toolset and framework separately by enabling developers to target different .NET Framework platforms.
- **Improving Application Lifecycle Management (ALM).** ALM features in Visual Studio provide great support not only for managing the entire software-development life cycle, but also for critical interaction with an enterprise application's final end-users and IT stakeholders.

DEVELOP SMART CLIENT APPLICATIONS

Visual Studio 2008 provides developers with new ways to build smart clients. These new features, which both enhance application functionality and improve developer productivity, include easier design integration, expanded deployment options, more versatile logon and personalization services, and better data access and synchronization.

Effective smart client development begins with good application design. Visual Studio makes integrating UI designers into the development process easier by supporting common formats such as Extensible Application Markup Language (XAML) and giving designers more direct control over the layout, controls, and data binding of an application's UI. Designers can use familiar tools, such as the Microsoft® Expression® Suite, to create UIs and produce files that developers can work with directly in Visual Studio. Visual Studio supports a fully collaborative workflow that enables designers and developers to hand work back and forth directly and work in parallel. Designers and developers can also build easily manageable and reusable libraries of common UI designs, formats, and elements.

By taking advantage of the 2007 Office system as a development platform, designers can leverage the look and feel of both Office and SharePoint to create familiar, intuitive UIs. Developers can then use Visual Studio Tools for Office to produce the UIs in their solutions quickly and easily. Visual Studio 2008 also provides developers with support for building native C++ applications that use the Microsoft Office 2007 UI style, including the Ribbon Bar, Ribbon Status Bar, and Mini-toolbar.

Once built, applications need to be deployed efficiently. ClickOnce deployment in Visual Studio 2005 introduced Web-like deployment for smart clients. Users can go to a single URL and click a link to install the smart client application on their machines. IT professionals can deploy new versions of the application by simply copying the new application to the URL. Visual Studio 2008 adds ClickOnce support for the Firefox® browser and provides location-independent signing and customer branding. In addition, ClickOnce now supports deployment through authenticated proxy servers and enables developers to distribute their applications to multiple end-user companies from a central location.

Many customers face the challenge of integrating their smart-client applications with existing and new Web-based applications through logon and personalization services. A new set of tools and classes in Visual Studio 2008 simplify this integration. Developers can use the same user profile and login services for their client applications as for their Web applications. This enables customers to use one method of back-end storage for user personalization and authentication, regardless of the application type.

Another challenge is that of maintaining data integrity for client applications that don't have a constant connection to a centralized data store. Microsoft Synchronization Services for ADO.NET provide an application programming interface (API) to synchronize data between data services and a local store. The Synchronization Services API, which is modeled after the ADO.NET data-access APIs, gives developers an intuitive way to synchronize data. It makes building applications for occasionally connected environments a logical extension of building applications that depend on a consistent network connection.

Another data-access feature Visual Studio 2008 delivers to smart-client developers is integrated support for Microsoft® SQL Server™ 2005 Compact Edition—a free, easy-to-use, lightweight, and embeddable version of SQL Server 2005 for developing desktop and mobile applications. SQL Server 2005 Compact Edition, the next version of SQL Server Mobile, extends the SQL Server Mobile technology to the desktop. Visual Studio offers this low-maintenance, compact, embedded database for single-user client applications on all Windows platforms, including Tablet PCs, Pocket PCs, smart phones, and desktops.

Finally, developers using Visual Studio 2008 can leverage service-oriented architectures (SOAs) and Windows Communication Foundation (WCF) to build mobile device client applications that work in partially connected environments. These applications can send data to and receive data from a server, even if the device disconnects or roams. With Visual Studio’s tools providing the logic to solve addressability and storage issues, developers can focus on the mobile application functionality and not worry about the different identities, connection methods, or storage models required.

CREATE MICROSOFT OFFICE APPLICATIONS

Visual Studio Tools for Office (VSTO) is fully integrated into Visual Studio 2008 Professional Edition. Developers can now easily target the more than 500 million users of Microsoft Office using the same managed-code skills they've developed for writing Microsoft Windows applications or ASP.NET applications. Developers can customize Word, Excel®, PowerPoint, Outlook, Visio®, InfoPath®, and Project to improve user productivity and take advantage of the many improvements in the 2007 Microsoft Office system.

The tools in Visual Studio enable developers to create both application-level and document-level managed-code customizations behind 2007 Office system applications quickly and easily. Built-in visual designers for key 2007 Office system UI features provide a rapid application development (RAD) experience that enables developers to deliver applications with high-quality Office-based UIs.

Visual Studio also simplifies building and debugging of SharePoint Workflow projects and enables developers to build applications that provide easy access to back-end data stores and to data from enterprise customer relationship management (CRM) and enterprise resource planning (ERP) systems such as SAP. Web Parts built for SharePoint are easily reusable in other applications. Developers can also create applications that use Microsoft Office to manage process navigation and enterprise data surfacing, combined with SharePoint workflow services to manage collaboration requirements.

