

WCF LOB Adapter Framework

Service-enabling Line of Business systems



Objectives

- **Motivation**
- **What is the WCF Adapter Framework**
- **How to build a WCF Adapter**
- **Inbound versus Outbound**
- **Metadata**
- **LOB Adapters**

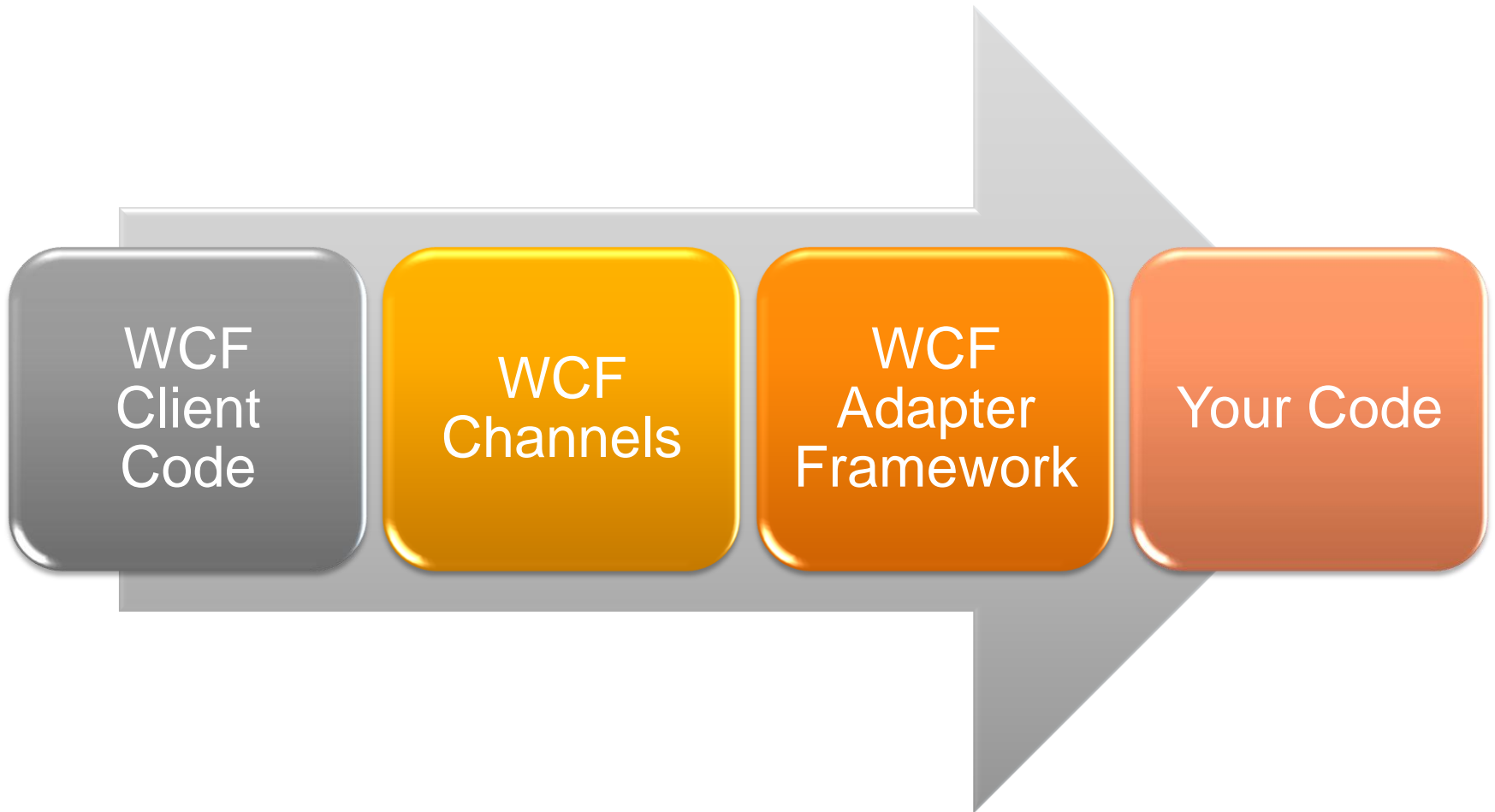
Motivation

- **You'd like to adopt a Service Oriented Architecture**
- **You have many applications/databases to “wrap” as services**
- **Applications/databases often are dynamic (change)**
 - Option A – build a loosely typed service
 - Option B – build a strongly typed service and plan for versioning
 - Option C – build something that dynamically exposes metadata

