



# U2 Toolkit for .NET (U2NETDK)

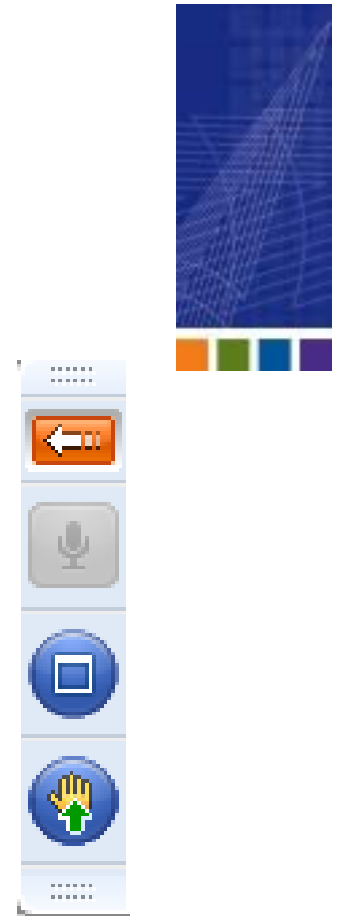
Michael Byrne, Sales Engineer Manager

# Webinar Opening Procedure

- Orange arrow = control GoTo Webinar control panel
- This webinar will be recorded and posted to our website for you to replay at a later date
  - You will be notified via email once .pdf and video are posted
- If using phone – don't select "Use Mic & Speakers"



- All attendees are muted during the presentation
- Brief Q&A session – after the presentation



# Michael Byrne

Sales Engineer Manager



- Started with UniData in 1997
  - Senior Consultant
  - Advanced Customer Support (focusing on Web)
- Left after Informix acquisition 2000
  - Software developer at Internet startup
  - Started software company
    - Consulting – business database based Web applications
    - Built, sold, and supported a product on Windows technology
- Returned to IBM U2 Group in 2005 as Senior Sales Engineer
- Extensive knowledge in Web development and technologies

# Agenda



- Introducing U2 Toolkit for .NET (U2NETDK)
- Architecture
- Migration of IBM.NET / UO.NET apps
- U2 Toolkit for .NET Samples and Demos
- Server and Client Logging
- Resources
- Demos
  - MVC Demo using UO.NET
  - Web Services Demo ADO.NET and UO.NET
  - Data extraction using SSIS (SQL Server Express)
- Q & A

# Business Benefits of U2 Toolkit for .NET (U2NETDK)



- Access to Microsoft .NET development framework
- Low-level API for maximum performance and integration
- Native interfaces for U2-centric developers (UO.NET)
- Standards-based interfaces for immediate access to full .NET functionality (ADO.NET)
- Encrypt and authenticate data transmitted with Secure Socket Layer (SSL)
- Improve application scalability via performance enhancements and connection pooling





