

Professionelle Java Frontends mit Silverlight

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Über mich

- ▶ Unabhängiger Technologieberater
- ▶ Über 15 Jahre Erfahrung
- ▶ Schwerpunkte: SOA, BPM, RIA, Agile
- ▶ JEE und .NET
- ▶ Zertifizierungen
 - Microsoft, Sun, Scrumalliance
- ▶ Autor und Trainer
- ▶ www.pleus.net



Agenda

- ▶ Kurze! Einführung
- ▶ Entwicklung von Java-Frontends
 - Tools, JEE-Anbindung, LOB-Features
- ▶ Integration in den Entwicklungszyklus
 - Server, Build, Deployment und Test

keine Effekte dafür Code

<http://www.silverlight.net/showcase/>

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Was ist Silverlight?

- ▶ RIA-Technologie von Microsoft
- ▶ Browser Plug-In
 - Portable CLR, Browser-VM, Cross-Platform
- ▶ Plattform
 - Programmiersprachen, Steuerelemente, Bibliotheken, Tools
- ▶ Interaktiv und Performant
 - Rich & Reach, Neue Benutzererfahrung
- ▶ Umfassend, robust und verfügbar
 - Version 4.0 in nur 2,5 Jahren
 - www.silverlight.net



PLANNING

Warum Silverlight & Java?

- ▶ Reichhaltige **Benutzererfahrung**
 - ▶ Interaktiv, 60+ Controls, LOB-Features
 - ▶ Styles, Storyboards, Video
- ▶ Hohe **Entwicklerproduktivität**
 - Professionelle Tools und Sprachen
 - Etablierter Komponentenmarkt + Community
- ▶ Hohe Reichweite + webbasiertes Deployment
- ▶ Standardbasierte Java-Integration
- ▶ Investitionsschutz und Planungssicherheit
- ▶ Wiederverwendung von KnowHow
 - Java/C#, Patterns, Hibernate, Lucene, log4j, etc.
- ▶ Keine Lizenzkosten

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Beispiel: Rich UI

Woodgrove Financial

Pay Bills

Payee	History	Recurring	Amount	Withdraw Date
Testers		<input type="checkbox"/>	Last Amount: 1,00 €	11.08.2010
ABC Catering		<input type="checkbox"/>	Last Amount: 1,00 €	24.08.2010
Bell Telecom		<input checked="" type="checkbox"/>	Last Amount: 10,00 €	22.11.2010
Visa		<input type="checkbox"/>	Last Amount: 1,00 €	24.08.2010
TD Mortgage		<input type="checkbox"/>	Last Amount: 1,00 €	24.08.2010

Total Payable: 0,00 €

Withdraw from: Premium Checking (2467891011)

