

.NET FRAMEWORK OVERVIEW

赵俊其

平台及开发技术部

微软（中国）有限公司

Agenda

- Introduction to .NET
- .NET Framework
- Common language runtime
- Building user interfaces
- Data and ADO.NET

Microsoft® .net Framework

- A platform for building applications
 - Windows applications
 - Mobile applications
 - Web applications
 - Components
 - XML Web Services



Introduction to .NET

The .NET Framework and Visual Studio.NET



Broad Language Support

- What about types?
 - Common Type System (CTS)
- Other languages and compilers
 - Common Language Specification (CLS)

Broad Language Support

VB.NET

```
Dim s as String  
s = "authors"  
Dim cmd As New SqlCommand("select * from " & s, sqlconn)  
cmd.ExecuteReader()
```

C#

```
string s = "authors";  
SqlCommand cmd = new SqlCommand("select * from "+s, sqlconn);  
cmd.ExecuteReader();
```

C++

```
String *s = S"authors";  
SqlCommand cmd = new  
SqlCommand(String::Concat(S"select * from ", s),  
            sqlconn);  
cmd.ExecuteReader();
```

Broad Language Support

J#

```
String s = "authors";  
SqlCommand cmd = new SqlCommand("select * from "+s, sqlconn);  
cmd.ExecuteReader();
```

Delphi

```
var s      : String;  
    cmd : SqlCommand;  
begin  
    s := 'authors';  
    cmd := new SqlCommand.Create('select * from '+s, sqlconn);  
    cmd.ExecuteReader();  
end
```

Broad Language Support

```
var s = "authors"  
var cmd = new SqlCommand("select * from " + s, sqlconn)  
cmd.ExecuteReader()
```

JScript

```
String *s = S"authors";  
SqlCommand cmd = new SqlCommand(String::Concat(S"select *  
from ", s), sqlconn);  
cmd.ExecuteReader();
```

Perl

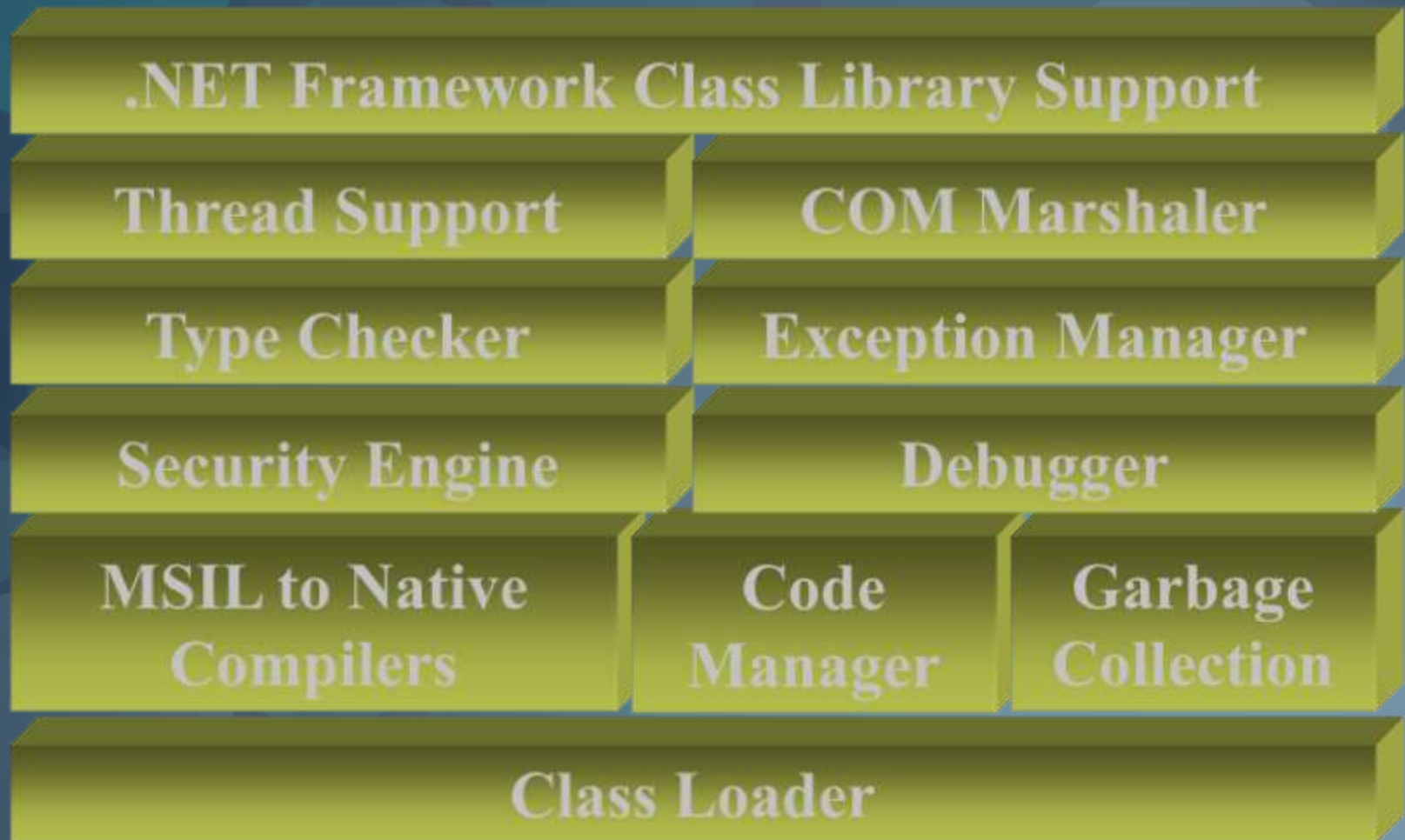
```
s = "authors"  
cmd =SqlCommand("select * from " + s, sqlconn)  
cmd.ExecuteReader()
```