# Previously...

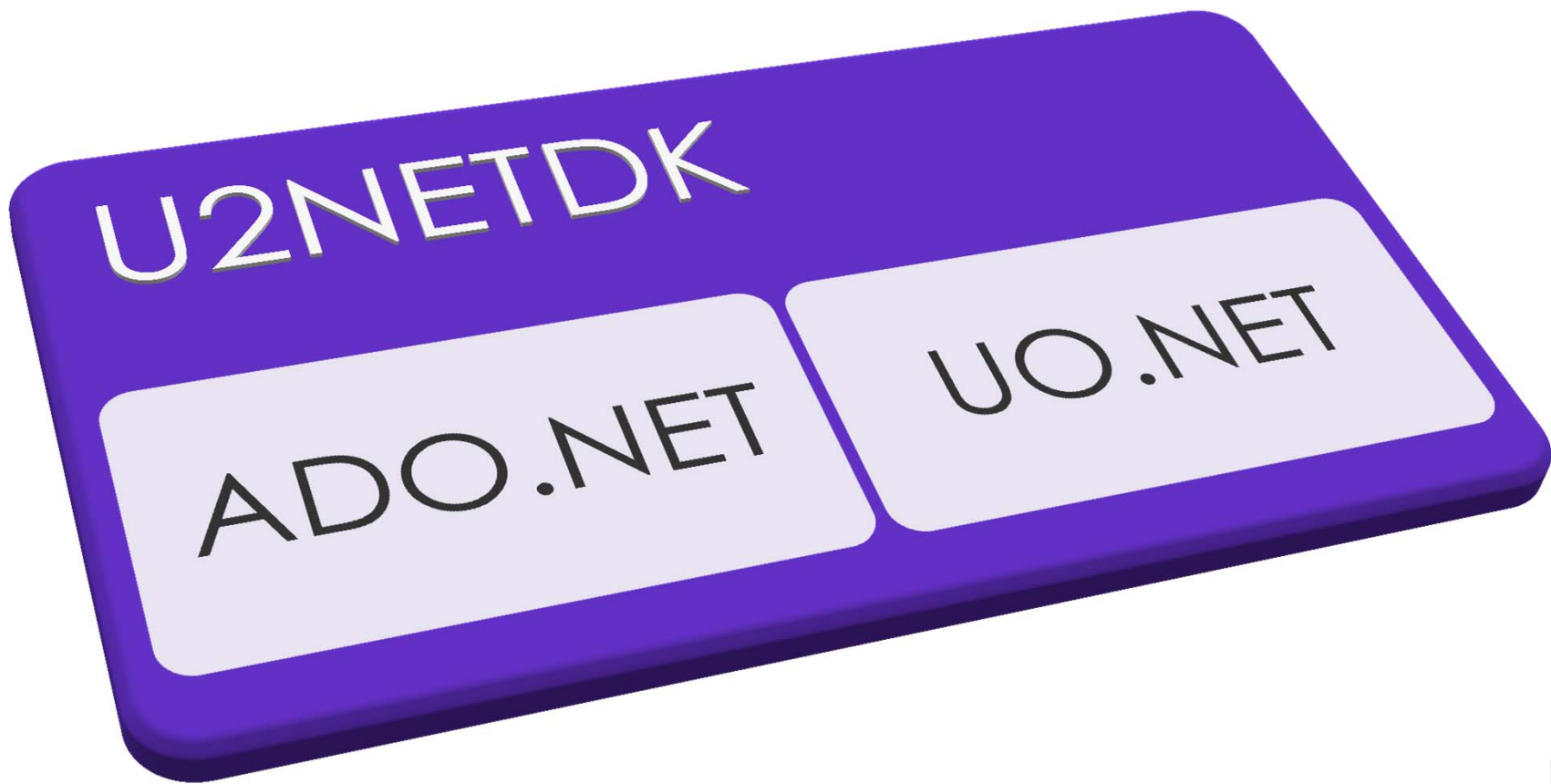
## IBM.NET (IBM Data Server Provider/Add-Ins)

- Supported DB2, Informix, and U2
- ADO.NET Provider
- LINQ To Entity Provider
- IBM Database Add-ins for Visual Studio (2005/2008)
- IBM.NET 9.7 fix pack1 (9.7.1.2)

## UO.NET (UniObjects for .NET)

- Core UniObjects API for native access
- UniFile, UniSubroutine, UniCommand, UniDynArray, etc.

Now With U2 Toolkit for .NET...