Available as of Aug 24, 2010

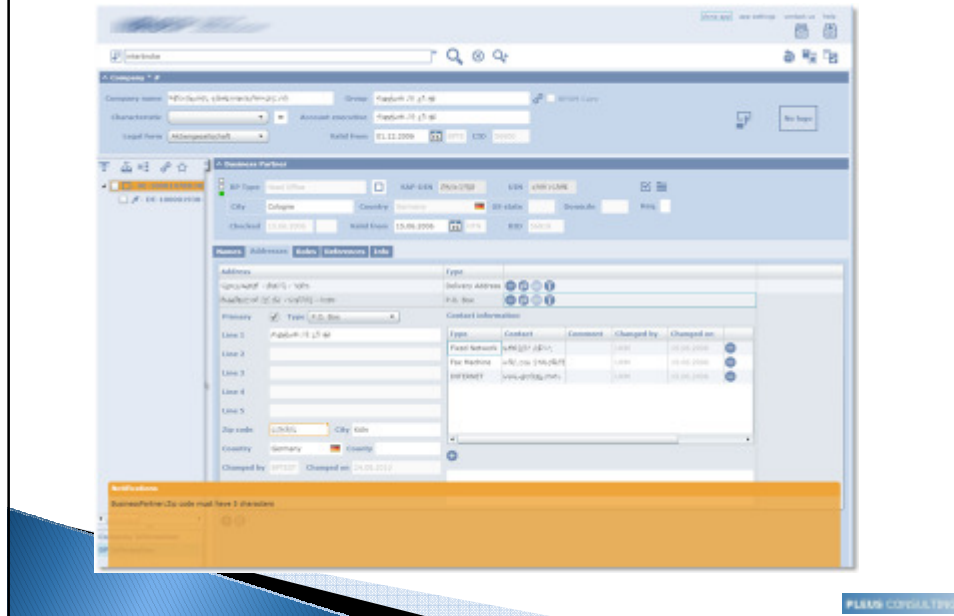
Available in Account: 11.870,00 €

Total After Payment: 11.870,00 €

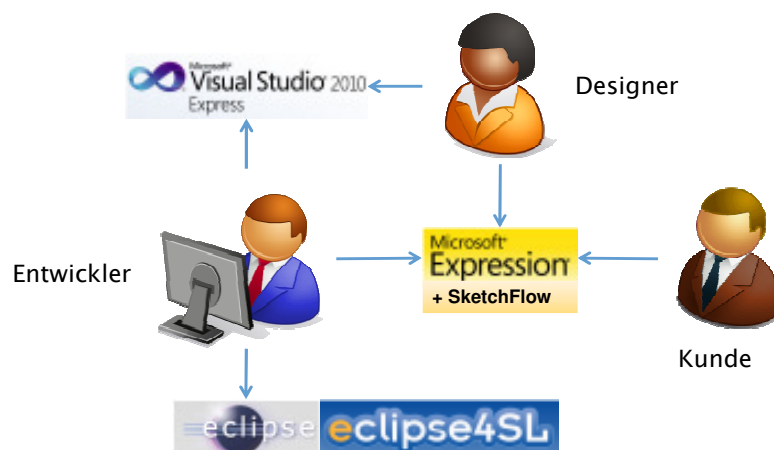
<http://www.cookingwithxaml.com/meals/financials/default.html>

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Beispiel 2: Branchenanwendung



Toolübersicht



Eclipse Tools for Microsoft Silverlight

The screenshot shows the Eclipse IDE interface with a Silverlight 2 project. The central area is split into a visual designer (top) and an XAML code editor (bottom). A red arrow points to the 'Code Preview' area above the visual designer. Another red arrow points to the 'XAML code editor' at the bottom. A third red arrow points to the 'Tool Palette' on the right side of the visual designer. The left sidebar shows a project tree with various Silverlight controls like Button, TextBox, and Image. The right sidebar shows a 'Silverlight' palette with various controls.

- Eclipse4SL Plugin
- Nur Silverlight 2
- Visueller Designer
- XAML + Code Editor

www.eclipse.org/esl/

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Microsoft Visual Web Developer Express

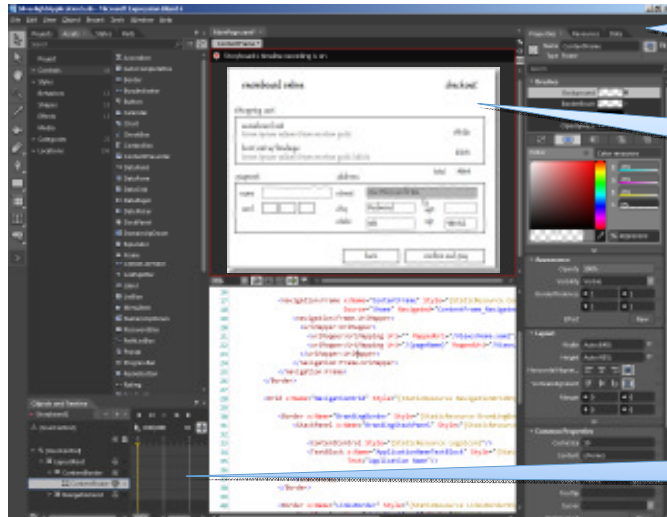
The screenshot shows the Microsoft Visual Web Developer Express IDE interface. The central area is split into a visual designer (top) and an XAML code editor (bottom). The visual designer shows a Silverlight 4 application with a grid of controls. The XAML code editor shows the corresponding XAML code. The left sidebar shows a project tree with various Silverlight controls. The right sidebar shows a 'Silverlight' palette with various controls.

