

COM Integration

PxPlus 2016 (v13)



COM Integration

- **C**omponent **O**bject **M**odel
 - Control **.NET** components using an object interface
 - COM also known as **OLE/OCX/ActiveX**

- COM component examples
 - Excel
 - Progress bar control
 - Shell Explorer control



COM Integration

- Work with **.NET** components via **COM** objects
 - Get and set COM object properties
 - Obtain information from the .NET component
 - Change the behavior of the .NET component
 - Execute COM object methods
 - Make the .NET component do the work
 - Subscribe to COM object events
 - React when something happens in the .NET component
 - Button click
 - File save



COM Component Browser

● PVXTLB.EXE

- Lists COM components on system via Open
- Type information about COM objects
 - COM name/Class and GUID
 - Descriptions of methods, properties, and events
- Generate PxPlus object for event handling
- Download from: <http://ftp.pvxplus.com/downloads/misc/PVXTLB.EXE>



Working with COM Objects

- Create and initialize COM object

```
DEF OBJECT ExcelHandle, "Excel.Application"  
DEF OBJECT ExcelHandle, "*"
```

- Special case "*" lists all ActiveX COM components



Working with COM Objects

- Work with COM object
 - Access properties and methods via ' (tick)

```
ExcelHandle'Calculate()  
ExcelHandle'Visible
```

- List all methods and properties via '* (tick asterisk)

```
PRINT ExcelHandle'*
```



Working with COM Objects

- Extended properties and methods
 - **pvxHandle**
 - Container window handle
 - **pvxIsA\$**
 - Internal COM object class name
 - **pvxDescribe\$(member\$)**
 - Information describing the member, its return type, as well as parameters and their types
 - *+More*



Working with COM Objects

- Extended helper objects
 - Used for COM data handling
 - ***Variant**
 - Store any data type
 - Optionally passed by reference
 - Convert PxPlus data types to automation types
 - ***VarArray**
 - Each element can accept data of any type
 - Passed by reference
 - *+More*



Working with COM Objects

- Disconnect COM object and cleanup resources
 - Two options available using different directives

```
DROP OBJECT ExcelHandle  
DELETE OBJECT ExcelHandle
```



Working with COM Events

- A couple of options to subscribe to COM events
 - Link events to COM event object

```
ExcelEvents = NEW("ExcelEvents")  
ON EVENT FROM ExcelHandle PROCESS ExcelEvents
```

- Generate a CTL on COM event

```
ON EVENT "SheetChange" FROM ExcelHandle PREINPUT 500
```



Working with COM Events

- COM event object

- Requires a method written for each event to be handled

```
DEF CLASS "ExcelEvents"  
FUNCTION SheetChange(sheet, target) SHEET_CHANGE FOR EVENT SAME  
END DEF  
SHEET_CHANGE:  
ENTER sheet, target  
! Handle event here  
RETURN
```

- **TCB(120)** returns a handle to the COM object
- Can be generated via **PVXTLB.EXE**



Working with COM Events

- Unsubscribe from events
 - Unlink events from a COM event object

```
ON EVENT FROM ExcelHandle PROCESS 0  
DROP OBJECT ("ExcelEvents")
```

- Stop generating CTL for COM event

```
ON EVENT "onChange" FROM ExcelHandle PREINPUT 0
```



.NET With no COM Interface

- Some **.NET** components have no **COM** interface
 - Barcode scanner
 - Credit card reader
 - Phone system
- How do you work with them from PxPlus?
 - No easy interactive way that supports events
 - Need to build COM wrapper for .NET component



COM Wrapper

- Written in .NET language i.e. C#, VB.NET, etc.
- Import .NET component
- Define COM class object
 - Wrapper for .NET component
 - Define COM interfaces
 - Syntax is defined by the COM standard



COM Wrapper Example

- An example, to better understand a COM wrapper
 - The **SimpleCOM** example

Component	Description
SimpleCOM	Visual Studio solution that contains the two projects listed below <ol style="list-style-type: none">1. SimpleApp - Application/Library Project2. SimpleCOM - COM Wrapper Project
SimpleCOMEvents	PxPlus COM event object with logic to handle event in PxPlus
SimpleCOMTest	PxPlus test program

- Download from:

<http://ftp.pvxplus.com/downloads/misc/SimpleCOM.zip>



Additional Resources

The help link(s) below refer to the current on-line help pages. The functionality may have been further updated since the PxPlus 2016 (version 13) release.

- [COM Control](#)

