

**VSM 356**  
**Build Custom Data Bound Business Objects and Collections**

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**About Brian**

- Chief Architect, IDesign Inc. ([www.idesign.net](http://www.idesign.net))
- Microsoft MVP
- Writing
  - Data Binding with Windows Forms 2.0, Addison Wesley, January 2006
  - Smart Client Deployment with ClickOnce, Addison Wesley, Summer 2006
  - MSDN Magazine, MSDN Online, CoDe Magazine, The Server Side .NET, asp.netPRO, Visual Studio Magazine
- Speaking
  - Microsoft TechEd US, Europe, Malaysia, Visual Studio Connections, DevTeach, INETA Speakers Bureau, MSDN Webcasts
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## Agenda

- Business Entities and Collection Overview
- Key Data Binding Interfaces
- Defining Custom Business Entity Types
- Defining Custom Entity Collections
- Enhancing the Framework Collections
- Binding to Custom Objects in Windows Forms 2.0

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## Business Entity Type Overview

- Custom types that you write
- Contain business entity data
  - Instance data that transitions more than one layer in your architecture
  - Logically related data supporting one or more use case in your application
- Classes with:
  - Fields (Data holders)
  - Properties (Data API)
  - Operations (Validation, custom logic, etc.)
  - Interface implementations (supporting usage scenarios)

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## Business Entity Collection Overview

- Containers for zero to many instances of business entity types
- Should be type safe and homogeneous containers for a given type
- Implement specific interfaces for specific scenarios
- Based on generic collection types in .NET 2.0

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## Key Data Binding Collection Interfaces

- **IEnumerable**
  - Basic iteration pattern in .NET
  - Implement IEnumerable / IEnumerator
  - Use iterators in C# 2.0 for more compact code
- **IList**
  - Ordered, indexed collection that supports Windows Forms complex data binding
- **IBindingList**
  - Supports change notification, sorting, searching
- **IBindingListView**
  - Supports advanced sorting (multi-property) and filtering

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## Key Data Binding Entity Interfaces

- **INotifyPropertyChanged**
  - Change notifications to clients or containers
- **IEditableObject**
  - Transacted changes to object
- **IDataErrorInfo**
  - Error containment and notification

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## Creating Entity Types

- Declare class
- Implement properties
  - Code snippets
- Implement interfaces
  - Requires property modifications
- Implement logic
  - Often requires property modifications
  - May cause bound controls not to sync properly
- Automate!!
  - Base Classes
  - Code Snippets
  - CodeRush
  - CodeSmith

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## Custom Entity Collections

- Prior to .NET 2.0
  - CollectionBase + lots of work + lots of duplicated code!!
- .NET 2.0 – Generic collections
  - List<T> - IList implementation
  - BindingList<T> - partial IBindingList implementation
- Derive a custom type from the generic collection
  - Cleaner API, somewhere to add behavior

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## Extending BindingList<T>

- Sorting, Searching not implemented
  - Stubbed out and overridable
- Custom construction for objects sometimes needed
  - `IBindingList.AddNew` override needed
  - Default implementation just calls default constructor

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## Extending BindingList<T>

- Implementation of IBindingListView may be desirable
  - Multi-property sorts
  - Filtering of contained data
- Some things generalizable, some not
- My BindingListView<T> class gets you most of the way there

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## Putting the code to work

- **BindingSource** component binds well to custom objects and collections
  - If they support the right interfaces
- **Data Sources** window in Visual Studio supports drag and drop data binding of custom objects as well

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## Summary

- Bindable objects and collections much easier in .NET 2.0
- Harness the power of generic collections
- Automate business entity type declarations

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## Resources

- Data Binding in Windows Forms 2.0, Addison Wesley, January 2006  
<http://www.amazon.com/exec/obidos/ASIN/032126892X/qid%3D1124482085/sr%3D11-1/ref%3Dsr%5F11%5F1/102-3039504-6850510>
- Rocky Lhotka binding refresh problem post:  
<http://www.lhotka.net/WeBlog/PermaLink.aspx?guid=d8306469-7e76-4734-9811-777498808b85>
- Windows Forms Object Data Binding in .NET 2.0, 15seconds.com,  
<http://www.15seconds.com/issue/040614.htm>
- Build a Data Access Layer with the Visual Studio DataSet Designer, The Server Side .NET, Oct 2005,  
<http://www.theserverside.net/articles/showarticle.tss?id=DataSetDesigner>
- Tackle Complex Data Binding in Windows Forms 2.0, CoDe Magazine, July/Aug 2005, <http://www.code-magazine.com/Article.aspx?quickid=0507051>

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