

Integrating Languages in the Visual Studio Shell

Aaron Marten (aaronm@microsoft.com)
Software Design Engineer

Carl Brochu (cbrochu@microsoft.com)
Software Design Engineer in Test

Visual Studio Ecosystem



Agenda

- Overview
- Introduce
- Inspire

Visual Studio Architecture

Managed Package

Native Development
Managed (C#/VB) Development
(C++) Development

Managed Package

Macros

Addins

work

DTE
(Automation)

XML

VB

C#

WPF

Etc...

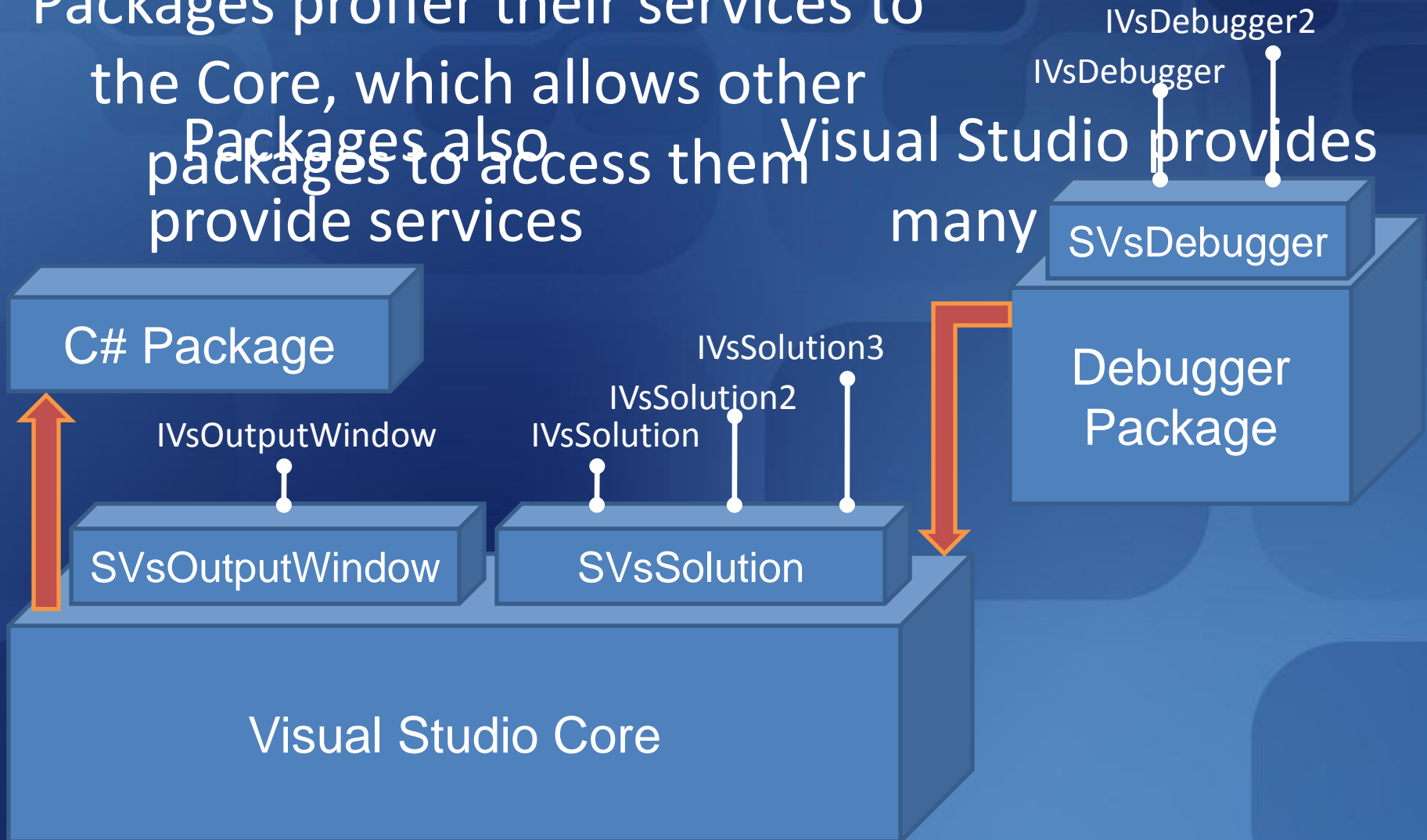
Visual Studio COM Interfaces

Visual Studio IDE “Core”

Services

Packages proffer their services to the Core, which allows other packages to access them. Packages also provide services.