Python

Common Language Runtime

- Manages running code
 - Verifies type safety
 - Provides garbage collection, error handling
 - Code access security for semi-trusted code
- Provides common type system
 - Value types (integer, float, user defined, etc)
 - Objects, Interfaces
- Provides access to system resources
 - Native API, COM interop, etc.

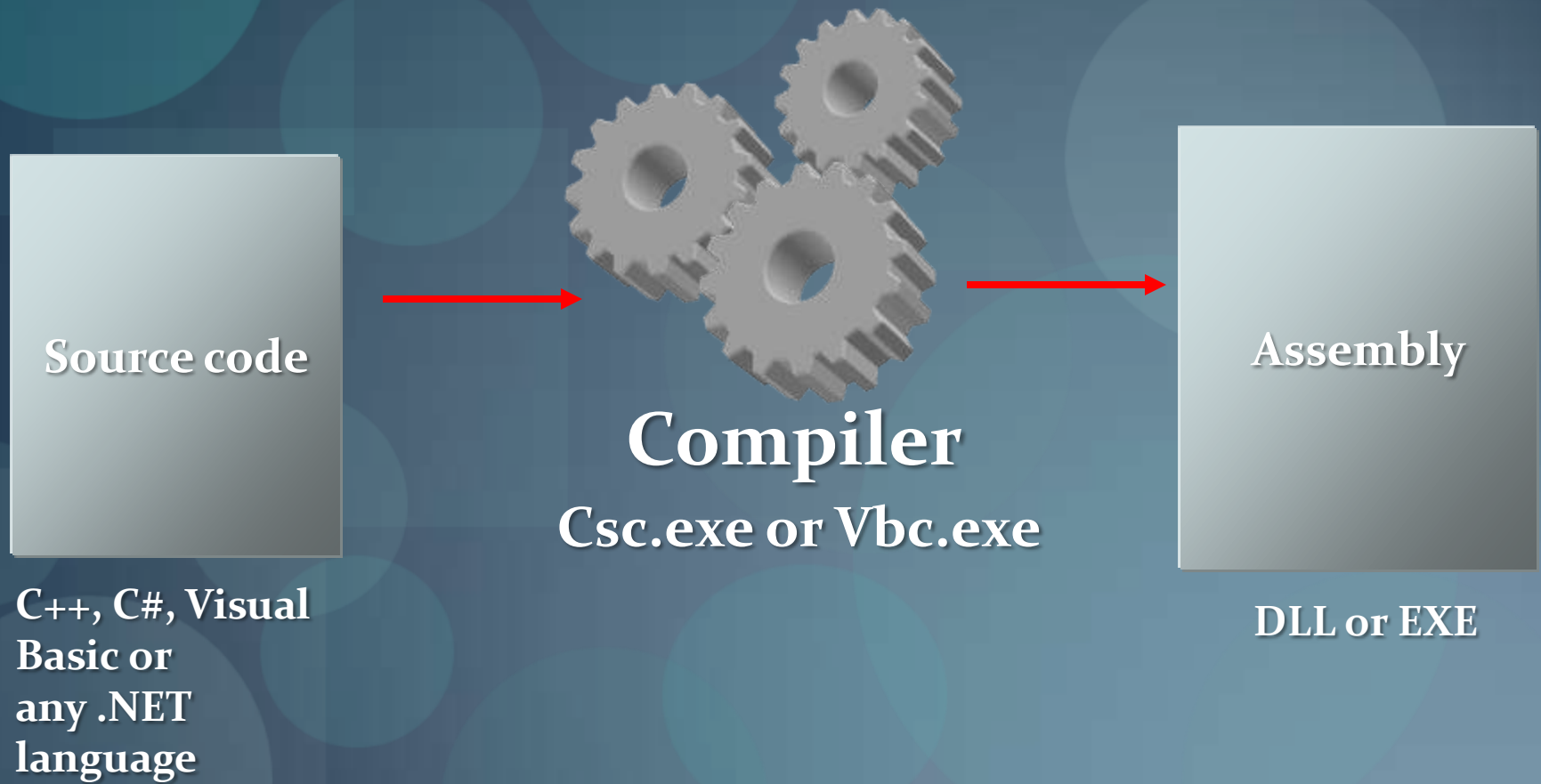
CLR Architecture



Garbage Collector

- Objects are allocated on the Garbage collected heap
- The garbage collector is responsible for reclaiming memory used by objects which are no longer in use.
- Non-deterministic, although you can request collections.
- You can specify code to be run before an object is collected.

CLR Compilation



Assembly

- A collection of code and resources compiled, versioned, and deployed as a single unit.
- Self-describing through inclusion of a manifest.

ParcelTracker.DLL

Metadata

IL
Managed
code

Resources

Metadata

- Type information
 - more complete than IDL / TLB
 - automatically bound into assembly
 - inseparable
 - stored in binary format
 - describes every class type
 - used by Microsoft IntelliSense[®] in Visual Studio .NET

