



Project Topic 1

Services Engineering

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Recap of Stage 1

Implementing Services with WCF

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

- File Explorer:** Shows the project structure with files like `App.config`, `Web.config`, `BillingService.svc`, `IBillingService.cs`, and `BillingService.svc.cs`.
- Code Editor:** Displays the `App.config` file with the following XML configuration:

```
<?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):** Shows the project structure with files like `SentimentClient`, `Properties`, `References`, `Service References`, `App.config`, `AuthenticatorService.cs`, `BillingService.cs`, `packages.config`, `Program.cs`, `StatisticService.cs`, and `StatisticService`.
- Properties:** Shows the properties of the selected `App.config` file, including `Encoding` (Unicode (UTF-8)), `Output`, `Schemas` (C:\Program Files (x86)\Microsc), and `Stylesheet`.
- Encoding:** Shows the character encoding of the document, which is `Unicode (UTF-8)`.

Deploying Services to IIS

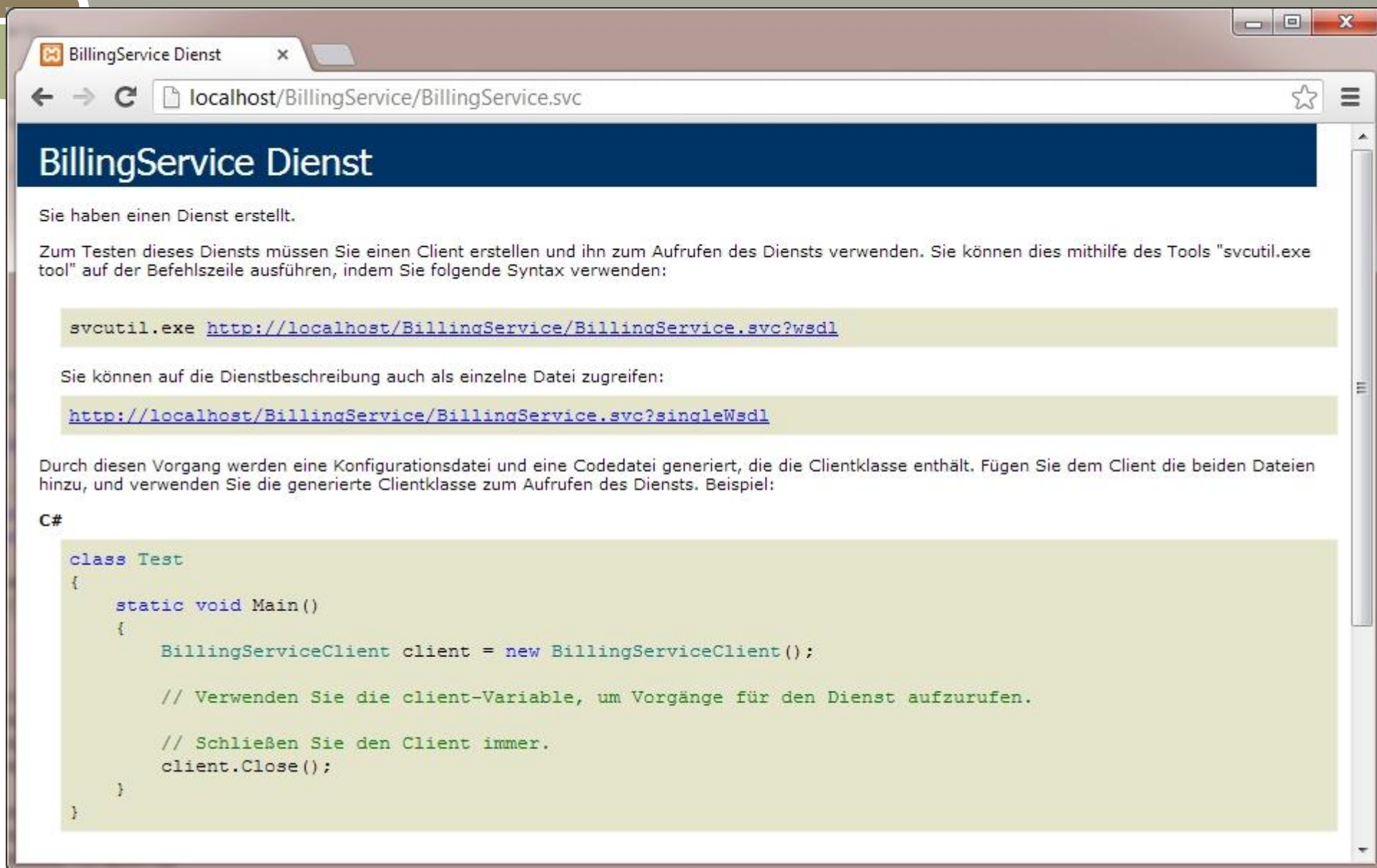
The screenshot shows the Internet Information Services (IIS) Manager window. The breadcrumb navigation at the top indicates the path: **DISASTER > Sites > Default Web Site > BillingService**. The left-hand pane, titled "Verbindungen", shows a tree view of the IIS configuration. Under "Default Web Site", the "BillingService" application is selected. The main pane, titled "Inhalt von /BillingService", displays a list of files and folders. The list is filtered by "Start" and shows the following items:

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

The right-hand pane, titled "Aktionen", provides actions for the selected application. The "Anwendung" section includes links for "Zur Ansicht 'Features' wechseln", "Im Explorer öffnen", and "Berechtigungen bearbeiten...". The "Anwendung hinzufügen..." section includes "Virtuelles Verzeichnis hinzufügen...". The "Anwendung verwalten" section includes "Durchsuchen", "Erweiterte Einstellungen...", "Aktualisieren", "Entfernen", "Hilfe", and "Onlinehilfe".

At the bottom of the window, the status bar shows "Bereit".

Calling 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();
    }
}
```