# UO.NET Example

```
con = new U2Connection();  
con.ConnectionString = s;  
con.Open();  
UniSession us1 = con.UniSession;  
  
UniXML xml = us1.CreateUniXML();  
xml.GenerateXML("LIST PRODUCTS ISBN TITLE");  
ds = xml.GetDataSet();
```





# ADO.NET Example

```
con = new U2Connection();  
con.ConnectionString = s;  
con.Open();
```

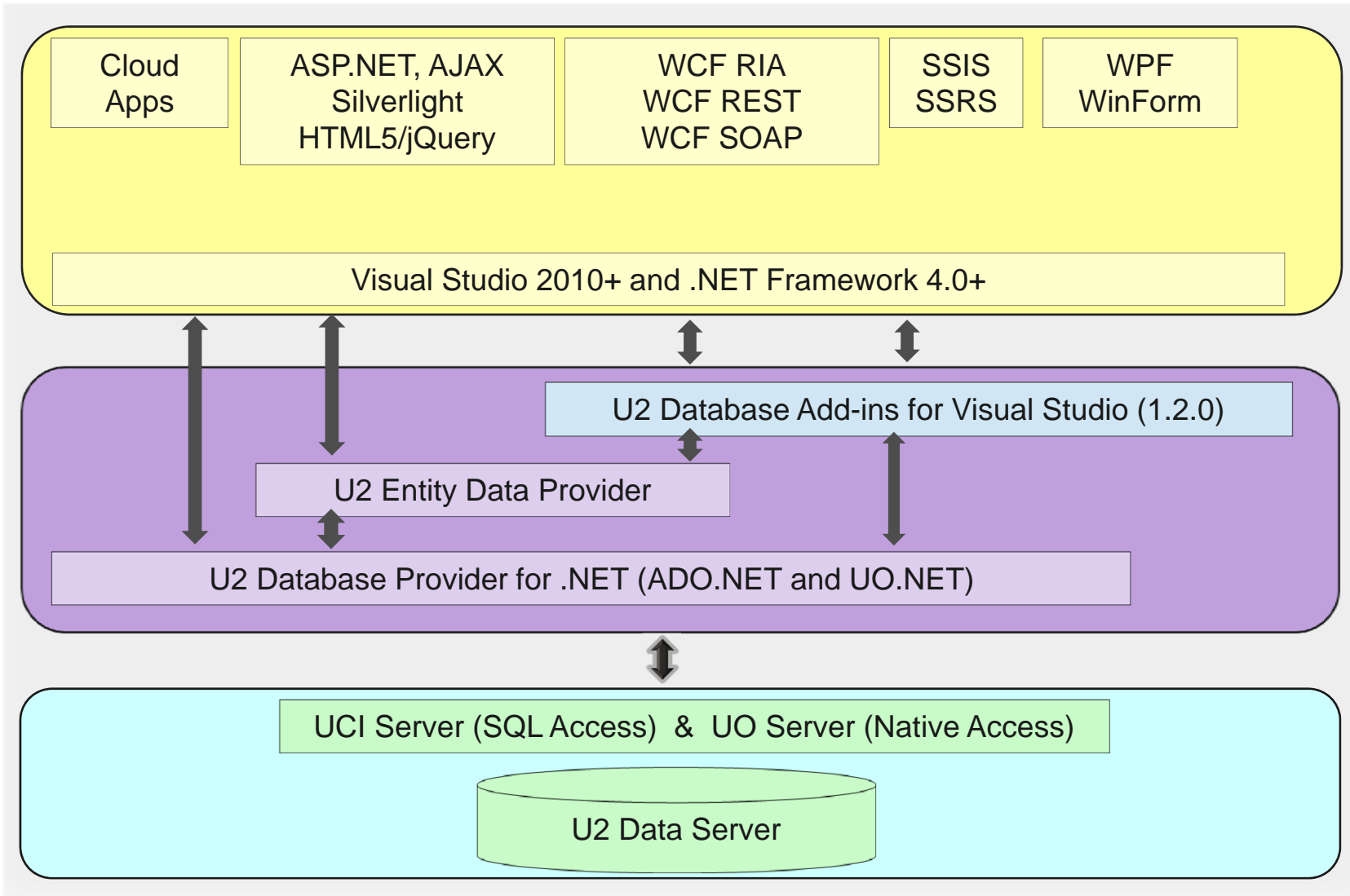
```
U2Command comm = con.CreateCommand();  
comm.CommandText = "SELECT ISBN, TITLE FROM PRODUCTS";  
U2DataReader dr = comm.ExecuteReader();
```

