

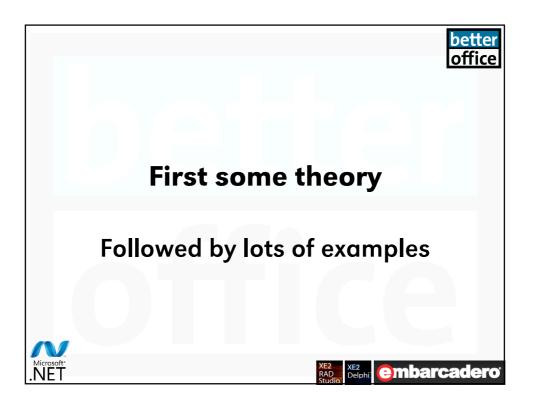


Microsoft^o .NET

- Binds
 - Concrete Delphi Objects
 - Scripted text
- Complex:
 - Probably the most complex feature added in recent Delphi versions
 - Might even 'beat' generics in complexity
- · This session focuses on
 - Some fundamentals
 - Practical use in your Delphi applications: Lots of examples









The big picture

- Binding facilitates the communication between TComponents
 - Because of the Observer Pattern implementation there
 - See diff of the Classes unit
- The expressions are text based
 - Which makes it very flexible
 - But no compile time verification

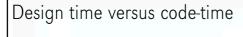








Microsoft®





- DesignTime
 - TBindingList
 - · Lots of bindings
 - Methods
 - Extendible
 - OuputConverters
 - Extendible
 - Automatically applied
 - TBindingScope
 - Binds to DB

- Code time
 - Expressions
 - Scope
 - Bindings
 - Notification

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Central hub 1: TBindingExpression

- Has
 - Scope
 - Expression text
- Compiles
 - TComponent references (having 'instance' and 'name')
 - TAssociations (each coupling 'TObject' instance' and 'name')
 - IScopes
- Evaluates
 - The expression text









Microsoft^o Central hub 2: TBindingManager

- The BindingManager manages notifications of affected objects
 - Requires the use of Managed bindings
 - i.e. Expressions, and not Unmanaged bindings like BindLink
 - Makes life much easier when using them programmatically
 - Unmanaged bindings are usually better at design time
- http://docwiki.embarcadero.com/VCL/en/System.Bi ndings.Manager.TBindingManager

