

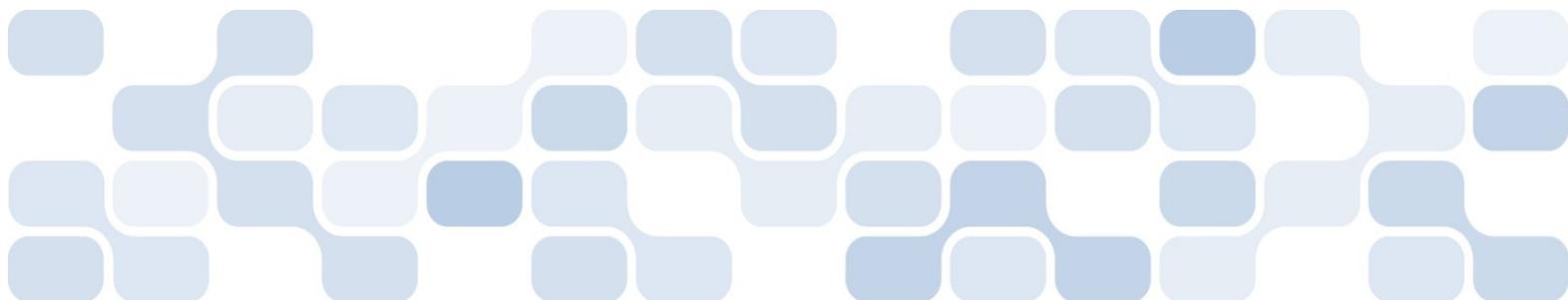


# **Microsoft® Visual Studio® Extensibility**

## **White Paper**

December 2007

For the latest information, please see [www.microsoft.com/vstudio](http://www.microsoft.com/vstudio)



The information contained in this document represents the current view of Microsoft Corporation on the issues discussed as of the date of publication. Because Microsoft must respond to changing market conditions, it should not be interpreted to be a commitment on the part of Microsoft, and Microsoft cannot guarantee the accuracy of any information presented after the date of publication.

This white paper is for informational purposes only. MICROSOFT MAKES NO WARRANTIES, EXPRESS OR IMPLIED, IN THIS SUMMARY.

Complying with all applicable copyright laws is the responsibility of the user. Without limiting the rights under copyright, no part of this document may be reproduced, stored in, or introduced into a retrieval system, or transmitted in any form, by any means (electronic, mechanical, photocopying, recording, or otherwise), or for any purpose, without the express written permission of Microsoft Corporation.

Microsoft may have patents, patent applications, trademarks, copyrights, or other intellectual property rights covering subject matter in this document. Except as expressly provided in any written license agreement from Microsoft, the furnishing of this document does not give you any license to these patents, trademarks, copyrights, or other intellectual property.

Unless otherwise noted, the example companies, organizations, products, domain names, e-mail addresses, logos, people, places, and events depicted herein are fictitious, and no association with any real company, organization, product, domain name, e-mail address, logo, person, place, or event is intended or should be inferred.

© 2007 Microsoft Corporation. All rights reserved.

Microsoft, Visual Basic, Visual C#, Visual Studio, the Visual Studio logo, and Windows are either registered trademarks or trademarks of the Microsoft group of companies.

The names of actual companies and products mentioned herein may be the trademarks of their respective owners.

## **CONTENTS**

<b>Introduction.....</b>	<b>1</b>
<b>Flexibility to Build a Broad Range of Solutions .....</b>	<b>2</b>
<b>Tools to Accelerate Development.....</b>	<b>4</b>
<b>Familiar User Interface.....</b>	<b>5</b>
<b>Robust and Growing Ecosystem .....</b>	<b>7</b>
<b>Summary .....</b>	<b>8</b>

---

## INTRODUCTION

An industry-leading set of development tools, Microsoft Visual Studio and Visual Studio Team System provide a broad range of capabilities, including out-of-the-box support for customization and extension through macros, add-ins, and more. And because no commercial product can meet every need, Microsoft provides a number of resources to help developers further extend the Visual Studio experience:

- **The Visual Studio Software Development Kit (SDK)**, a set of tools and samples for building more powerful extensions to Visual Studio and Visual Studio Team System
- **The Visual Studio Shell**, a core integrated development environment (IDE) for custom tools and languages
- **Visual Studio Tools for Applications**, tools for application customization

The extensibility of Visual Studio provides numerous benefits, including the flexibility to build a broad range of solutions, accelerated development, the ability to deliver a familiar user interface, and a robust and growing ecosystem. The remainder of this document examines how the Visual Studio SDK, the Visual Studio Shell, and Visual Studio Tools for Applications can help developers innovate faster, apply existing skills, and realize new business opportunities.