# U2NETDK Roadmap



	Current		2013
Version	1.1.1	1.2.0	Future
	Foundation	Growth	Future
<b>Development</b>	<ul style="list-style-type: none"> <li>Visual Studio 2010+</li> </ul>	<ul style="list-style-type: none"> <li>Visual EDM Designer</li> <li>Dataset Designer</li> <li>Code Generation</li> </ul>	<ul style="list-style-type: none"> <li>Visual Studio 2012 support</li> </ul>
<b>Platform</b>	<ul style="list-style-type: none"> <li>Windows XP/7/2008/2003</li> <li>.NET Framework 4.0</li> <li>.NET EF 4.1+</li> <li>32-bit and 64-bit</li> </ul>	<ul style="list-style-type: none"> <li>Windows 8</li> </ul>	
<b>Native Interfaces</b>	<ul style="list-style-type: none"> <li>UO.NET API</li> </ul>		<ul style="list-style-type: none"> <li>VS Add-ins</li> <li>LINQ to Entity</li> <li>Excel</li> <li>SSIS</li> <li>SSRS</li> </ul>
<b>Standards-based</b>	<ul style="list-style-type: none"> <li>ADO.NET Provider</li> <li>LINQ to Entity</li> <li>SSIS (driver)</li> <li>SSRS (driver)</li> </ul>	<ul style="list-style-type: none"> <li>VS Add-ins</li> <li>SSIS (Add-ins)</li> <li>SSRS (Add-ins)</li> <li>Excel (Add-ins)</li> </ul>	
<b>Security</b>	<ul style="list-style-type: none"> <li>ADE support</li> <li>SSL support</li> </ul>		

