



Project Topic 1

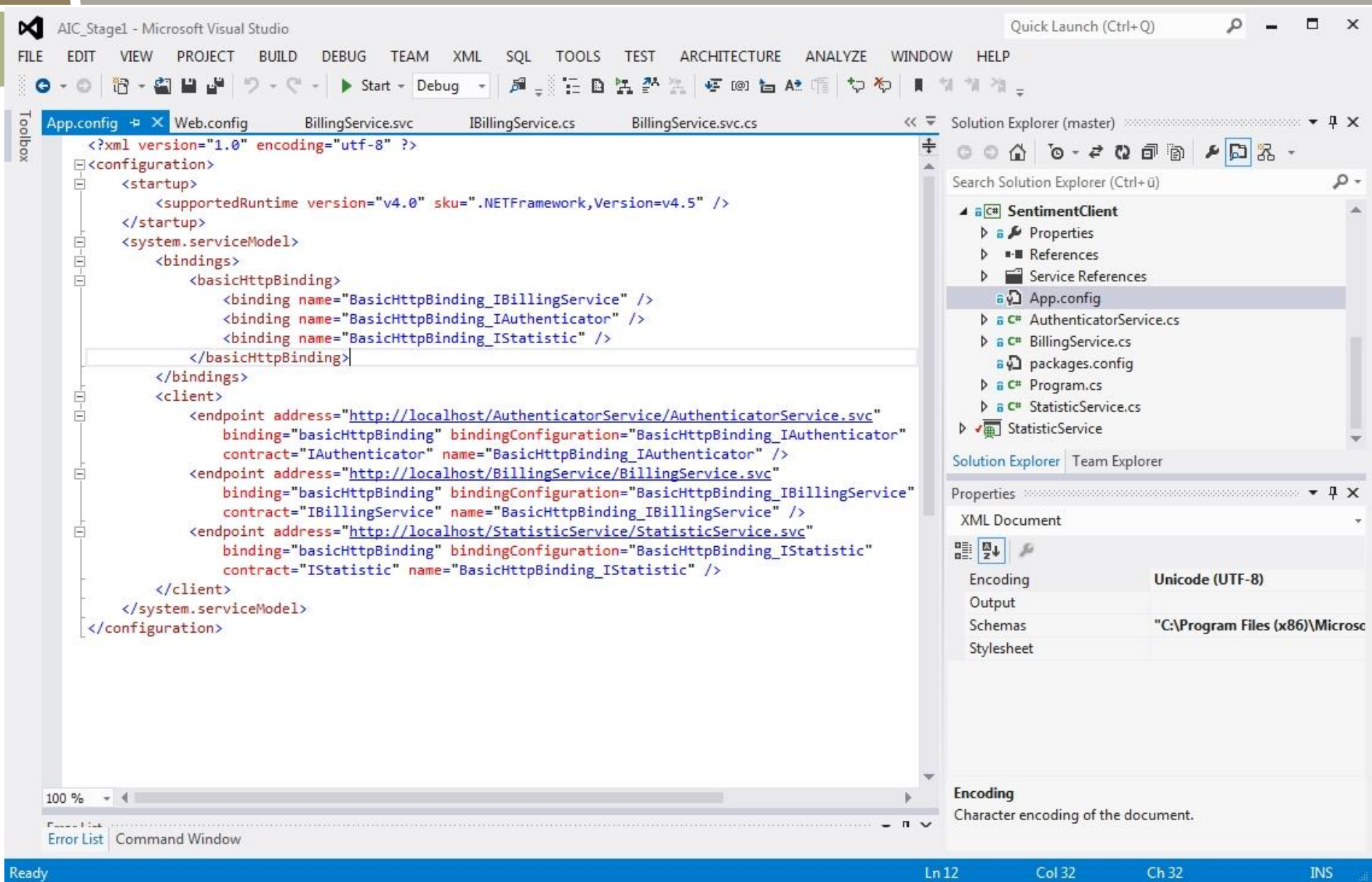
Services Engineering

Andreas Sehr
Bernhard Denner
Wolfgang Renz
Reza Anwar
Manuela Weilharter



Recap of Stage 1

Implementing Services with WCF



The screenshot displays the Microsoft Visual Studio IDE with the following components:

- Toolbox:** Located on the left, showing the XML configuration structure.
- App.config:** The main configuration file, showing the following XML structure:

```
<?xml version="1.0" encoding="utf-8" ?>
<configuration>
  <startup>
    <supportedRuntime version="v4.0" sku=".NETFramework,Version=v4.5" />
  </startup>
  <system.serviceModel>
    <bindings>
      <basicHttpBinding>
        <binding name="BasicHttpBinding_IBillingService" />
        <binding name="BasicHttpBinding_IAuthenticator" />
        <binding name="BasicHttpBinding_IStatistic" />
      </basicHttpBinding>
    </bindings>
    <client>
      <endpoint address="http://localhost/AuthenticatorService/AuthenticatorService.svc"
        binding="basicHttpBinding" bindingConfiguration="BasicHttpBinding_IAuthenticator"
        contract="IAuthenticator" name="BasicHttpBinding_IAuthenticator" />
      <endpoint address="http://localhost/BillingService/BillingService.svc"
        binding="basicHttpBinding" bindingConfiguration="BasicHttpBinding_IBillingService"
        contract="IBillingService" name="BasicHttpBinding_IBillingService" />
      <endpoint address="http://localhost/StatisticService/StatisticService.svc"
        binding="basicHttpBinding" bindingConfiguration="BasicHttpBinding_IStatistic"
        contract="IStatistic" name="BasicHttpBinding_IStatistic" />
    </client>
  </system.serviceModel>
</configuration>
```
- Solution Explorer (master):** Located on the right, showing the project structure:
 - SentimentClient
 - Properties
 - References
 - Service References
 - App.config
 - AuthenticatorService.cs
 - BillingService.cs
 - packages.config
 - Program.cs
 - StatisticService.cs
- Properties:** Located at the bottom right, showing the encoding as Unicode (UTF-8).

The status bar at the bottom indicates the document is ready, with line 12, column 32, and character 32.

Deploying Services to IIS

The screenshot shows the Internet Information Services (IIS) Manager window. The breadcrumb navigation at the top indicates the path: **DISASTER > Sites > Default Web Site > BillingService**. The left-hand 'Verbindungen' (Connections) pane shows a tree view of the server structure, with 'BillingService' selected under the 'Default Web Site'.

The main pane, titled 'Inhalt von /BillingService', displays a file list with columns for 'Name' and 'Typ' (Type). The files and folders listed are:

Name	Typ
App_Data	Dateiordner
bin	Dateiordner
obj	Dateiordner
Properties	Dateiordner
Bill.cs	Visual C# Source file
BillDao.cs	Visual C# Source file
BillingService.csproj	Visual C# Project file
BillingService.csproj.user	Visual Studio Project User Options file
BillingService.svc	WCF Web Service
BillingService.svc.cs	Visual C# Source file
IBillingService.cs	Visual C# Source file
MySQLDriver.cs	Visual C# Source file
User.cs	Visual C# Source file
Web.config	XML Configuration File
Web.Debug.config	XML Configuration File
Web.Release.config	XML Configuration File