- Kostenlose IDE
- Silverlight 4
- Refactoring, etc.
- Visueller Designer
- XAML + Code Editor

www.microsoft.com/express/

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Microsoft Expression Blend



Designtool

SketchFlow

Photoshop import

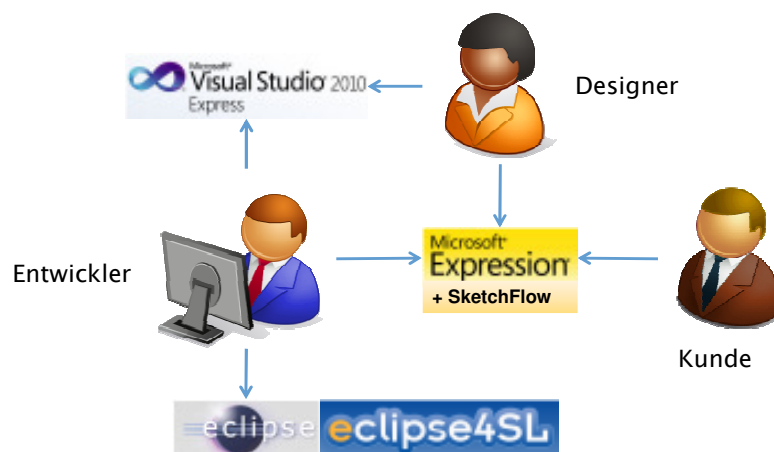
Template designer

Storyboard

www.microsoft.com/expression/

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Toolübersicht



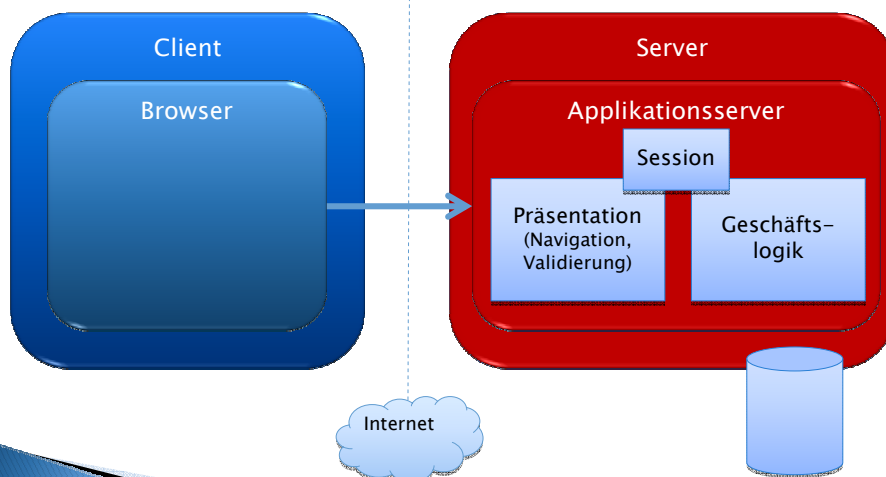
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DEMO 1