# Architecture - U2 Toolkit for .NET





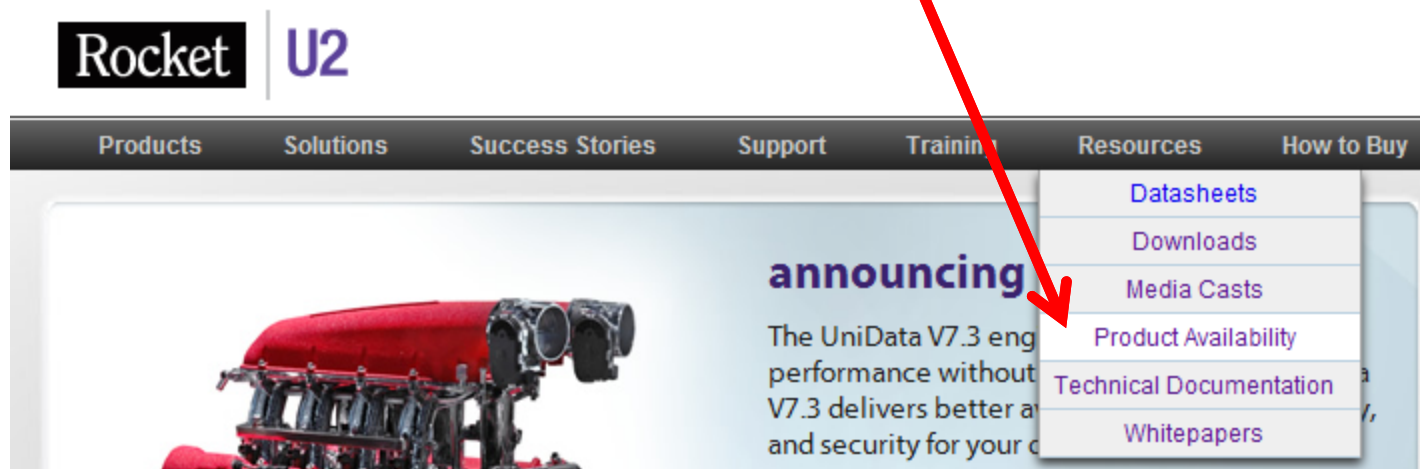
# Other Features

- Supported on UniVerse 10.3 / UniData 7.1 or higher
- Device License – Share with other U2 clients
  - Telnet, UDODBC, UVODBC, JDBC, etc.
- Connection Pooling
  - Not sharable between SQL and native access
  - Entity Framework is multi-threaded, will consume multiple user licenses if not using CP
- Data Concurrency
  - Pessimistic concurrency (Microsoft terminology)
    - UO.NET – UniTransaction
    - ADO.NET - U2Transaction
  - Optimistic concurrency
    - ADO.NET, really geared for add-ins and generated statements



# Where To Find U2NETDK

- <http://www.rocketsoftware.com/u2>
- Product Availability Matrix



# Where To Find U2NETDK



**Product availability**

**Product Availability**

**Product** U2 Toolkit for .NET

**Platform** Windows x86

Search

**FREE!**

# Development and Migration



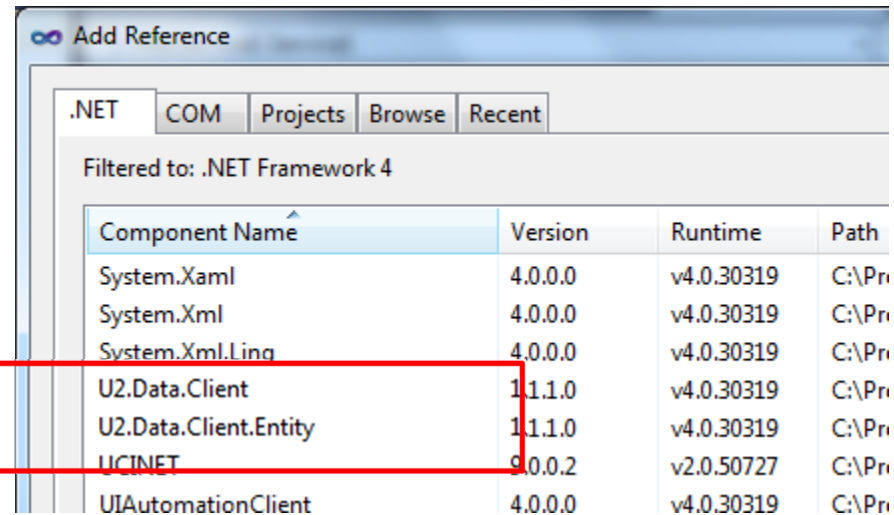
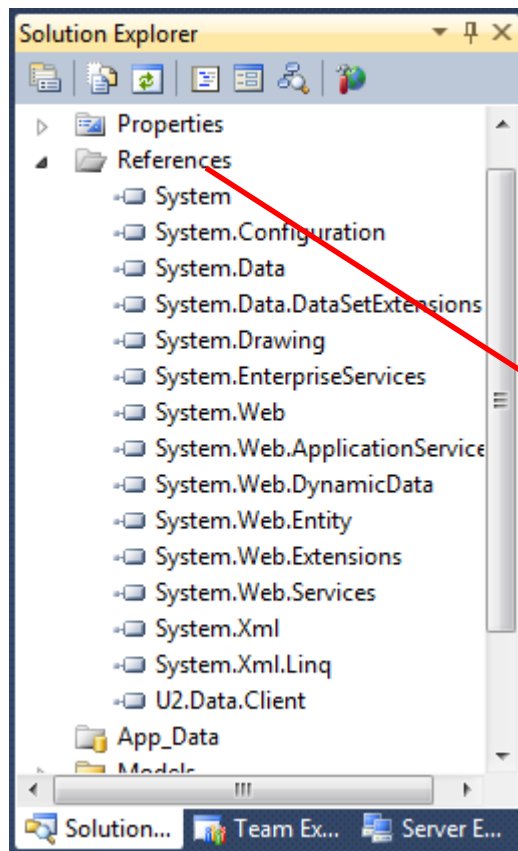