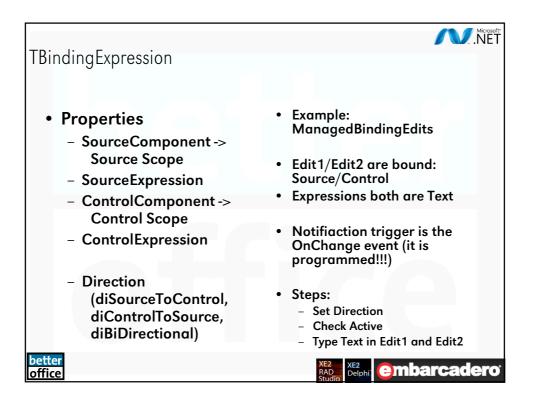


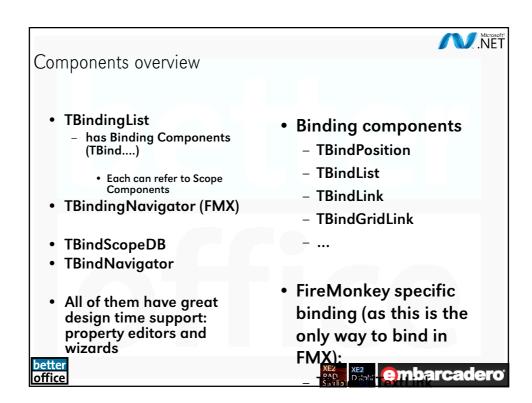


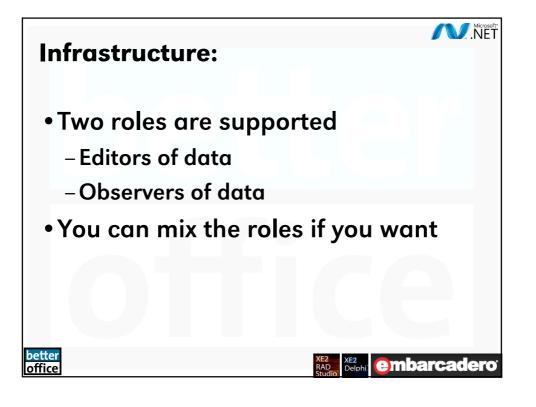


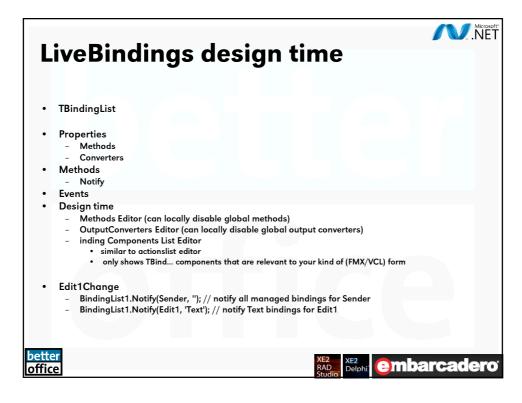


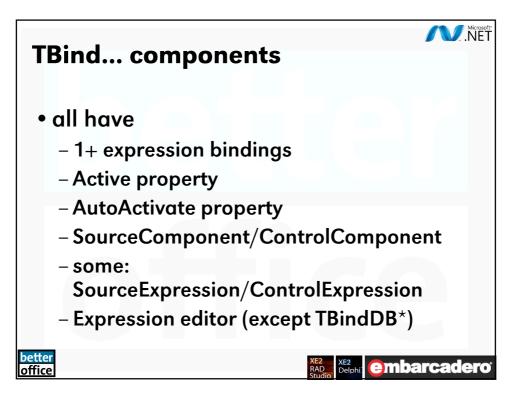
Microsoft® **Binding Basics** • DB Links TBindingList - TBindDBEditLink - Has Bindings of types: - TBindDBTextLink Expressions - TBindDB<u>Image</u>Link - TBindExpression ** - TBindDBMemoLink - TBindExprItems * - TBindDBCheckLink Links - TBindLink * * have these properties: - TBindListLink * • ClearExpressions * - TBindGridLink FormatExpressions * - TBindPosition ParseExpressions * Lists ** have these properties: - TBindList * - TBindGridList ControlExpression SourceExpression embarcadero office













TBind* component purposes

- TBindExpression/TBindExprItems
 - Both create *managed* or unmanaged bindings for assigning values
- TBindPosition
 - Link a property in a control to the position of a data source
- TBindList, TBindGridList (TBind*List)
 - Unmanaged bindings to populate a list/grid
- TBindLink
 - Unmanaged bindings to link a control to a data source
 - for instance to behave like a TDBEdit/TDBImage in VCL
- TBindListLink, TBindGridLink
 - Unmanaged bindings to link a list or grid to a data source
 - For TStringGrid to behave like TDBGrid







TBindDB*Link

- Edit, Text, List, Image, Memo, Check, Grid
- Unmanaged bindings to link FMX controls to a data source
- Demo: OneEachForm.dproj





TBindExpression additional properties



- Direction
- Managed
- NotifyOutputs
- SourceExpression/ControlExpression
- has Expression editor
- Expression editor has test buttons (Eval*)









TBindExprItems



- Similar to TBindExpressions
 - supports multiple expression strings
 - handy when updating more controls for one source
 - or more controls from multiple sources in one place
- Different properties:
 - ClearExpressions
 - FormatExpressions (not: ControlExpression)
 - NotifyOutputs
 - SourceMemberName (not: SourceExpression)











TBindPosition

- Different properties:
 - PosClearExpressions
 - Executes when the TBindPosition is deactivated
 - PosControlExpressions (not: ControlExpression)
 - From Source to Control
 - for ScrollBar: Self.Max (RecordCount-1), Position (Max(0, RecNo-1)), Hint ("Record" + ToStr(RecNo) + "of" + ToStr(RecordCount)
 - PosSourceExpressions
 - from Control to Source
 - for ScrollBar: RecNo <- Position+1
 - SourceMemberName (not: SourceExpression)





TBindList



- Different Properties:
 - AutoFill
 - BufferCount
 - ClearControlExpressions -> for the ListBox
 - FormatControlExpressions -> for the ListBox
 - FormatExpressions -> for the Items in the ListBox
 - SourceMemberName (not: SourceExpression)
 - FormatExpression example: Text <- ToStr(RecNo) + ". " + Name.AsString + " (" + Weight.AsString + " pounds.)"
- Buttons in property editor.
- Commands in object inspector: Fill List; Clear List.