- ▶ Silverlight design surface

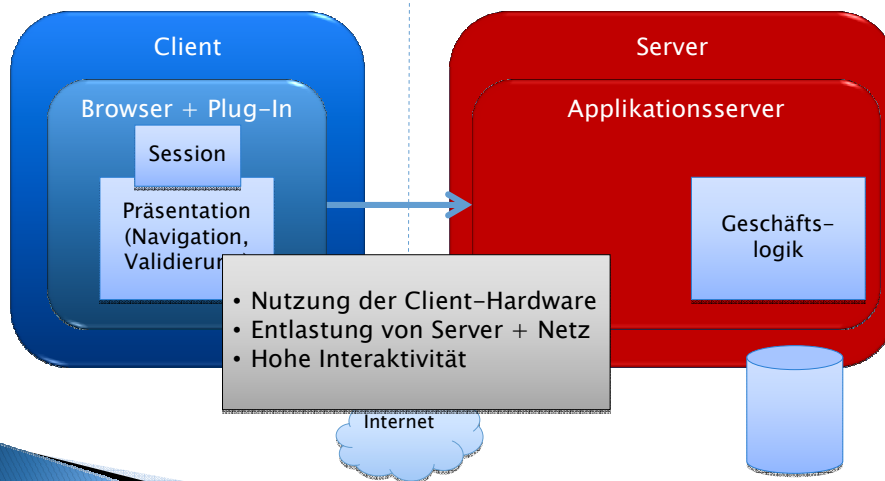
Thin Client / Fat Server Modell

Präsentation und Daten



Distributed Client / Server Modell

Initial Präsentation, dann nur Daten



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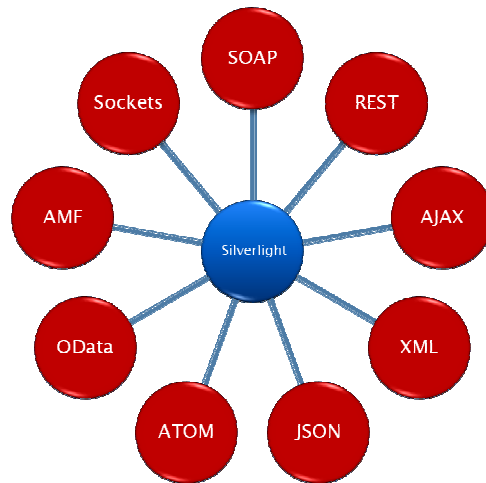
JEE - Anbindung

- ▶ Service Layer ist Voraussetzung
 - ▶ Contract (Schema) first
 - ▶ Kein direkter DB-Zugriff möglich
- Achtung: clientaccesspolicy.xml und crossdomain.xml



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Konnektivität



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SOAP



- ▶ Merkmale
 - ▶ SOAP1.1 und SOAP 1.2 via HTTP
 - ▶ WS-I Basic Profile 1.1
 - ▶ WS-Addressing
 - ▶ Base64 für Binärdaten
- ▶ Silverlight
 - Add Service Reference -> generiert Proxy, ClientBase<...>
 - Asynchrones Paradigma – Aufruf mit Events und Lambda-Expressions

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REST



- ▶ Formate
 - ▶ XML/JSON/ATOM/RSS
 - ▶ XML Schema Unterstützung

- ▶ Silverlight
 - System.Net.WebClient – Zugriff auf beliebige Web Ressourcen via HTTP
 - DataContractJsonSerializer – JSON (De)serialisierung
 - Linq2XML – Mapping XML/C#

AJAX



- ▶ Zugriff auf das Browser-DOM
- ▶ Aufrufe mittels HttpWebRequest
- ▶ Wiederverwendung existierender AJAX – Schnittstellen

- ▶ Silverlight
 - HtmlPage.Window.Invoke – Aufruf Silverlight -> Javascript
 - ScriptableMemberAttribute – Aufruf Javascript -> Silverlight