Metadata in an Assembly

Type Descriptions

Classes
Base classes
Implemented interfaces
Data members
Methods

Assembly Manifest

Name
Version
Culture

Other assemblies
Security permissions
Exported types

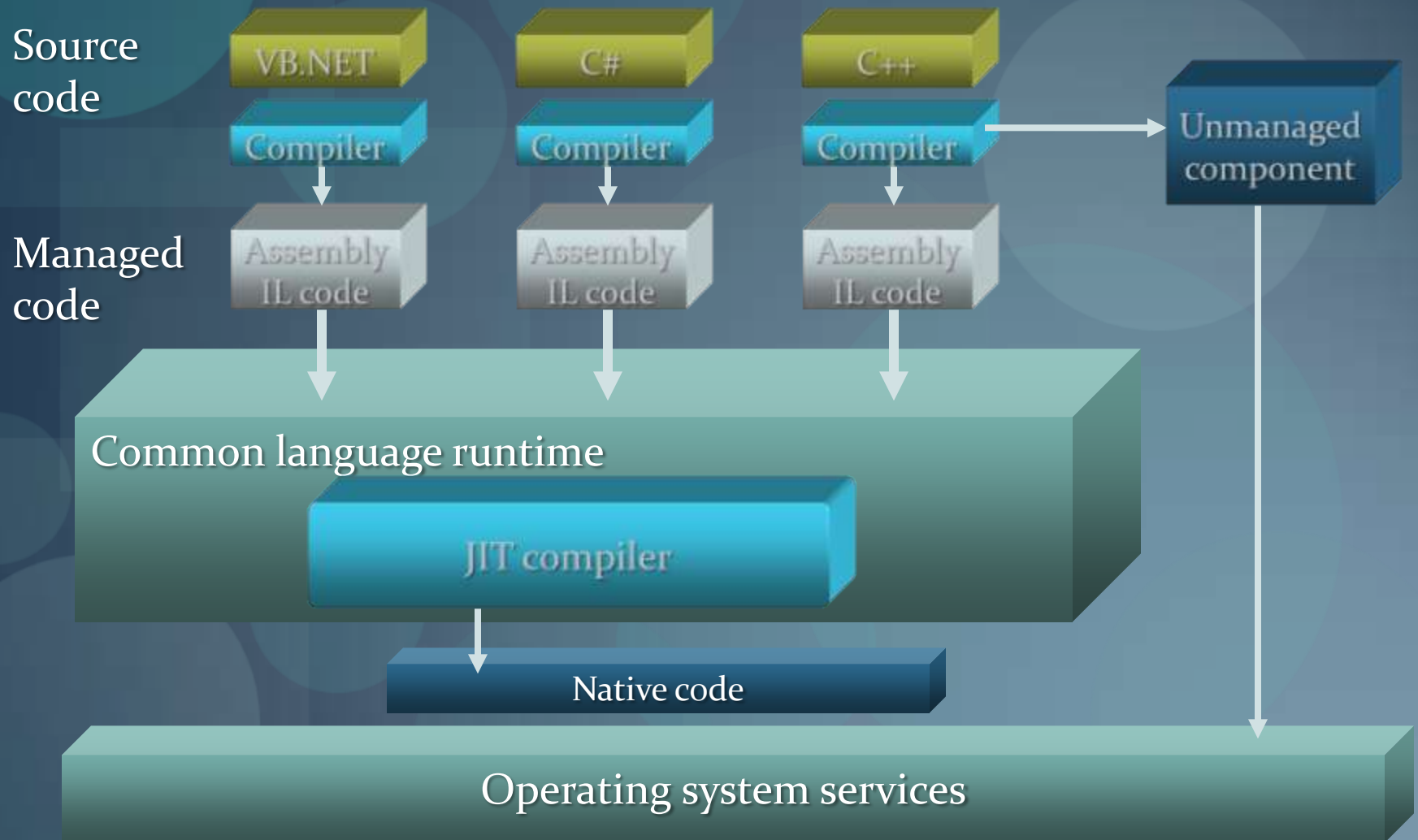
Simplified Deployment

- No registration required
 - Code is completely self-describing
 - Simply copy components to app dir
- Zero-impact install
 - Installing one app will not affect another
- Side-by-side execution
 - Multiple component versions can co-exist

Managed Code

- Managed code is code written to target the services of the CLR.
- Managed code is compiled to IL, and then JITted into native code.
- Managed code uses data managed by the Garbage Collector.
- Managed code includes meta-data.

CLR Execution Model



Base Class Library

- Contains thousands of classes for common functionality such as I/O, data access, graphics, etc.
- Provides the framework for building applications and web services.

BCL Namespaces

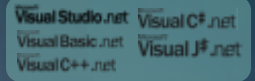
- System.Data – Data Access
- System.Drawing – Graphics, GDI+
- System.EnterpriseServices – COM+
- System.IO – File I/O
- System.Net – Networking
- System.Security – security classes

BCL Namespaces

- `System.Text` – internationalization aware string manipulation
- `System.Threading` – threading support
- `System.Web` – ASP.NET
- `System.Windows` – Windows Applications
- `System.Xml` – XML APIs
- ...enough to cover a ton of slides!