Simple Client



```
I:\Workspace\aic_group2_topic1\AIC_Stage1\SentimentClient\bin\Debug\SentimentClient.exe
Welcome max !
1) Want to see the actual statistics for your company?
2) Do you want to watch your bills?
3) Unregister
4) Logout
_
```



Stage 2 – WS-BPEL


Stage 2 – WS-BPEL



Web Services Business Process Execution Language

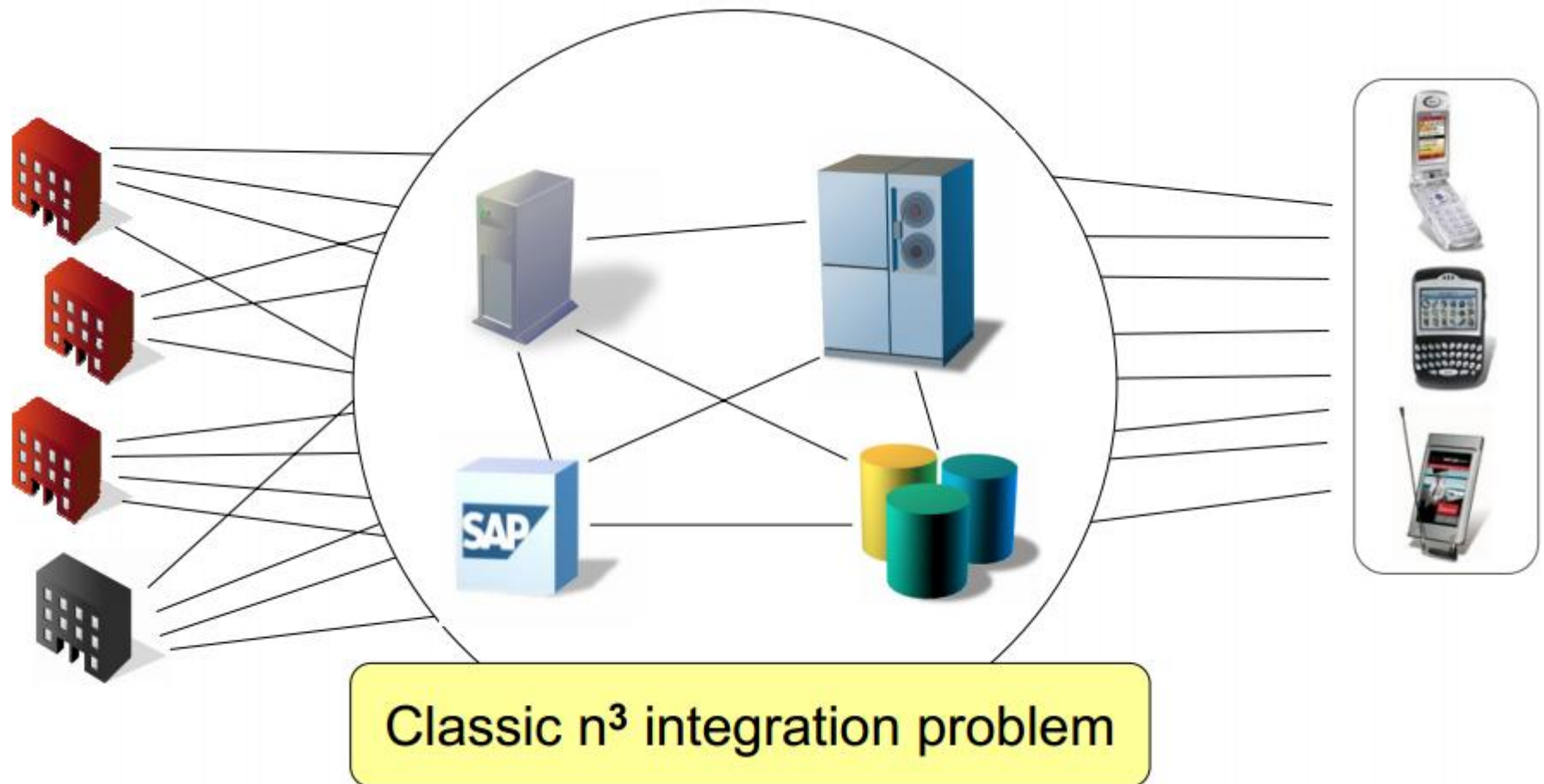
- ◆ XML based
- ◆ Specifying executable business processes
- ◆ Interaction through web service operations