# ADO.NET U2 Account Prep

- Connect to any UniVerse/UniData account
- Prepare your accounts and files:
  - UniData (VSG or U2 Metadata Manager (UDT 7.3))
  - UniVerse (HS.ADMIN or U2 Metadata Manager\*)
- Can bypass account/file preparation for
  - U2 subroutines, output as UniDynArray
  - SQL with UNNEST
    - Code First ExecuteStoreCommand method in EF 4.0/4.1
    - Using Microsoft DataSet



# Add Reference to U2NETDK





# Moving from IBM.NET

Existing Namespace	New Namespace
IBM.Data.DB2	U2.Data.Client
IBM.Data.DB2Types	U2.Data.ClientTypes

Existing Classes	New Classes
DB2Connection	U2Connection
DB2DataReader	U2DataReader
DB2DataAdapter	U2DataAdapter
DB2Parameter	U2Parameter
DB2Transaction	U2Transaction
DB2comandBuilder	U2CommandBuilder
DB2Command	U2Command



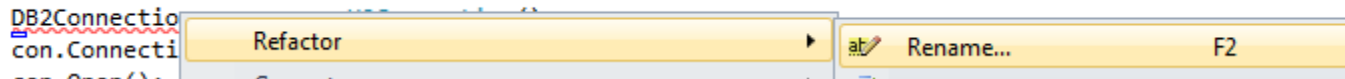
# Moving from UniObjects for .NET

Existing Namespace	New Namespace
IBMU2.UODOTNET	U2.Data.Client.UO

Existing Classes	New Classes
UniObjects	U2Connection

## Example: Refactoring in Visual Studio 2010

```
string s = GetU2ConnectionString("localhostHSSALESConnectionStringForUO");
```





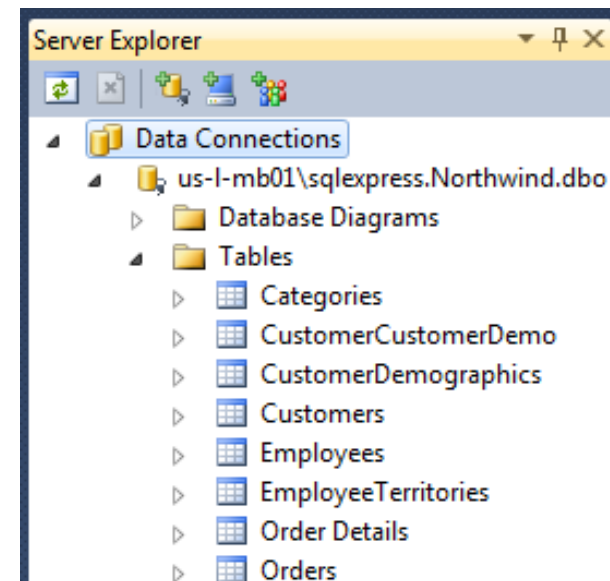
# Import the Correct Library

- ADO.NET
  - Using U2.Data.Client
- UO.NET
  - Using U2.Data.Client
  - Using U2.Data.Client.UO
- Entity Framework
  - Using U2.Data.Client
  - Using U2.Data.Client.Entity

# U2NETDK Directions



- Server Add-ins for Visual Studio
- Code generation
  - ADO.NET (CRUD)
  - UO.NET (CRUD using native)
- Visual EDM Designer
- Native access additions
  - LINQ to Entity
  - SSIS integration
  - Excel add-ins





# C#/VB.NET Samples (UDT or UV)

- Connection
- DataAdapter
- DataAdapter\_MultiValue
- DataAdapter\_TOXML
- DataReader
- EntityFramework
- EntityFramework\_CodeFirst
- EntityFramework\_CodeFirst\_MultiValue1
- EntityFramework\_CodeFirst\_MultiValue2
- EntityFramework\_CodeFirst2
- EntityFramework\_ExecuteStoreQuery\_UNNEST
- EntityFramework\_POCO
- EntityFramework\_Subroutine
- Subroutine
- UO\_UniCommand
- UO\_UniDataSet
- UO\_UniFile
- UO\_UniSelectList
- UO\_UniSubroutine