VS 2005 中的 .NET Framework

工具



客户端应用程序模型

Web 和服务应用程序模型

数据系统应用程序模型

移动 PC 和设备应用程序模型

命令行

Windows 窗体

System.Windows.Forms

ASP.NET

System.Web

Yukon

System.Data.SqlServer

Framework 精简版

System.Windows.Forms

System.Console

NT 服务

System.ServiceProcess

表示

数据

通信

System.Web.UI

- Page
- Control
- HtmlControl
- MobileControl
- WebControl
- Adaptor
- Design

System.Windows.Forms

- Form
- Control
- Print Dialog
- Design

System.Drawing

System.Data

- SqlClient
- SqlType
- SqlXML
- OdbcClient
- OleDbClient
- OracleClient
- DataSet
- Mapping
- ObjectSpace
- ObjectSpace
- Query
- Schema

System.Xml

- Schema
- Serialization
- Xpath
- Query

System.Web

- Personalization
- Caching
- SessionState

System.Messaging

- System.DirectoryService
- System.Runtime.Remoting

System.Web.Services

- Web.Services
- Description
- Discovery
- Protocol

System.Net

- HttpWebRequest
- FtpWebListener
- SslClientStream
- WebClient
- NetworkInformation
- Socket
- Cache

基本功能

基础服务和应用程序服务

- System.Timer
- System.Globalization
- System.Serialization
- System.Threading
- System.Runtime
- System.Text
- System.Design
- System.IO
- System.Collection
- System.ComponentModel
- System.CodeDom
- System.Reflection
- System.EnterpriseService
- System.Transaction
- System.Text
- System.Design
- System.IO
- System.Collection
- System.ComponentModel
- System.CodeDom
- System.Reflection
- System.EnterpriseService
- System.Transaction

安全性

System.Web.Security

System.Security

- AccessControl
- Credential
- Cryptography
- Permission
- Policy
- Principal
- Token

配置

- System.Web.Configuration
- System.Configuration
- System.Resource

部署/管理

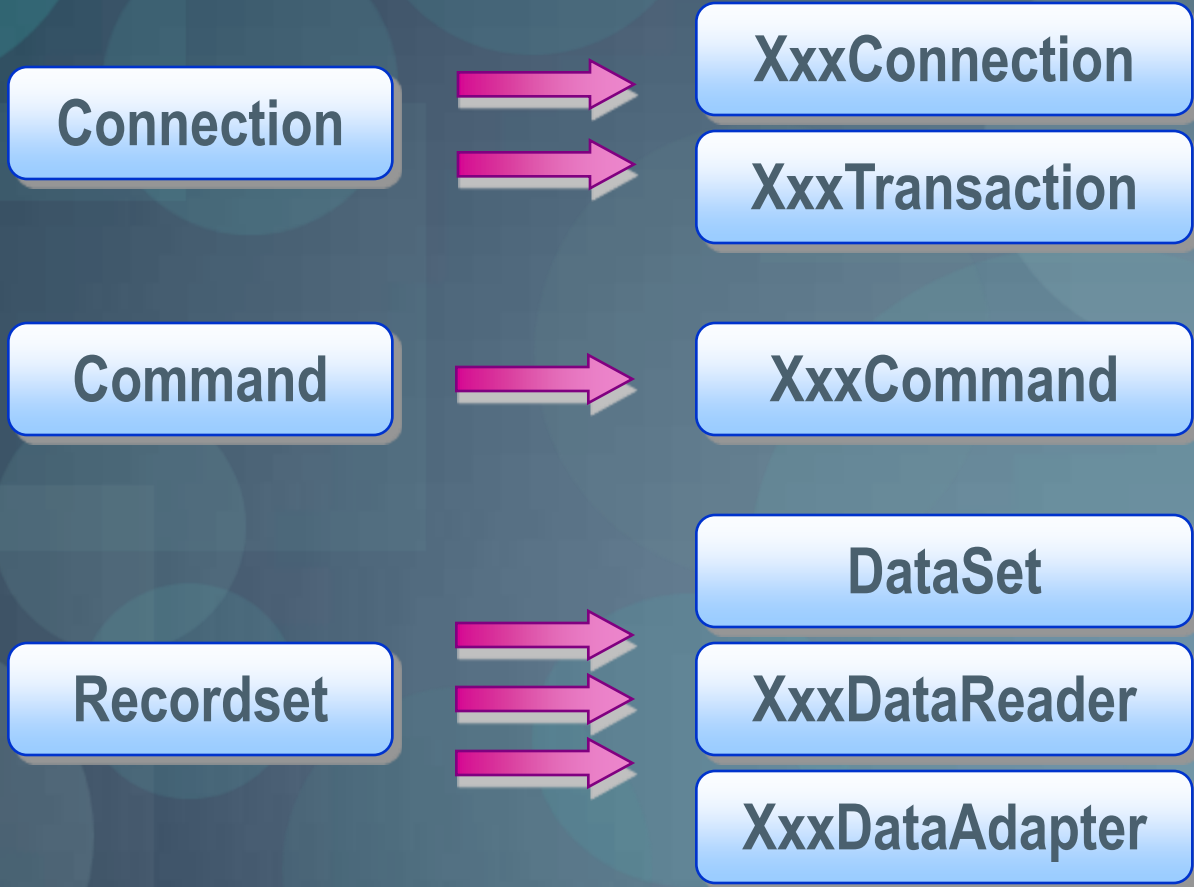
- System.Web
- Administration
- Management
- System.Management
- System.Deployment
- System.Diagnostic