OData



- ▶ ODBC für das Web, SOAP für Daten
 - <http://www.odata.org>
- ▶ Basiert auf REST, JSON, ATOM
- ▶ Clients und Server für Javascript, PHP, Java, Objective C, .NET, Ruby
- ▶ OData Toolkits für Java (Client & Server)
 - <http://code.google.com/p/odata4j>, <http://www.restlet.org>
- ▶ Beispiel: OData Explorer
 - <http://www.silverlight.net/content/samples/odataexplorer/>
- ▶ Silverlight
 - Add Service Reference -> generiert Proxy
 - Abfragen mit LINQ
 - Automatische Änderungsverfolgung

Binär



- ▶ Hessian (Open Source) – www.hessiancsharp.org
 - Silverlight Portierung einfach
- ▶ Adobe Action Message Format (AMF)
 - FlourineFX (Open Source) – www.flourinefx.com
 - WebORB (Kommerziell) – www.themidnightcoders.com

Sicherheit

- ▶ Verschlüsselung
 - SSL (HTTPS)
- ▶ Authentifizierung
 - Basic Authentication
 - X509 Zertifikate
 - NTLM (Windows Authentifizierung)
- ▶ WS-Security nicht vollständig
 - Nur UsernamePasswordToken
 - Lösungen: Zugriff auf HTTP und SOAP-Header, Service Proxy

DEMO 2

- ▶ Silverlight / JEE Anbindung

LOB-Features

- ▶ UI Controls
- ▶ Datenbindung, Konvertierung
- ▶ Validierung
- ▶ Änderungsverfolgung

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Professionelle UI Controls

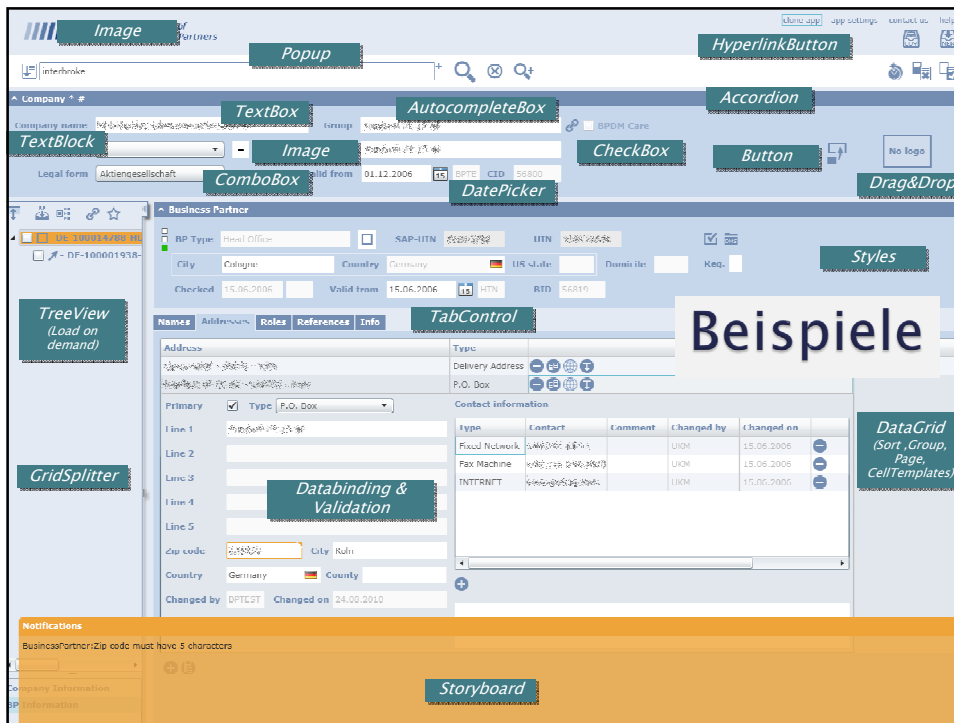
- ▶ Standard sehr umfassend
- ▶ Kommerzielle und Open Source für exotische Ansprüche
- ▶ Exemplarisch DataGrid
 - Sortieren
 - Filtern
 - Gruppieren
 - Pagen
 - Spalten tauschen
 - Feste Spalten
 - Detailansicht
 - Templates