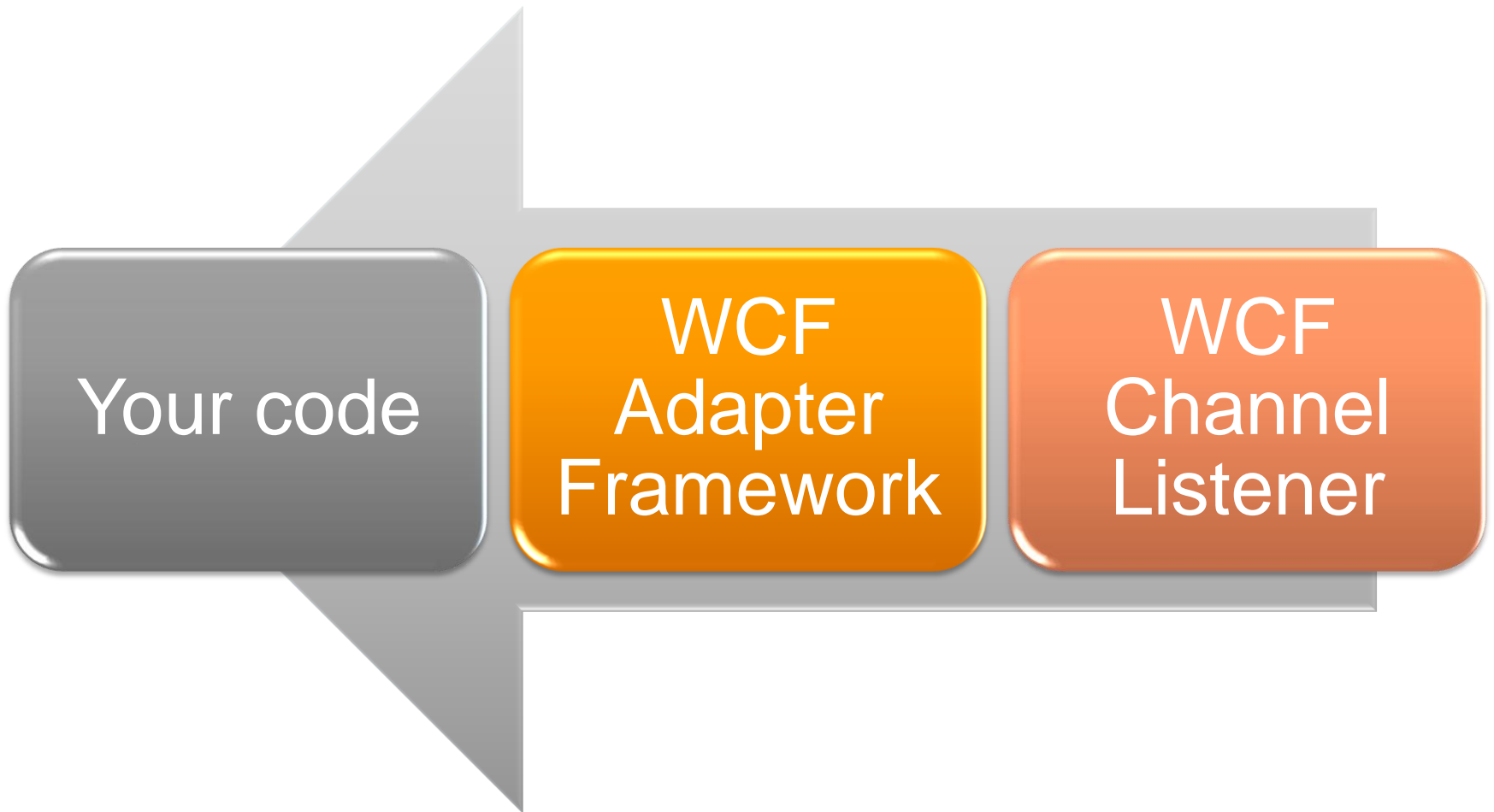
Enter the WCF LOB Adapter SDK

- **A way to “wrap” existing functionality in a WCF Channel**
- **Layered on top of WCF**
- **Simplifies task of building dynamic metadata API**
- **Streamlines programming model**
 - WCF for both remote services and application services
- **Can integrate with any WCF enabled application**
 - Including WCF-Custom BizTalk Server Adapter