ADO.NET

- New objects (e.g., DataSets)
- Great support for XML
- Separates connected / disconnected issues
- Language-neutral data access
- Uses same types as common language runtime

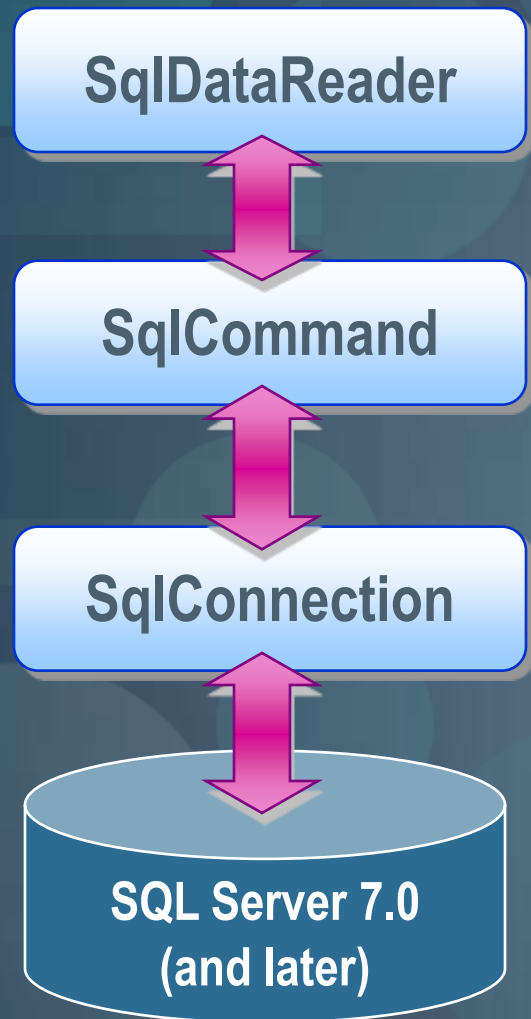
ADO.NET

ADO



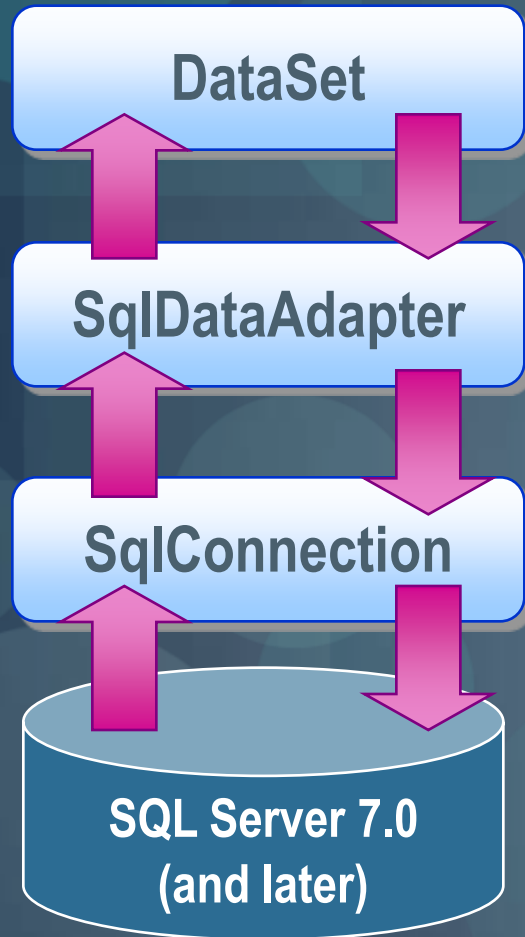
ADO.NET

Connected Scenario



1. Open connection
2. Execute command
3. Process rows in reader
4. Close reader
5. Close connection

Disconnected Scenario



1. Open connection
2. Fill the DataSet
3. Close connection
4. Process the DataSet
5. Open connection
6. Update the data source
7. Close connection

Windows Form

- Framework for building rich clients
 - RAD (rapid application development)
 - Rich interfaces
 - Easily hooked into Web services
 - Rich set of controls
 - Data-aware
 - ActiveX[®] Support
 - Accessibility

ASP.NET

- ASPX, ASP – Side by Side
- Simplified Programming Model
- Simplified Deployment
- Better Performance