Stage 2 – WS-BPEL

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

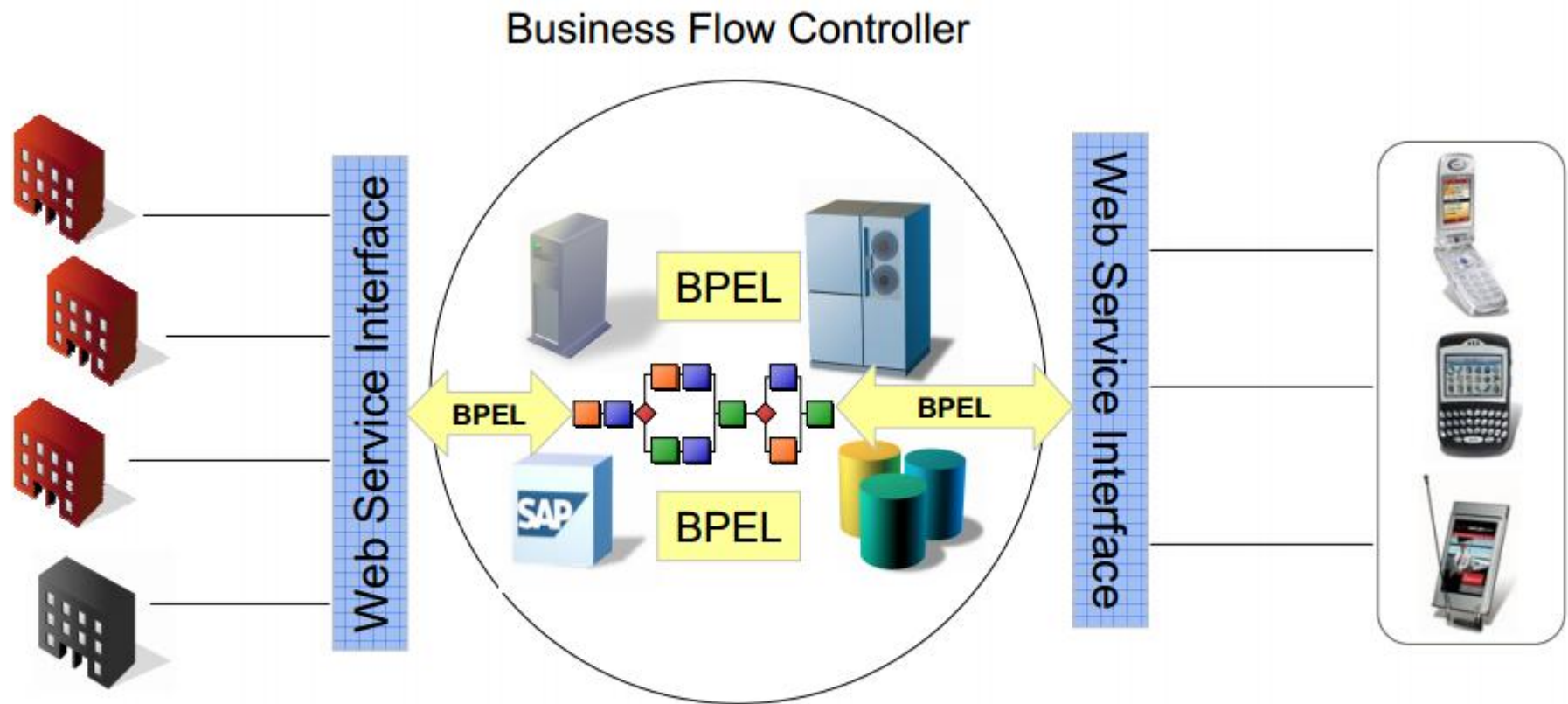
Stage 2 – BPEL Use Case

Global Telco – Before BPEL




Stage 2 – BPEL Use Case

Global Telco – After BPEL



Stage 2 – Apache ODE

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



LIVE DEMO