

VWX301 Workflow Driven Windows Applications

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About Brian

- Chief Architect, IDesign Inc. (www.idesign.net)
- Microsoft Regional Director / MVP
- Writing
 - *Data Binding with Windows Forms 2.0*, Addison Wesley, January 2006
 - *Smart Client Deployment with ClickOnce*, Addison Wesley, Dec 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
- Participates in Microsoft Design Reviews
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Agenda

- Windows Workflow Foundation Overview
- Windows Application Workflow Scenarios
- Integrating Workflow Into Your Application
- Invoking Workflow For Processing Logic
- Driving Presentation with Workflow



Windows Workflow Foundation (WF) Overview

- Workflow framework for .NET Developers
- Part of .NET 3.0
 - Supported on Windows XP SP2, Windows Server 2003, Windows Vista
- Integrated design experience in VS 2005 / Orcas
 - Based on drawing data flow diagrams, state diagrams, or activity diagrams
- Ships with Office 2007 as well



WF Relation to Other Technologies

- **BizTalk 2004 / 2006**
 - Packaged workflow application server
 - Managed environment for defining, running, and managing orchestrations (workflows) and activities
 - Business activity monitoring and management
 - Message transformation engine
- **BizTalk 20XX**
 - WF replaces orchestration engine
- **Office 2007**
 - End user (Word, Excel, Access, etc.)
 - Web developer (SharePoint Designer, SharePoint services)
 - App developer (Visual Studio, SharePoint services)
- **Third Part Products (Ultimus, K2, etc.)**



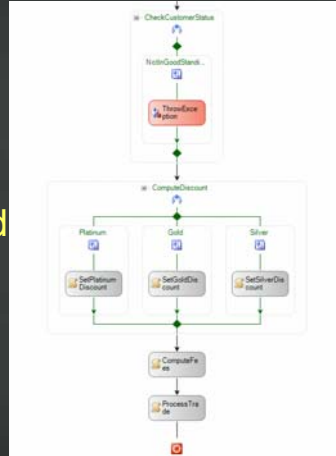
Windows Workflow Foundation (WF) Overview

- **Workflow models**
 - Sequential
 - State Machine
- **Activities are the building blocks**
 - Base Activity Library
 - Custom activities
 - Connect/Configure in the designer
 - Handle events at runtime
 - Encapsulate business logic



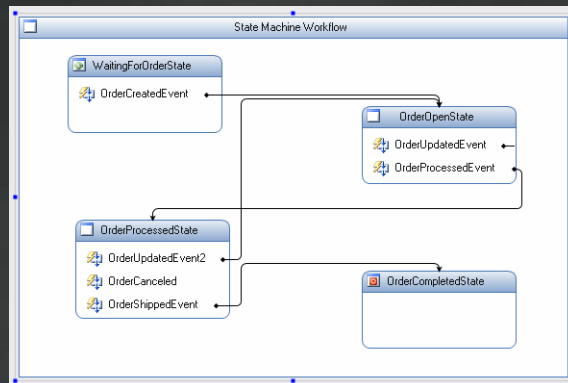
Windows Workflow Foundation (WF) Sequential Workflows

- Structured, step-by-step process flows
- Transitions from activity to activity
- Have a beginning and an end
 - May run forever
- Can (should?) be complex
 - Branches / Loops / Delays
 - Parallel activity
 - I/O anywhere in workflow
 - Human activities



Windows Workflow Foundation (WF) State Machine Workflows

- State Machine Workflows
 - System transitions from one state to another based on events
 - Transitions based on arbitrarily complex conditions / events
 - States can nest