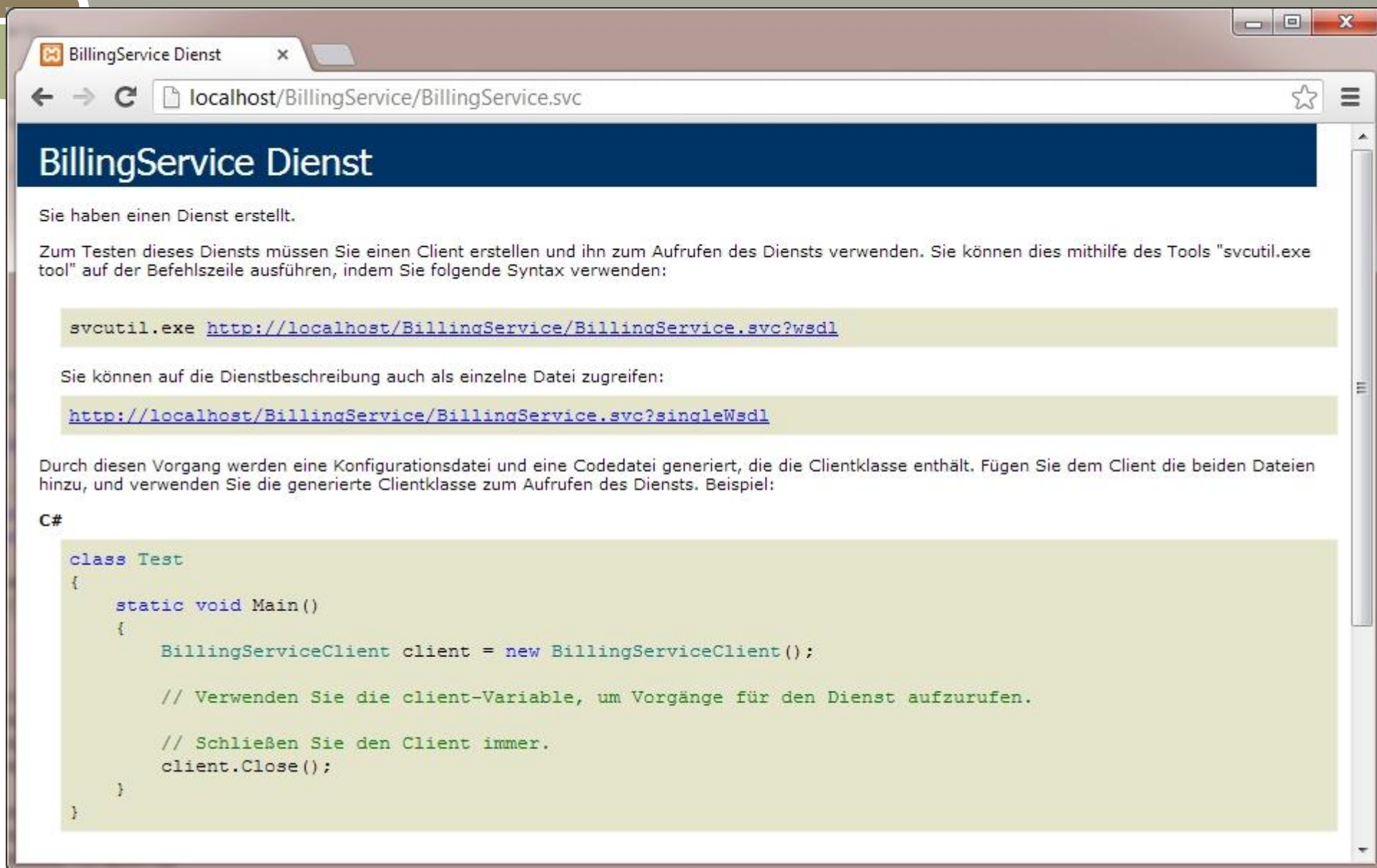
At the bottom of the main pane, there are two tabs: 'Ansicht "Features"' and 'Ansicht "Inhalt"', with the latter being the active view.

The right-hand 'Aktionen' (Actions) pane provides various options for the selected 'BillingService' application, including:

- "BillingService"-Aufgaben** (BillingService Tasks)
- Anwendung** (Application)
- [Zur Ansicht "Features" wechseln](#) (Switch to "Features" view)
- [Im Explorer öffnen](#) (Open in Explorer)
- [Berechtigungen bearbeiten...](#) (Edit permissions...)
- [Anwendung hinzufügen...](#) (Add application...)
- [Virtuelles Verzeichnis hinzufügen...](#) (Add virtual directory...)
- Anwendung verwalten** (Manage application)
- [Durchsuchen](#) (Browse)
- [Erweiterte Einstellungen...](#) (Advanced settings...)
- [Aktualisieren](#) (Refresh)
- [Entfernen](#) (Remove)
- [Hilfe](#) (Help)
- [Onlinehilfe](#) (Online help)

The status bar at the bottom left of the window shows the word 'Bereit' (Ready).

Service on IIS



BillingService Dienst

Sie haben einen Dienst erstellt.

Zum Testen dieses Diensts müssen Sie einen Client erstellen und ihn zum Aufrufen des Diensts verwenden. Sie können dies mithilfe des Tools "svcutil.exe tool" auf der Befehlszeile ausführen, indem Sie folgende Syntax verwenden:

```
svcutil.exe http://localhost/BillingService/BillingService.svc?wsdl
```

Sie können auf die Dienstbeschreibung auch als einzelne Datei zugreifen:

```
http://localhost/BillingService/BillingService.svc?singleWsdl
```

Durch diesen Vorgang werden eine Konfigurationsdatei und eine Codedatei generiert, die die Clientklasse enthält. Fügen Sie dem Client die beiden Dateien hinzu, und verwenden Sie die generierte Clientklasse zum Aufrufen des Diensts. Beispiel:

C#

```
class Test
{
    static void Main()
    {
        BillingServiceClient client = new BillingServiceClient();

        // Verwenden Sie die client-Variable, um Vorgänge für den Dienst aufzurufen.

        // Schließen Sie den Client immer.
        client.Close();
    }
}
```




Stage 2 – WS-BPEL

Stage 2 – WS-BPEL

Web Services Business Process Execution Language

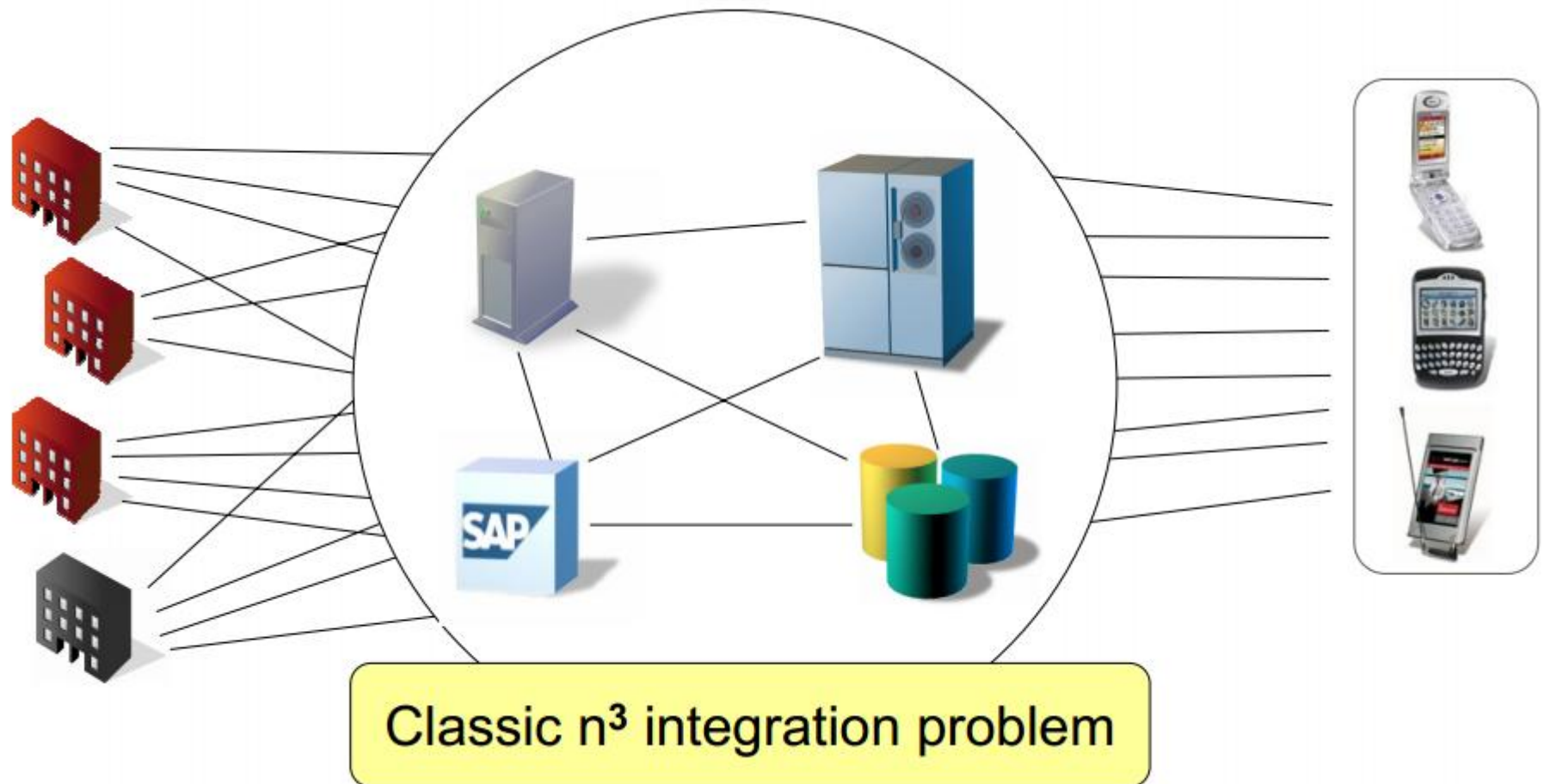
- ◆ XML based
- ◆ Specifying executable business processes
- ◆ Interaction through web service operations