- Caching
- Security
- Powerful Controls

ASP.NET

- Simplified Browser Support
- Simplified Form Validation
- Code Behind Pages
- More Powerful Data Access
- Web Services
- Better Session Management

XML Web Services

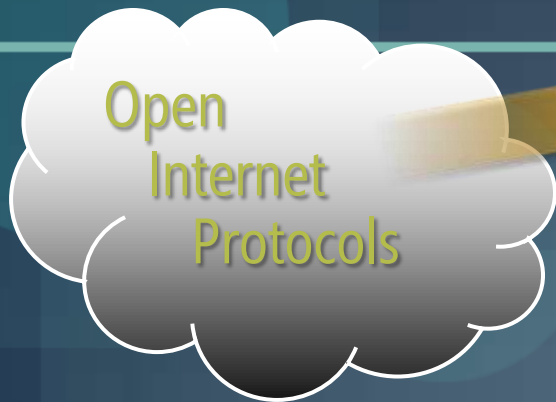
Industry standards for interoperability



- Enable disparate systems to work together
 - Across languages, platforms, applications
 - Computer to computer
 - Inside/outside the firewall
- Based on open, internet standards
 - XML, SOAP, WSDL, UDDI
- Broad industry support
 - Key area of vendor alignment



What Is A Web Service?



Web Service

A programmable application component accessible via standard Web protocols

- Provide a Directory of Services on the Internet
- Web Services are defined in terms of the formats and ordering of messages
- Web Services consumers can send and receive messages using XML
- Built using open Internet protocols