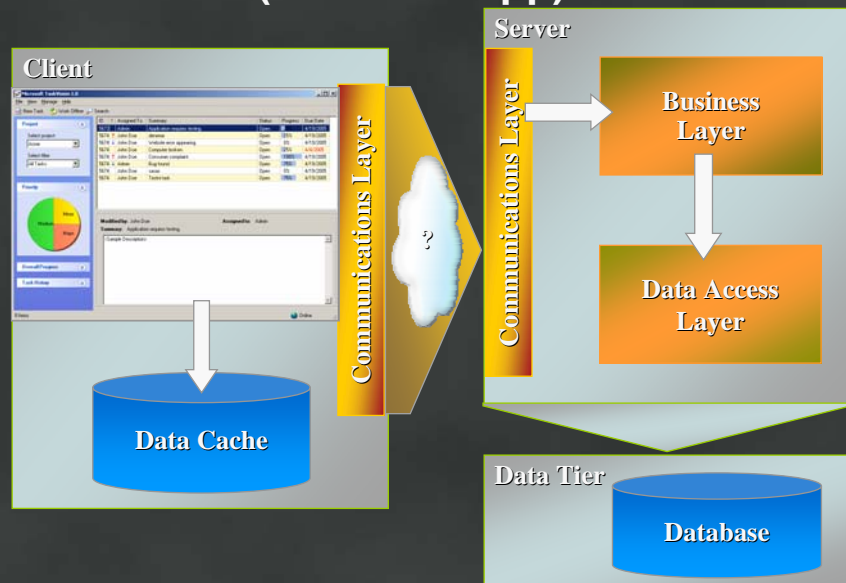


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Smart Client (Windows App) Architecture



Windows App Workflow Scenarios

- **View presentation**
 - Wizards
 - Task transitions
 - State driven notifications
- **Processing logic**
 - Step by step or state driven processing with human interaction
 - **Examples:**
 - Document approval
 - Dispatching
 - Order processing
 - Trouble ticket / help desk
 - Really part of the business or service layer



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Integrating WF

- **WF has its own runtime engine**
 - WorkflowRuntime
- **WF has its own services**
 - Integrate workflow with hosting / external environment
- **Can be integrated into any .NET application**
 - Just libraries that need a process to run in



Integrating WF

- **Design workflows**
 - Separate class libraries
- **Add references to host application**
 - WF libraries
 - Workflow class libraries you wrote
- **Add WorkflowRuntime to host**
- **Create Workflow instances**
- **Hook up host events**
- **Start the workflow**



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Invoking Workflow Driven Logic

- Business processes can be implemented with workflows
- Expose a business operation on the business layer or service
- Invoke or call into executing workflow from the business operation
- Optionally retrieve / update state in the workflow from the forms