First Name	Last Name	Phone	Street Address	Second
State: CA (2 items)				
City: Anytown (2 items)				
Pieter	Wycoff	(555) 555-9292	321 Anywhere Lane	
This item has details. Here is some data: Pieter Wycoff				
Esko	Sorio	(555) 555-3248	1 Someplace Street	
State: HI (2 items)				
City: AnotherTown (1 item)				
Hedysa	Sagiv	(555) 555-0001	2 Anywhere Street	
City: Anytown (1 item)				
Jane	Somebody	(555) 555-5555	1 Anywhere Street	
State: NH (2 items)				

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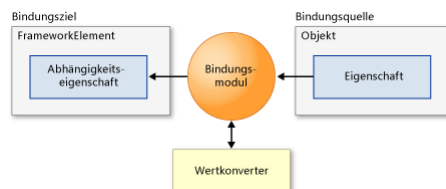
Standard DataGrid

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Datenbindung

- ▶ Automatischer Datentransfer zwischen Model und View
- ▶ Eigenschaften und Listen möglich
- ▶ Konvertierungen möglich
 - Typen und Inhalte



Datenbindung Beispiel

Model

```
public class ViewModel : INotifyPropertyChanged
{
    private string _title = "Hallo Java";
    public string Title
    {
        get { return _title; }
        set { _title = value; RaisePropertyChanged("title"); }
    }

    public event PropertyChangedEventHandler PropertyChanged;

    protected void RaisePropertyChanged(string propertyName) {...}
}
```

XAML

```
<Grid x:Name="LayoutRoot"
      <TextBlock Text="{Binding Title}"/>
```

Code

```
private ViewModel _model = new ViewModel();
void MainPage_Loaded(object sender, RoutedEventArgs e) {
    LayoutRoot.DataContext = _model;
    _model.Title = "Hallo Java";
}
```

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Konvertierung Beispiel

Konverter

```
public class TitleConverter : IValueConverter
{
    public object Convert(object value, Type targetType, object parameter,
    {
        return value + " ...";
    }

    public object ConvertBack(object value, Type targetType, object parameter,
    {
        return value;
    }
}
```

XAML

```
xmlns:app="clr-namespace:silverlightbookstore">
<UserControl.Resources>
  <app:TitleConverter x:Key="TitleConverter"/>
</UserControl.Resources>
<Grid x:Name="LayoutRoot">
  <TextBlock Text="{Binding Title, Converter={StaticResource TitleConverter}}"/>
```

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Validierung

- ▶ UI Feedback durchgängig eingebaut

ID Number: 12w Enter an integer between 0 and 99999.

Name: Mr. x| Last name must be between 3 and 8 characters long.

3 Errors

- ID Number Input string was not in a correct format.
- Name Numbers and special characters are not allowed in the name.
- LastName Last name must be between 3 and 8 characters long.

- ▶ Synchron, Asynchron, Felder, Objekte
 - Exceptions, INotifyDataErrorInfo, [CustomValidation]
- ▶ Validierung im Modell
- ▶ Modellerweiterung über partielle Klassen

Validierung Beispiel

Generiertes Modell

```
public partial class book : object, System.ComponentModel.INotifyPropertyChanged {  
    private string authorField;  
    public string author  
    {  
        get{  
            return this.authorField;  
        }  
        set{  
            this.authorField = value;  
            this.RaisePropertyChanged("author");  
        }  
    }  
}
```

Erweitertes Modell

```
[CustomValidation(typeof(book), "IsObjectValid")]  
public partial class book : object, INotifyPropertyChanged  
{  
    public string bookAuthor  
    {  
        get{  
            return this.authorField;  
        }  
        set{  
            if (string.IsNullOrEmpty(value)){  
                throw new Exception("Empty author is not permitted.");  
            }  
            this.authorField = value;  
            this.RaisePropertyChanged("author");  
        }  
    }  
}
```