Outbound Adapter



Inbound adapter



Creating a .NET Adapter

- .NET Library project
- Add reference to `Microsoft.ServiceModel.Channels.dll`
- Implement the correct interfaces
- Project template wizard simplifies development

Picking your Uri

- **Clients and listeners will use Uri to specify endpoints**
 - `<scheme>://<user>@<address>?<query>` (e.g. `http://jon@localhost:9999/Service?Test=true`)
- **You determine Uri scheme**
 - May relate to actual LOB/database called
 - Connection information can be culled

net.tcp://wcfservername:8888/Endpoint



scheme://hostname:port/path

Connections

- **Connection Factory**
 - Parses the URI for a connection
 - Container for connection related properties – available to handler code
- **An instance of a Connection is created for each instance of handler**
 - ConnectionFactory pools
- **Connection objects have factory as property**
 - No real data on the connection
- **Each time a Factory or Listener is created**
 - Open is called each time Factory or Listener is opened
- **Can encapsulate connection to LOB/Database**

Adapter

- **Actual Adapter object represents configuration values**
 - Passed down from framework's configuration infrastructure
- **Adapter properties surface as part of CustomBinding object**

Outbound Handler

- **Outbound adapters are message receivers**
 - Akin to a service endpoint
- **WCF clients call outbound adapters like any other WCF endpoint**
 - WCF messages arrive at handler
 - Handler responsible for interacting with LOB system and sending reply
- **Handlers can be synchronous or asynchronous**
 - Separate classes
 - Determined by channel shape

Calling OutboundHandler

```
MyCustomAdapterBinding b = new MyCustomAdapterBinding();

IChannelFactory<IRequestChannel> rcf =
    b.BuildChannelFactory<IRequestChannel>();
rcf.Open();

EndpointAddress ea =
    new EndpointAddress("myschema://Test");

IRequestChannel rc = rcf.CreateChannel(ea);
Message inmsg = CreateMessage();
Message rmsg = rc.Request(inmsg);
```

Inbound Adapters

- **Are channel listeners**
- **Adapter “listens” on some physical or application endpoint**
 - Examples - HTTP, MSMQ, SQL
- **When listener receives a message – it is returned to the channel listener layer**
 - Layer notifies ultimate registered listener
 - Often a ServiceHost or derived class

InboundHandler

- **Class that provides “listening” capability**
- **StartListener called**
 - Start async listener (like Timer)
- **WaitForMessage called**
 - Return true when there is at least one message
- **TryReceive then called**
 - ServiceHost will call over and over
 - Custom listener code can vary

Metadata

- **One of the big advantages of using the Adapter Framework over writing your own WCF channels**
- **Adapter framework helps exposes static and dynamic metadata**

Metadata

- **Searchable metadata**

- Implement IMetadataSearchHandler
- Wizard provides skeleton
- Provide implementation of Search

- **Browsable metadata**

- Implement IMetadataBrowseHandler
- Provide implementation of Browse method

What is the BizTalk Adapter Pack?

- **Set of adapters for common LOB systems**
- **Available for use in BizTalk ports for sending and receiving messages**
- **Can be used from SharePoint or other .NET applications**
 - BizTalk is not required to use these adapters!
- **Included in BizTalk Server license**
 - Also licensed separately for use outside of BizTalk Server
- **Built on the WCF LOB Adapter SDK**

BizTalk Adapter Pack

Version 1 Adapters

- mySAP
- Oracle Databases
- Siebel eBusiness

Version 2 Adapters

- Oracle E-Business Suite
- SQL Server

For supported versions see:

<http://www.microsoft.com/biztalk/en/us/adapter-pack.aspx>

Summary

- **WCF LOB Adapter Framework provides an easy to use abstraction on top of the WCF Channel architecture**
- **OOB Adapters can be used to connect to LOB systems outside or inside of BizTalk**
- **Custom LOB adapters can do the same**
- **Metadata search and browse an Adapter only feature**