Visual Studio provides many



Extensibility Points for Languages

- Language Services
- Project Systems
- Expression Evaluators/Debug Engines
- Code Snippets
- MSBuild Tasks

What is a Language Service?

- Service you provide to Visual Studio
- Sits behind standard code editor
- On demand (based on file extension)
- `IVsLanguageInfo`

Scanner / Colorizer

- Colorizes each character
- Make it fast
- Stateful
- Identify special tokens

Demo

RegEx Language Service Sample

Writing Language Services using Managed Code

XML

IronPython

Ruby.NET

Microsoft.VisualStudio.Package.LanguageService

Microsoft.VisualStudio.Shell

COM Interop Layer

Visual Studio

Managed Language Services: Base Classes in MPF

- Derive from abstract class LanguageService
- Implement IScanner for the colorizer
- AuthoringScope is the abstraction of the parser for the other functionality (e.g. Intellisense, auto completion, etc...)
- AuthoringSink provides a way for your parser to call back to VS for error reporting, etc...

Language Service Tools & Resources

- (Native) Babel
- MPPG / MPLex
- Managed Babel
- Samples

Project Systems

- IVsHierarchy / IVsProject(2,3)
- Project Items
 - References (.NET, COM, Web, custom, other...)
 - Files
- Configurations

MPF Project System Classes

- Distributed as **C# source code** in the Visual Studio SDK
- Samples
 - IronPythonIntegration
 - NestedProject

Demo

IronPython Sample Walkthrough

Other Language Extensibility Points

- Web Designer
- Windows Forms Designer
- WPF/XAML Designer
- Object Browser/Class View
- Hosting language in a custom dialog (e.g. Console Window)

Introducing: Visual Studio 2008 Shell

- Empty “Shell” with IDE features.
- No Visual Studio as a pre-requisite.
- Accelerates development.

Visual Studio Shell (integrated Mode)

- Optimized for
Programming
Languages

Visual Studio Shell (isolated Mode)

- Optimized for
Specialized Tools

Development vs. Deployment

Development

VS SDK

+

Visual Studio

Deployment

YourApp.exe

+

Your Stuff

+

VS Shell Runtime
Redist

Your Setup

Licensing

- Freely redistributable
- No platform targeting restriction
- Main restrictions for Isolated Mode:
 - Add your own Help About
 - Can't remove splash screen overlay
 - Can't load MS packages
 - Can't break VS or others
 - Pass through VS Shell EULA



Demo

IronPython Studio

Call to Action

- Download Visual Studio 2008 SDK
- Explore IronPythonIntegration and other samples
- Integrate your language inside Visual Studio
- Join the rapidly growing VSX community

Shameless Plug...

Visual Studio Ecosystem is Hiring Dev/Test/PM

- DSL Tools, Visual Studio SDK, Visual Studio Shell
- Redmond, Washington, USA
- Cambridge, UK

For more info, email us or go to this URL:

<http://blogs.msdn.com/garethj/archive/2007/12/07/hiring-for-dsl-tools-and-visual-studio-extensibility-in-both-cambridge-and-redmond.aspx>

Links

- VSX Developer Center
 - <http://msdn.com/vsx>
- VSX Forum
 - <http://forums.microsoft.com/msdn/showforum.aspx?siteid=1&forumid=57>
- IronPythonStudio
 - <http://www.codeplex.com/IronPythonStudio>
- VSX Team Blog
 - <http://blogs.msdn.com/vsxtteam>
- Aaron's Blog
 - <http://blogs.msdn.com/aaronmar>

Questions?

Aaron Marten (aaronm@microsoft.com)
<http://blogs.msdn.com/aaronmar>

Carl Brochu (cbrochu@microsoft.com)