Finally, new Visual Studio features enable Office applications to be deployed securely and easily. Developers now have an easy-to-use and version-resilient security model for their applications that will be compatible with future versions of Visual Studio and Office. Full support for ClickOnce deployment of all Office customizations and applications gives developers and administrators the right tools and framework for easy deployment and maintenance of their Office solutions.

BUILD WINDOWS VISTA APPLICATIONS

With Visual Studio 2008, developers can easily leverage new platform technologies to deliver more compelling applications to their customers. Visual Studio enables them to effortlessly incorporate new Windows Presentation Foundation features into both existing Windows Forms applications and new applications. They can also move their applications to the new Windows Vista *look and feel* easily with enhancements to the Microsoft Foundation Class Library (MFC) and Visual C++®. Visual Studio 2008 also enables improved interoperability between native and managed code.

Visual Studio provides tools that enable developers who are early adopters of Windows Presentation Foundation to build *rich experience* applications quickly and easily. These tools include a designer and XAML editor, project templates, debugging support, and deployment support.

Developers can also use Visual Studio 2008 to build applications that exhibit the Windows Vista *look and feel* and take advantage of the more than 8,000 new native APIs available in Windows Vista. A number of the Windows Vista *look and feel* features are available simply by recompiling an MFC application. Deeper integration that requires more coding or design work is also simplified with Visual Studio's integrated support for the Windows Vista native APIs.

Visual Studio makes it easier to build applications that leverage both native and managed code, and also delivers improved interoperability performance. C++ developers have access to a new marshalling library that simplifies data transfer across the native-managed (Standard Template Library (STL)-Common Language Runtime) boundary for extending the STL into managed code.

HANDLE DATA MORE PRODUCTIVELY

Visual Studio 2008 significantly improves the way developers handle data. Traditionally, developers have manipulated data differently depending on where the data resides and how the user connects to it. With the introduction of LINQ and various other data-access improvements, developers can use a consistent programmatic approach to managing data and perform data access with new data-design surfaces. ADO.NET integrates with LINQ and supports an occasionally connected design pattern to simplify the development tasks for those application types.

The Visual Studio 2008 programming and design experience are modeled around language/data-access unification. LINQ aims to reduce complexity for developers and help boost their productivity through a set of extensions to the C# and Visual Basic programming languages, as well as the Microsoft .NET Framework, that provide integrated querying for objects, databases, and XML data. Using LINQ, developers can write queries natively in C# or Visual Basic, without needing to use specialized languages such as SQL and XPath.

LINQ to SQL—a run-time infrastructure for managing relational data as objects without losing the ability to query—simplifies the construction of data driven Web sites. Visual Studio’s deep support for incorporating LINQ to SQL into ASP.NET Web applications makes the creation of data-driven Web sites more productive, more efficient, and more fun. Developers can use familiar programming semantics to access all data sources in a unified and uniform manner.

ENABLE NEW WEB EXPERIENCES

Microsoft offers organizations a robust, end-to-end platform for building, hosting, and exposing applications over the Web. Beyond the secure, reliable, and extensible infrastructure of IIS, Visual Studio enables developers to easily create Web applications with more interactive, responsive, and efficient client-side execution by using the seamless integration and familiar programming model of ASP.NET AJAX along with Internet Explorer browser extensions and enhancements.

Visual Studio enables the creation of new Web experiences by empowering Web developers through simplifying Web development. Visual Studio 2008 gives developers the tools they need to build the next generation of Web experiences—both client-centric applications and Web services—more quickly, efficiently, and easily than ever before.

Teams targeting the Web can collaborate more effectively and obtain faster results by integrating the advanced designers and editors of the new Expression Suite tools into their development workflow, and by incorporating the broad functionality of Windows Live services into their solutions.

Visual Studio provides developers with all the tools and framework support required to create compelling, expressive, Web applications with “AJAX-style” interactive Web user interfaces. Developers can take advantage of these rich client-side and server-side frameworks to easily build client-centric Web applications that integrate with any back-end data provider, run within any modern browser, and have complete access to ASP.NET application services and the Microsoft platform.

As the concept of a Web service evolves, Visual Studio will enable developers to configure service endpoints, using the same tools and code regardless of wire protocol (HTTP or TCP/IP), to transmit messages and test the service without code. Developers and partners will be able to extend the underlying protocols to handle any definition of a Web service.

Developers can use RAD tools to quickly and easily create client connections and proxies to existing services, and test them without needing to write code. In addition, developers can use the same techniques and tools for consuming WCF services, no matter where they are located.

Visual Studio also enables the developer to orchestrate behavior across services with Windows Workflow Foundation (WF) to visualize, create, edit, and debug workflow tasks and dependencies.