---

## **FLEXIBILITY TO BUILD A BROAD RANGE OF SOLUTIONS**

Organizations can deliver an endless range of new capabilities—and capitalize on significant business opportunities—by using the Visual Studio SDK to build extensions to Visual Studio, shipping stand-alone tools within the Visual Studio Shell, or integrating Visual Studio Tools for Applications into their software.

### **More Than a Standard SDK**

The Visual Studio SDK enables developers to build a broad range of solutions that integrate with Visual Studio and Visual Studio Team System, which can increase the market for a company's products and make it easier for customers to unify development processes. Developers in the Visual Studio ecosystem currently ship thousands of such solutions, including code productivity tools, cross-platform development tools, modeling tools, requirements tools, and tools for writing more secure code. Such tools can broadly be categorized as those that extend the Visual Studio IDE and those that extend the application life-cycle management (ALM) capabilities delivered by Visual Studio Team System.

For the latest Visual Studio release, the Visual Studio 2008 SDK provides a number of new capabilities and end-to-end samples. For example, support for Domain-Specific Language (DSL) tools enables developers to create graphical designers for common tasks and to use these designers to quickly generate code. (Teams at Microsoft using DSL tools have seen an initial 43 percent return on investment, with those returns increasing as the designers are reused.)

The Visual Studio 2008 SDK also includes authoring tools for the Visual Studio Shell, a wizard with menus and commands for generating starter code, built-in unit tests for the wizard-generated code, and a browser that makes it easy to discover samples and news feeds related to Visual Studio extensibility. In addition, developers can build extensions to target any platform, enabling them to create custom tools for mobile devices, embedded systems, cross-platform environments, and more.

### **An IDE for Every Need**

Extensions to Visual Studio can be hosted within the Visual Studio Shell, which is a core IDE that can be used to distribute custom tools and programming languages. In addition, hosting DSL tools in the Visual Studio Shell provides an effective way to deliver solutions that target nontraditional roles in the software development life cycle. For example, organizations can provide a graphical UI for nontechnical users such as business analysts or project managers while at the same time providing developers with the code behind the UI.

---

## **Flexible Application Customization**

Visual Studio Tools for Applications can be used to support the addition of customization capabilities to Windows-based applications. Through such an approach, ISVs can address a broader market with existing products, system integrators and resellers can tailor off-the-shelf products to customer needs, and end users can customize software to optimize its utility.

---

## **TOOLS TO ACCELERATE DEVELOPMENT**

By building on Visual Studio, organizations can do more with fewer lines of code, accelerating time-to-market and concentrating on those features that differentiate their products or solutions.

### **Write Less Code**

Whether to solve development problems, provide tools for the community, or build commercial products, using the Visual Studio SDK to build extensions enables organizations and their customers to take advantage of a rich, prebuilt set of Visual Studio features, such as its project system, editors, and debuggers. For organizations that have a custom programming framework or that regularly implement similar types of solutions, the SDK's support for DSL Tools can accelerate the development of graphical designers used to generate code. Similarly, building on the Visual Studio Shell enables organizations to deliver specialized tools for vertical markets or nondeveloper audiences without having to create an IDE from scratch.

### **Improve Application Life-Cycle Management**

Most developers work in teams, and Visual Studio Team System provides an integrated solution for ALM that helps those teams work more efficiently. Developers can extend Visual Studio Team System Team Foundation Server to deliver new capabilities in areas such as project methodology templates, work-item tracking, source-code control, build management, and reporting. The role-specific products in Visual Studio Team System (for example, Visual Studio Team System Test Edition) are also extensible.

### **Reuse Existing Samples**

The Visual Studio SDK contains a number of end-to-end samples that can help speed the development of extensions, such as those for the Iron Python Language Project. Code samples and documentation also are provided for the IDE in general, toolbox controls, domain-specific languages, Team System Team Foundation Server, data designers, and other areas. Developers can jump-start the development process by using shared-source community projects found on CodePlex, Microsoft's Web site for hosting open source projects.

### **Faster Development for All**

Visual Studio Tools for Applications enables organizations to easily support application customization and accelerate solution development for everyone from ISVs to end users. Visual Studio Tools for Applications projects open seamlessly from within Visual Studio, meaning that solutions created by end users can be reused and refined by professional developers. Such standardized tools also make it easier for IT departments to manage customizations across the organization.

---

## **FAMILIAR USER INTERFACE**

Developers often must learn numerous tools with different behaviors and UIs, which increases the cost of training and effectively narrows the range of an individual's expertise. Organizations that take advantage of the extensibility of Visual Studio can provide products and solutions with a familiar look and feel, enabling users to use existing skills and more quickly become productive with new tools.

