



# Workflow Services Using WCF and WF

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Pre-requisites for this presentation:

- 1) Basic Understanding of WF
- 2) Basic Understanding of WCF

Level: Intermediate



# Understand Windows Workflow Foundation and Windows Communication Foundation Integration

# Why?

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Services Encapsulate Business Logic

Workflow Integrates Long Running  
Business Processes

# What is Different in .NET 3.5?

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Possible in Framework 3.0

Declarative Model in Framework 3.5

Basis for future integration

# New Framework 3.5 Features

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Send and Receive Activities

New WCF Context Bindings

New WCF Projects and Templates

System.WorkflowServices assembly

# Key Concepts

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Set up the workflow infrastructure inside a WCF Host

Send messages to the right instance of a running workflow

# Key Technical Concepts

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WCF Extensibility Points

Workflow Context flows with service call

# WCF Extensibility Points

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Extend or modify WCF runtime

Extensibility Points:

Service Host

Service Model

Bindings

Channels

Security

Metadata

Encoders and Serializers



# ContextBindingElement

Create context aware bindings:

- WsHttpContextBinding

- BasicHttpContextBinding

- NetTcpContextBinding

Extends binding to allow context flow

- Context in SOAP header or HTTP cookie

# WF and WCF Dependencies

Workflow uses WCF Extensibility and ContextBindingElement. WCF knows nothing about Workflow.

# Workflow Context

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Workflow Instance Id

Correlation to the correct instance of a service

Define Service Interfaces

Add Workflow

Write the Host

Endpoints and Behaviors to App.Config

# Context Demo

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Receive Activity and Non-WF Client

# Simple Activity Demo

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Send and Receive Activities

# Receive Activity

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Processes a service call:

ServiceOperationInfo

ContextToken

CanCreateInstance

Databinding to Parameters and Return Value

Fault Message

Sequential Composite Activity

# ServiceOperationInfo Demo

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Contract First Design

Workflow First Design

Interface defined inside of workflow type



# Receive Activity “Magic”

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No Local Services to map services to  
Workflow Events

No correlations for parallel service waits

Infrastructure builds appropriate workflow  
queues and correlations

# Send Activity

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Make a service request:

ServiceOperationInfo

ChannelToken

CustomAddress

Associate context with activity

ChannelTokens with the same name and owner are cached

# WorkflowServiceHost

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Derives from ServiceHostBase

WorkflowRuntimeBehavior

Get WorkflowRuntime instance through  
WorkflowRuntimeBehavior

No IExtension<ServiceHostBase>

# Context Flow Demo

Coordinated context flow between send  
and receive activities in separate  
workflows

# Workflow Conversations Demo

Context can distinguish among workflow branches

# Multiple Service Hosts

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One WindowsServiceHost per workflow

One WorkflowRuntime for each workflow

Contention??

SqlPersistenceService

# Extended Example Demo



## WorkflowServiceHostFactory

- Service definition can be a XAML file or type

```
<%@ServiceHost Language="C#" Service="foo.xoml"  
    Factory="System.ServiceModel.Activation.WorkflowServiceHostFactory"  
    %>
```



# Summary

WCF and WF Integration Much Easier

Extends Declarative Model

Service Encapsulation of Long Running Business  
Processes