GAIN A BETTER OVERALL DEVELOPER EXPERIENCE

Visual Studio 2008 builds on the productivity and developer experience improvements delivered in Visual Studio 2005. Continued focus on improving product quality, and fundamental changes in the way Microsoft builds developers tools, has enabled the company to deliver a high-quality tool with significant servicing investments over previous versions. Throughout the development process used to create Visual Studio 2008, individual feature teams focused on each feature's final quality. This approach has raised the overall product quality significantly.

In addition, the overall developer experience with the Visual Studio 2008 is better because developers can now easily build against and target all the platforms they have been using in their projects over the last few years. Developers have traditionally required tools that are bound to the runtime platform that they are building against. Now they can use one toolset to target different .NET Framework platforms. This approach enables development teams to adopt Visual Studio 2008 without a corresponding IT cost in deploying new framework components.

Visual Studio not only provides new designers for building the next generation of applications, but also makes it easy for developers to extend existing applications to deliver high-quality user experiences. Windows Forms continue to provide developers with the features and functionality required to build compelling Line-Of-Business applications. With Visual Studio 2008, the design-time experience for Windows Forms UI and component developers has continued to improve. Enhancements to the existing Windows Forms designer enable task-oriented designs for creating applications that leverage Windows Forms, .NET Framework 3.5, and XAML in one application. This includes providing a design-time experience for using Windows Presentation Foundation content in an existing Windows Forms application; the Windows Forms visual designer can place and visually lay out the new content in relation to the other controls on the form. Similarly, Windows Forms content can be placed into a new application built on Windows Presentation Foundation.

Improvements in designer performance let developers build Windows Forms applications more productively. Simplification of a design-time error list provides developers with more usable feedback and the ability to *ignore and continue*, to ease the overall development task.

APPLICATION LIFECYCLE MANAGEMENT (ALM)

In Visual Studio 2008, Microsoft is continuing to invest in the market-leading Visual Studio Team System technology. Visual Studio 2008 provides great support for managing not only the entire software development life cycle but also the critical interaction with an enterprise application's final users and managers. In addition, it is designed to expand the collaborative benefits of Visual Studio Team System to more roles on the project team.

By addressing the needs of a wide range of customers, from the smallest independent developers to the largest enterprises, Visual Studio 2008 makes delivering quality solutions easy regardless of the size of the project or team. New ALM capabilities in this release include integration of database professionals into the software life cycle, extended unit-testing capabilities, load testing for the enterprise, and performance tuning and diagnostics through testing.

The ability to create off-line database representations and database projects brings the database professional into the development life cycle. Visual Studio 2008 provides a full suite of tools for source control, test-data generation and testing, rename refactoring, and a deployment solution that includes visual diff/merge and deploy-script generation.

Unit testing is easily one of the most sought after capabilities incorporated into Visual Studio. This release extends its capabilities, improving its performance and broadening its reach. Unit tests now run faster whether they're executed from the integrated development environment (IDE) or from the command line; test inheritance enables users to reuse inherited methods; and usability improvements enable developers to execute a test directly from its definition. Unit tests are now available to all Visual Studio Professional Edition users and can also be used to test mobile applications.

Visual Studio 2008 improves on existing load-testing capabilities as well, by simplifying the load-testing interface and providing a multiple-machine graph view that displays the test results, performance, and health of all the machines under test. Additional improvements enable better management of the test results, rich load modeling, and the integration of results from non-PerfMon sources.

A new area of support in Visual Studio is the ability to drive system performance tuning and diagnostics through the Visual Studio test tools. This enables developers to run profiling during tests. They can run load and test procedures against a system, see how it behaves, and use integrated tools to profile, debug, and tune. Also included is performance baselining: developers can save a baseline profile and then, if the performance degrades, compare up-to-date traces to identify the source of the regression.

SUMMARY

This white paper provides a view of the features in Visual Studio 2008 that support Microsoft's primary investment pillars. These three pillars in Visual Studio 2008 enable developers to:

- **Rapid Application Development.** In Visual Studio 2008, developer productivity doesn't end with the code editor and wizards. By providing new tools and frameworks to simplify the tasks of developers, designers, and database professionals for new application architectures and platforms, Visual Studio 2008 not only delivers a productive development tool, but also enables developers to tackle new business problems while decreasing the total cost of solution construction.
- **Effective Team Collaboration.** Visual Studio 2008 enhances the end-to-end value of Visual Studio Team System by increasing its role-based coverage and delivering enhanced traceability throughout the software development life cycle. With deep integration across roles in the software life cycle and the Team Foundation Server, Team System enables customers to amplify the impact of their teams and improve software quality.
- **Breakthrough User Experience.** As users look for new ways to comprehend and retain information, developers must still grapple with basic desktop and application security. Visual Studio, Windows Vista, and the 2007 Office system enable developers to deliver a safe, robust, and compelling user experience in any type of application.

These fundamental advances enable customers to rapidly create connected applications that deliver the highest quality, rich user experiences regardless of project complexity or organization size.

For the latest information about Visual Studio 2008, see the Visual Studio Web site (http://www.microsoft.com/vstudio).