XAML

```
<TextBlock Text="{Binding bookAuthor, ValidatesOnExceptions=True,  
    ValidatesOnNotifyDataErrors=True,  
    NotifyOnValidationError=True}"/>
```


Änderungsverfolgung

- ▶ Wichtig für Persistenz und Netzlast
 - Bei Add Reference automatisch ins Modell generiert
- ▶ Entitäten: INotifyPropertyChanged

```
var company = new Company();
company.PropertyChanged += (sender, args) =>
{
    var value = sender.GetType().GetProperty(args.PropertyName)
        .GetValue(sender, null);
    Debug.WriteLine(args.PropertyName + " has changed to " + value);
};
company.Name = "Oracle";
```

- ▶ Listen: INotifyCollectionChanged

```
var company = new Company();
company.Shareholders.CollectionChanged += (sender, args) =>
{
    Debug.WriteLine("Shareholder " + args.Action);
};
company.Shareholders.Add("Larry Ellison");
```

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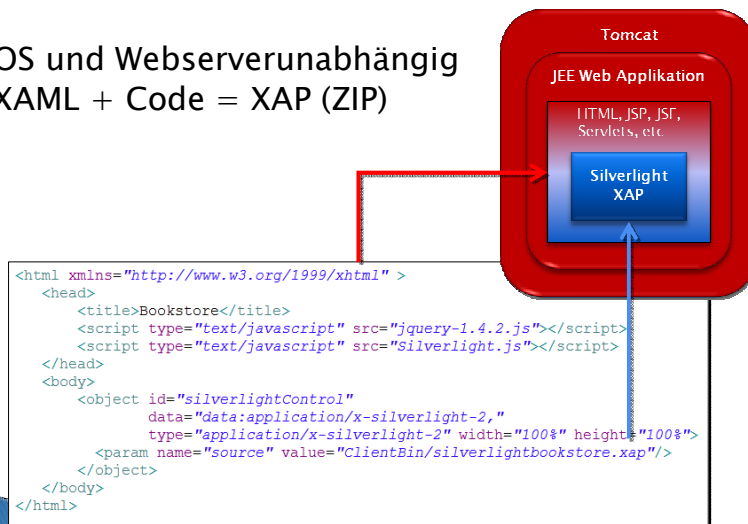
DEMO 3

- ▶ Datenbindung
- ▶ Validierung
- ▶ Änderungsverfolgung

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Silverlight Server Integration

- ▶ OS und Webserverunabhängig
- ▶ XAML + Code = XAP (ZIP)



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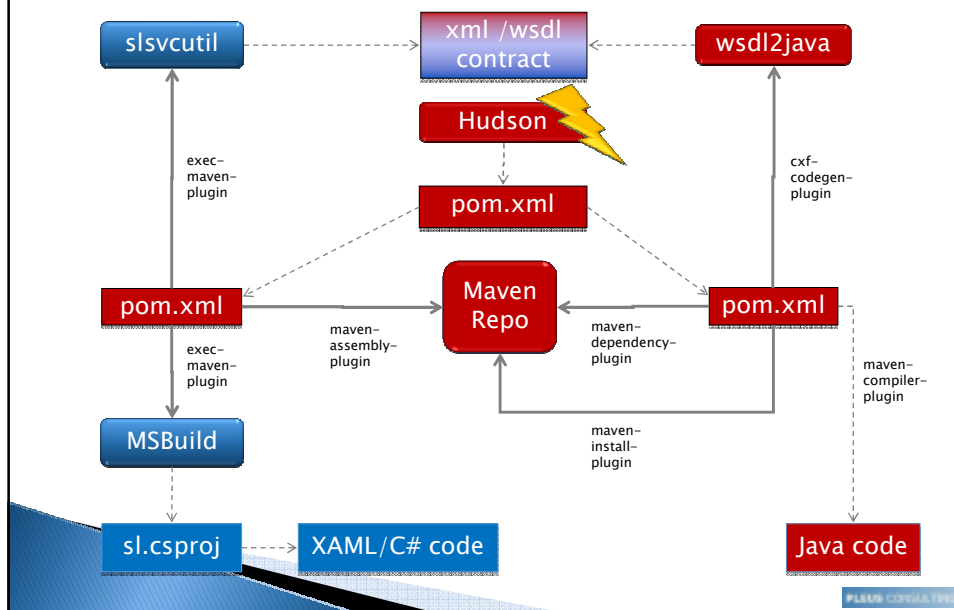
Build