### **The Choice of Professionals**

Visual Studio is the preferred development environment for millions of developers worldwide because it helps them write code faster and enables them to employ a single tool set and consistent UI when building software for the Windows® operating system, the Web, Microsoft Office, mobile devices, and other platforms. In a similar way, Visual Studio Team System is rapidly being adopted by development teams that need a well-integrated, end-to-end solution for application life-cycle management, as a way to help define, automate, and report on the development process.

The size of the global community using Visual Studio for development and Visual Studio Team System for application life-cycle management creates significant demand for products that integrate with Visual Studio and have a similar look and feel. Whether integrating with Visual Studio, building on the Visual Studio 2008 Shell, or using Visual Studio Tools for Applications to embed a streamlined IDE into their own applications, organizations can give their developers, end-users, and customers the benefits of this professional choice.

### **Familiar Languages**

The Visual Studio SDK and Visual Studio Tools for Applications both support the Visual Basic® and Visual C#® programming languages, the languages of choice for millions of developers. Developers can use either language with the SDK to build extensions, and end users can use either language to customize applications that employ Visual Studio Tools for Applications. The ability to extend Visual Studio in so many different ways using already familiar languages helps minimize training costs and increases flexibility in terms of what can be done with existing development resources.

### **Common Tools**

The Visual Studio SDK and Visual Studio Shell enable organizations to help developers more quickly become productive across a broader set of tools by integrating with the wealth of existing Visual Studio tools and features. Through such an approach, developers can reduce the need to learn specialized tools that may relegate them to niche roles within the organization and reduce their ability to serve that organization's broader development needs.

---

For example, integration with the Visual Studio project system enables organizations to add value to any phase of the development life cycle, from the definition of initial requirements through packaging finished software for deployment. Integrating with Visual Studio features such as visual designers, server and data explorers, debuggers, automated build tools, source-code control, work-item tracking, and business intelligence and reporting capabilities can help developers deliver results more quickly and remain focused on business needs.

---

## **ROBUST AND GROWING ECOSYSTEM**

Visual Studio is supported by a rich and diverse ecosystem, ranging from organizations that build high-end process management tools to individual developers who build free Power Toys. Microsoft is committed to investing in that ecosystem to foster innovation, with a focus on continued technical improvement, helping partners succeed, and engaging with the development community.

### **Broad Commercial Opportunities**

Millions of professional developers in organizations of all sizes use Visual Studio, creating a broad range of commercial opportunities for organizations to deliver innovative products and services. ISVs that build products for software development can reach a larger audience by integrating with Visual Studio. Systems integrators that offer consulting services can create service offerings around development methodologies and Visual Studio Team System implementation. New features and capabilities in Visual Studio 2008 and Visual Studio Team System 2008 expand this range of commercial opportunities even further.

### **Resources for Partners**

The Visual Studio Industry Partner (VSIP) program offers numerous benefits to help organizations build and sell products that integrate with Visual Studio. Program participants gain access to valuable insights for business planning, such as Microsoft industry research and early previews of new products. They also receive technical assistance through a series of regular developer labs at Microsoft headquarters in Redmond, including hands-on sessions with the Visual Studio team. In addition, a broad range of comarketing activities help VSIP partners reach out and promote their solutions to the millions of developers who use Visual Studio worldwide.

### **Evolving Tools**

Building on capabilities delivered in the Visual Studio 2008 SDK, teams within Microsoft are continuing to develop new extensibility tools and will deliver frequent new SDK releases. Overall direction for the SDK includes extending the authoring approach pioneered with DSL tools to the development and maintenance of other types of Visual Studio extensions—an approach called “VSX Tools.” The VSX Tools will be complemented by a set of prebuilt extensions that, by design, can be further extended by using graphical designers or modifying the code. These extensible tools will provide a way for partners and the development community to more easily create, customize, and evolve Visual Studio extensions.

---

## **SUMMARY**

The Visual Studio SDK, the Visual Studio Shell, and Visual Studio Tools for Applications are all resources to help organizations and individual developers extend Visual Studio and Visual Studio Team System. By taking advantage of the extensibility of Visual Studio, companies can build a broad range of solutions, accelerate solution development, deliver a familiar user interface, and benefit from a robust and growing ecosystem.

For more information on Visual Studio extensibility, visit the Web sites at [www.microsoft.com/vstudio](http://www.microsoft.com/vstudio) and [msdn.microsoft.com/vstudio/extend](http://msdn.microsoft.com/vstudio/extend).

For more information on the Visual Studio Industry Partner (VSIP) program, visit the Web site at [msdn.microsoft.com/vstudio/partners](http://msdn.microsoft.com/vstudio/partners).