TBindGridList

- Properties:
 - AutoFill
 - BufferCount
 - ClearControlExpressions
 - ColumnExpressions
 - FormatControlExpressions
 - FormatExpressions
 - SourceMemberName (not: SourceExpression)
- · Commands in object inspector: Fill Grid, Clear Grid
- ColumnExpressions are a lot of work to fill in.
- It consists of a Column, and for each column the formatting expressions.









TBindGridList (continued)



- Each Column has these properties:
 - ColumnIndex
 - ColumnName
 - ControlMemberName
 - FormatCellExressions
 - (each having a ControlExpression and SourceExpression Cells[2] <- AsString + 'lbs')
 - FormatColumnExpressions (idem Cell[2, 0] <- FieldName)
 - Name
 - SourceMemberName
- FireMonkey has a live bindings component that does not require you to write expressions.
- In VCL you can also use code to fill the properties.









TBindLink (bi-directional!) - ClearExpressions - FormatExpressions (not: ControlExpression) - ParseExpressions

Microsoft®

- SourceMemberName (not: SourceExpression)
- beter Example: Bind a TLaber Confice Combarcadero





TBindGridLink

- like TBindGridList but adds Positioning support and Parse expressions for bidirectional support
 - AutoFill
 - BufferCount
 - ClearControlExpressions
 - ColumnExpressions
 - FormatControlExpressions
 - FormatExpressions
 - ParseExpressions
 - PosControlExpressions (not: ControlExpression)
 - PosSourceExpressions
 - SourceMemberName (not: SourceExpression)





TBindGridLink



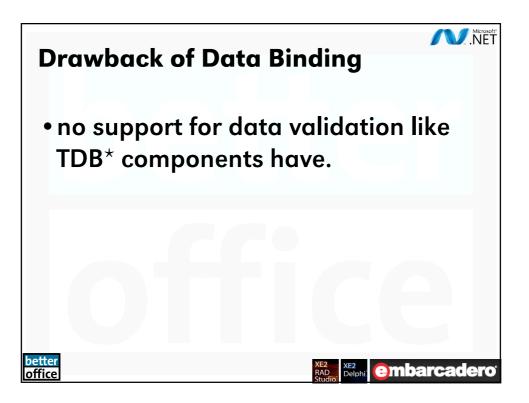
- Each Column has these properties:
 - ColumnIndex
 - ColumnName
 - Control Member Name
 - FormatCellExressions
 - (each having a ControlExpression and SourceExpression

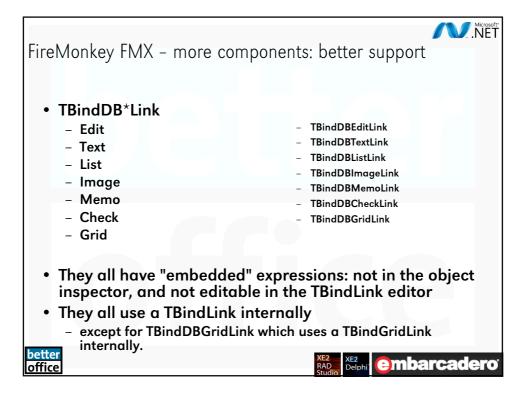
Cells[2] <- AsString + 'lbs')











SimpleDBBindLinkProject: FMX



- TBindNavigator: FMX
- - BindScope property: TBindScopeDB1





embarcadere

Scope Components



- •- Wrap a TObject in s a scope for the expression engine
- •- May be referenced by the SourceComponent property of abinding component
- - May implement one or more **IScope*** interfaces to specialize

office - IScopeActive







Interesting Examples

- EvalErrorSample
 - Shows that binding is about Source and Control expressions
- BindExpressionSampleProject
 - Shows binding of "Text" property from a single component
- fmx\BindListFMXProject.dpr, vcl\BindListVCLProject.dpr
 - http://blogs.embarcadero.com/jimtierney/2011/09/30/31559
 - Show BindingList feature: DB to ListBox
- ListCollectionsSampleProject
 - Shows binding to a couple of kinds of collections
 - http://blogs.embarcadero.com/jimtierney/2011/10/14/31608
 - http://blogs.embarcadero.com/jimtierney/2011/09/30/31559
 - SimpleListCollectionSampleProject, ListCollectionsSampleProject
 - BindListFMXProject, BindListVCLProject
- BindListEditVCLProject
 - Using BindingList with expressions, Binds
 - an Edit to/from a ListBox and
 - an Edit to/from a ListView









Write an application



- Two input fields that have bidirectional copying
- Write a small aplication that has a TBindingExpression
 - Use it for doing some basic calculations
 - Enter the expression in Edit1
 - Show the results in Memo1