UDDI

Universal Description, Discovery, and Integration

WSDL

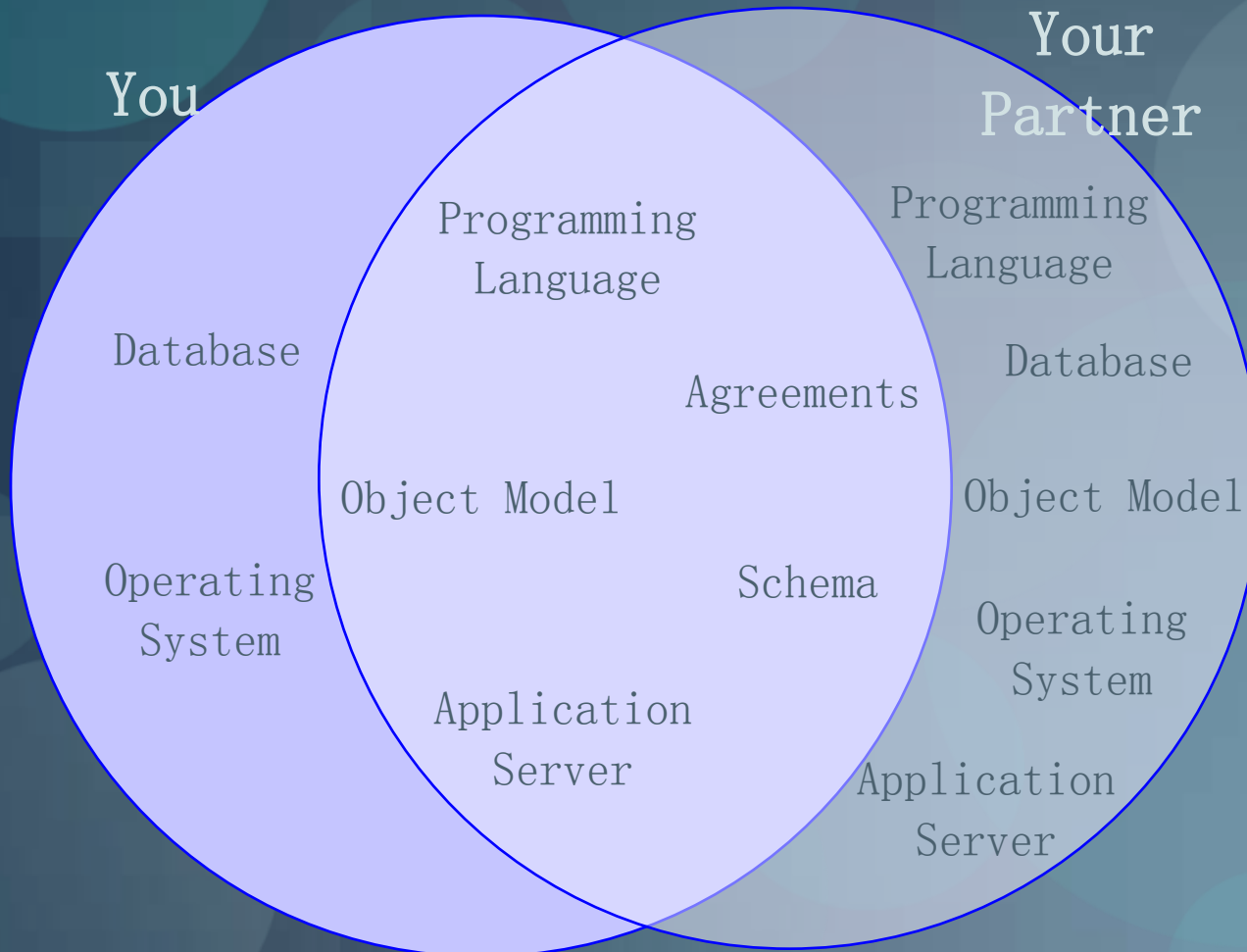
Web Services Description Language

SOAP

XML & HTTP

Reduce Dependencies

Example: Service-Oriented Architecture



Summary

1. What is the .NET Framework?
2. What is managed code?
3. What is an assembly?
4. What is the garbage collector?
5. What are web services?
6. What is the best .NET language?

Thanks!

Any advanced question, please contact with me via
msdpe@hotmail.com or msdpe.cnblogs.com

The Microsoft logo is centered on the page. It features the word "Microsoft" in a bold, italicized, white sans-serif font. A registered trademark symbol (®) is located at the top right of the word. The logo has a subtle drop shadow, making it stand out against the background. The background is a dark blue gradient with several large, semi-transparent circles of varying shades of blue and teal scattered across it.

Microsoft[®]

© 2007 Microsoft Corporation. All rights reserved.
This presentation is for informational purposes only. Microsoft makes no warranties, express or implied, in this summary.