Stage 2 – WS-BPEL

- 
- ◆ Orchestration language
 - ◆ Programming in the large
 - ◆ Basic Activities: assign, invoke, wait
 - ◆ Structured Activities: if, switch, foreach, while

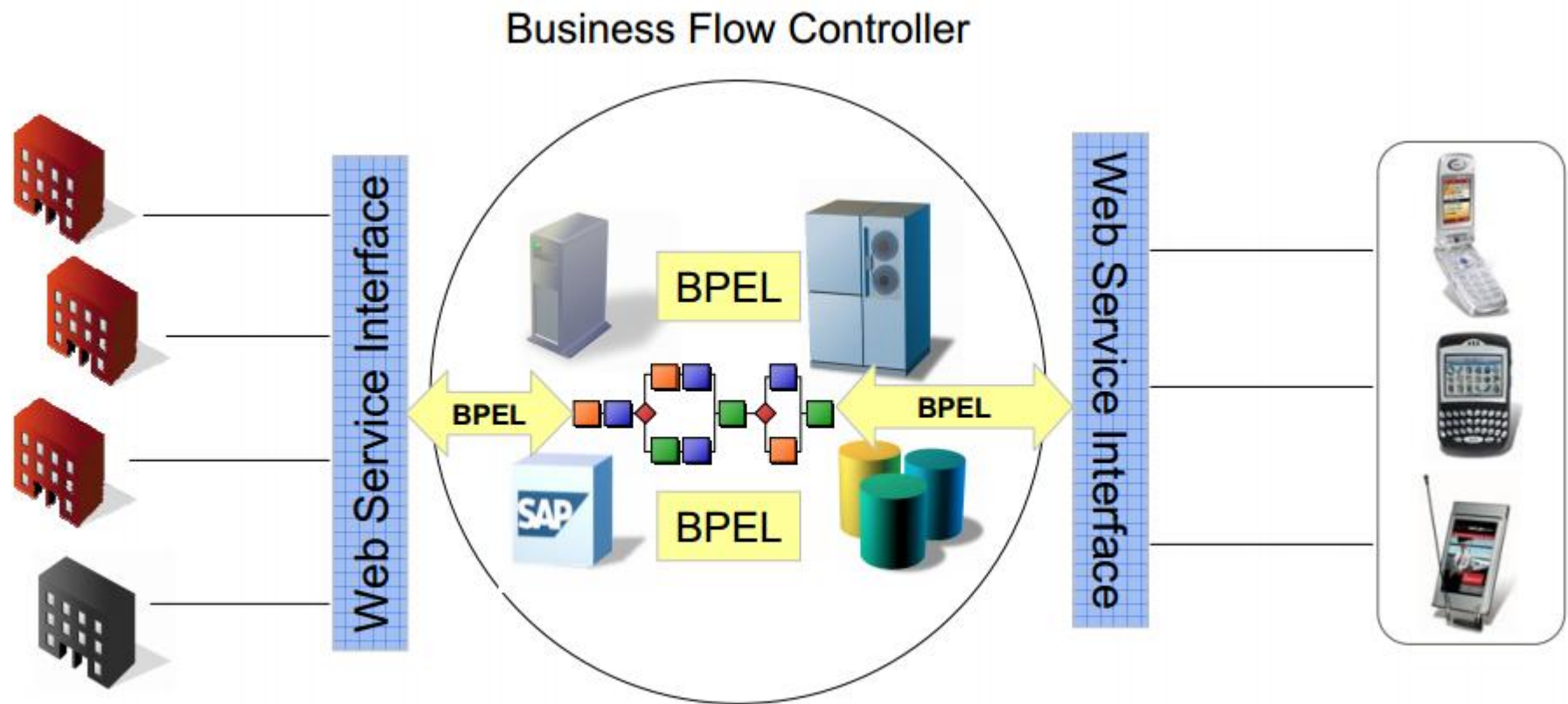
Stage 2 – BPEL Use Case

Global Telco – Before BPEL




Stage 2 – BPEL Use Case

Global Telco – After BPEL



Stage 2 – Apache ODE

- 
- ◆ Apache Orchestration Director Engine
 - ◆ Executing processes following WS-BPEL
 - Sending and receiving
 - Data manipulation
 - Exception handling



LIVE DEMO