- ▶ MSBuild = Ant für .NET
- ▶ Im Framework SDK enthalten
- ▶ Visual Studio Projekte sind MSBuild-Dateien
- ▶ Kein Visual Studio erforderlich
- ▶ Hudson MSBuild Plugin oder
- ▶ Integration über Maven Standard Plug-Ins
- ▶ XAP wird Artefakt im Maven Repo

```
pom.xml <plugin>
<groupId>org.codehaus.mojo</groupId>
<artifactId>exec-maven-plugin</artifactId>
<configuration>
<executable>msbuild</executable>
</configuration>
```

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Gemischter Buildprozess



DEMO 4

- ▶ Build und Integration

Testautomatisierung

- ▶ Unittests
 - Besonders für (View-)Model Tests
 - Erfordern Silverlight-Plug-In Instanz
 - Testfälle sind oft asynchron
 - Testrunner im Silverlight Toolkit
 - silverlight.codeplex.com
- ▶ UI-Tests
 - UI-Automatisierung mit Telerik WebUI
 - <http://www.telerik.com/automated-testing-tools/webui-framework-features.aspx>
 - HP Quicktest kompatibel
 - MSTest nicht mit Visual Studio.NET Express
 - Testfallausführung mit Nunit
 - www.nunit.org

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Maven Integration

- ▶ Unittest

```
[TestClass]
public class Tests : SilverlightTest
{
    [TestMethod]
    [Asynchronous]
    [Description("Get all books")]
    public void GetAllBooks() { .. }
}
```

mvn -o test

```
<groupId>net.pleus.silverlight</groupId>
<artifactId>silverlightclient-unittests</artifactId>
<packaging>jar</packaging>
<version>1.0-SNAPSHOT</version>
<name>Silverlight unit tests</name>
<url>http://www.pleus.net</url>
<dependencies>
</dependencies>
<build>
  <plugins>
    <plugin>
      <groupId>org.codehaus.mojo</groupId>
      <artifactId>exec-maven-plugin</artifactId>
      <configuration>
        <executable>msbuild</executable>
      </configuration>
      <executions>
        <execution>
          <id>test</id>
          <phase>test</phase>
          <configuration>
            <arguments>
              <argument>/t:Test</argument>
              <argument>/p:browser=firefox</argument>
            </arguments>
          </configuration>
          <goals>
            <goal>exec</goal>
          </goals>
        </execution>
      </executions>
    </plugin>
  </plugins>
</build>
</project>
```

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DEMO 5

- ▶ Unittests dem Silverlight-Toolkit
- ▶ UI-Tests mit WebUI und Nunit

- ▶ Maven Integration

Zusammenfassung

- ▶ Umfassende Rich Client-Technologie ✓
- ▶ Professionelle Tools ✓
- ▶ Cross Platform ✓
- ▶ Starke Community und Hersteller ✓
- ▶ Kostenlos in Entwicklung und Betrieb ✓
- ▶ Standardbasierte JEE-Kommunikation ✓
- ▶ Tomcat/Linux Deployment ✓
- ▶ Maven/Hudson – Buildintegration ✓
- ▶ Unit/UI – Testautomation ✓

Fragen und Diskussion