# Common Samples

- ▲ samples
  - ▲ C#
    - ▲ COMMON
      - ▷ AutomaticDataEncryption
      - ▷ ConnectionPool
      - ▷ SSLConnection
    - ▷ UniData
    - ▷ UniVerse
  - ▷ VB.NET



# Server and Client Logging

- UO.NET Connection - Server Logging
  - 'serverdebug' file in the UDHOME or UVHOME
  - UD: udcs 10 /tmp/udcs.log
  - UV: uvcs 10 /tmp/uvcs.log
  
- ADO.NET Connection – Server Logging
  - UD: TRACE\_LEVEL=3 in the ud\_database
  - UV: 'TRACEuci' file in the UVHOME directory
  
- U2NETDK Client logging  
(environment variables setting)
  - UCINETTRACE=c:\temp
  - UCITRACESWITCH=4(all), 3(warn), 2(error), 1(info)





# Resources

- U2 Technical documentation  
<http://www.rocketsoftware.com/u2/resources/technical-resources>
- Rocket Customer Portal (U2 TechConnect)  
<http://www.rocketsoftware.com/support>
- U2 DeveloperZone  
<https://u2devzone.rocketsoftware.com/>
- Stackoverflow  
<http://stackoverflow.com/questions/tagged/u2netdk>
- Getting Started with ASP.NET MVC  
<http://www.asp.net/mvc>

# Demos

- MVC Demo using UO.NET
  - Web Services Demo  
ADO.NET and UO.NET
- Data extraction using SSIS  
(SQL Server Express)



# Question and Answer Session



*To ask a question:*

- Click on hand icon with green arrow and we will call your name



Or you may email us your question later at:

[U2AskUs@rocketsoftware.com](mailto:U2AskUs@rocketsoftware.com)



# Disclaimer

THE INFORMATION CONTAINED IN THIS PRESENTATION IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

WHILE EFFORTS WERE MADE TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION CONTAINED IN THIS PRESENTATION, IT IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED.

IN ADDITION, THIS INFORMATION IS BASED ON ROCKET SOFTWARE'S CURRENT PRODUCT PLANS AND STRATEGY, WHICH ARE SUBJECT TO CHANGE BY ROCKET SOFTWARE WITHOUT NOTICE.

ROCKET SOFTWARE SHALL NOT BE RESPONSIBLE FOR ANY DAMAGES ARISING OUT OF THE USE OF, OR OTHERWISE RELATED TO, THIS PRESENTATION OR ANY OTHER DOCUMENTATION.

NOTHING CONTAINED IN THIS PRESENTATION IS INTENDED TO, OR SHALL HAVE THE EFFECT OF:

- CREATING ANY WARRANTY OR REPRESENTATION FROM ROCKET SOFTWARE (OR ITS AFFILIATES OR ITS OR THEIR SUPPLIERS AND/OR LICENSORS); OR
- ALTERING THE TERMS AND CONDITIONS OF THE APPLICABLE LICENSE AGREEMENT GOVERNING THE USE OF ROCKET SOFTWARE.

# Trademarks and Acknowledgements



The following are trademarks or registered trademarks of Rocket Software, Inc.: Dynamic Connect, SystemBuilder, U2, U2 Web Development Environment, UniData, UniVerse, and wIntegrate.

IBM, the IBM logo, AIX, and DB2 are trademarks of IBM in the United States and other countries.

Oracle and Java are registered trademarks of Oracle and/or its affiliates.

Microsoft, SQL Server, Windows, and Excel are trademarks of the Microsoft group of companies.

UNIX is a registered trademark of The Open Group.

Other company, product, and service names mentioned herein may be trademarks or service marks of others.