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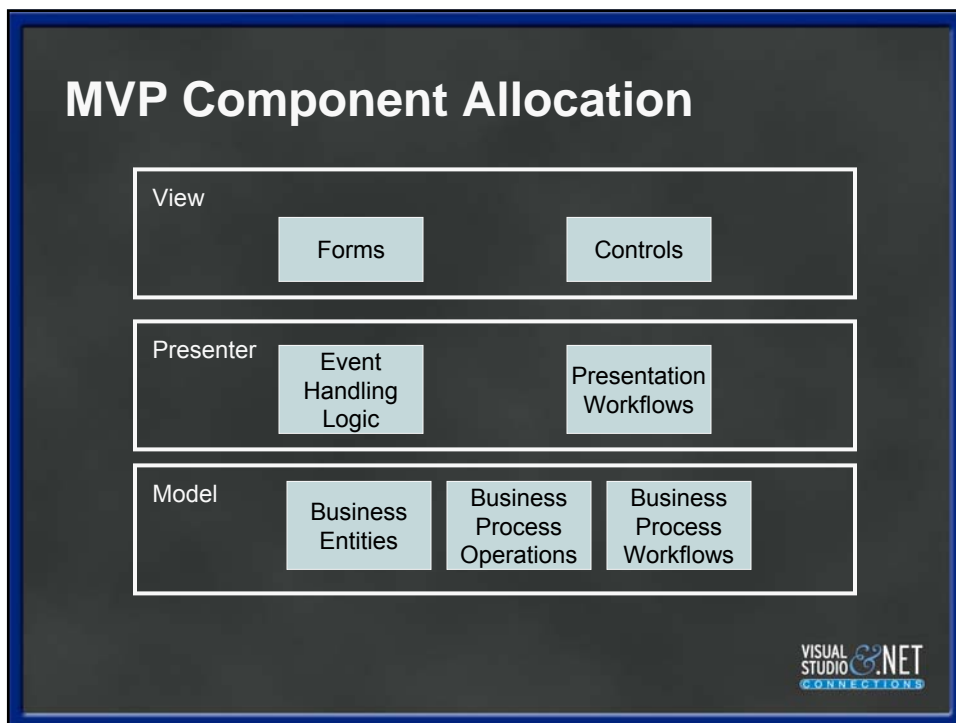
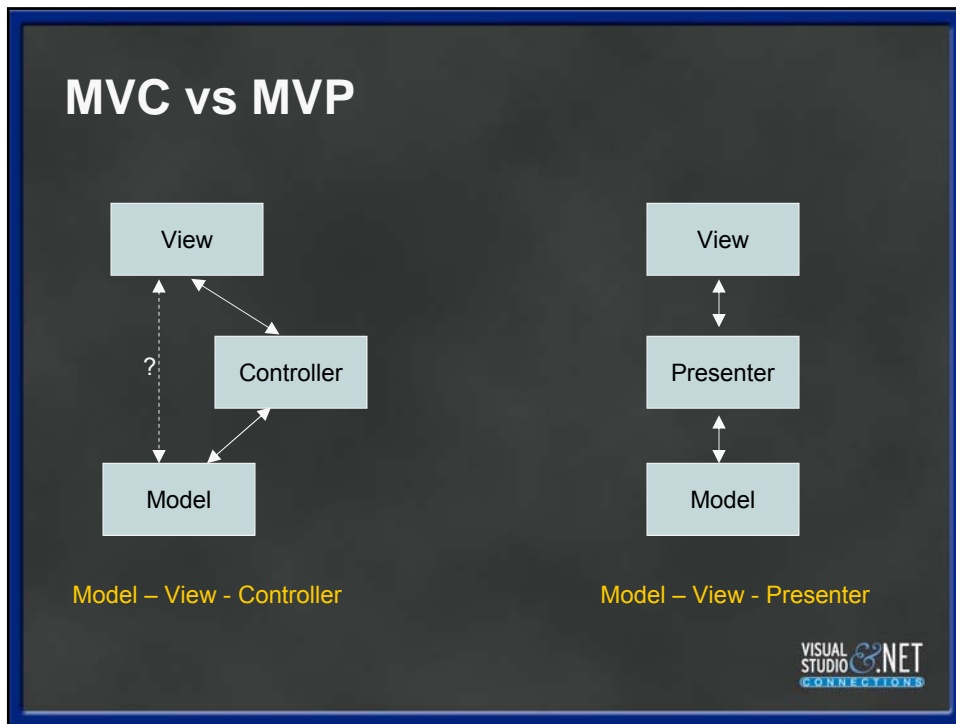
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Driving Presentation with Workflows

- Deciding what view to present next can be workflow driven
 - Decouple the presentation order from the forms themselves
- Pattern-based
 - Model-View-Controller
 - Model-View-Presenter
 - Front Controller





Resources

- Essential Windows Workflow Foundation, Dharma Shukla and Bob Schmidt, Addison Wesley, 2006. <http://www.aw-bc.com/catalog/academic/product/0.1144.0321399838.00.html>.
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- Model View Presenter, Jean-Paul Boodhoo, MSDN Magazine, August 2006, <http://msdn.microsoft.com/msdnmag/issues/06/08/DesignPatterns/default.aspx>.
- IDesign Advanced .NET 2.0 Master Class, 4-8 Dec, Reston VA
- IDesign WF Master Class
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