

Years ago the landscape for Java enterprise GUI development was quite straightforward. Today there are myriads of Open Source and commercial frameworks courting for the favor of the developers. On one hand choice is good; on the other hand it is difficult to find the ideal technology without lots of evaluation effort.

Another aspect that is often discussed is polyglot or blended programming, which means using more than one programming language in one project. This got popular with the advent of scripting languages such as Scala or Groovy. Putting to the next level it can be reasonable to use both .NET and JEE at the same time, much like a craftsman who uses a screwdriver from one company and a hammer from another because it ideally suits his/her needs.

If we combine both ideas, it seems to be natural to look at Silverlight for Java frontend development. For some reason Java developers are normally not very interested in .NET technology. But Silverlight is one of the most powerful GUI frameworks available today. So it is definitely worth a closer look.

The Silverlight features make it an ideal frontend technology for Java applications as well. This is especially true for line of business applications which we find in enterprises of all sizes.

Let us now look at Silverlight in more detail, with the focus on what is important for JEE enterprise applications. The rest of the document focuses on Silverlight 3 and greater.

Widgets

The main purpose of enterprise applications is to visualize and modify data. Therefore having powerful GUI controls is essential. Silverlight contains lots of powerful widgets out-of-the-box, which you can try here:

<http://www.microsoft.com/silverlight/silverlight/demos/controls/default.htm>

<http://samples.msdn.microsoft.com/Silverlight/SampleBrowser/index.htm>

In case the standard controls do not meet the requirements, there is an established component market where you can buy controls:

<http://demo.componentone.com/Silverlight/ControlExplorer/>

<http://demos.telerik.com/silverlight>

The look and feel of the widgets can be tailored to the companies needs. Styles are completely separated from the Widgets (like CSS), making it easy to create reusable company specific controls. Using control templates even the entire visual representation can be replaced so that a control for instance behaves like a button, but looks totally different

Validation is built into many controls making it easy to validate data before it is transferred back to the server.

Platforms

Being platform agnostic is very important for many companies. On the server-side it means freedom of choice in terms of the hardware, operating system and runtimes. On the client side it means potentially reaching as many users as possible.

Server-side

Silverlight applications can be hosted on any web server and any operating system. No server side runtime is required. To host a Silverlight application the XAP-package has just to be dropped on the server. It can be included in any web app using the HTML-object tag like shown below:

```
<object data="data:application/x-silverlight," type="application/x-silverlight-2"
        width="100%" height="100%">
  <param name="source" value="ClientBin/Credits.xap"/>
  <param name="onerror" value="onSilverlightError" />
  <param name="background" value="white" />
  <param name="minRuntimeVersion" value="3.0.40624.0" />
  <param name="autoUpgrade" value="true" />
  <a href="http://go.microsoft.com/fwlink/?LinkID=149156&v=3.0.40624.0"
    style="text-decoration: none;">
  
  </a>
</object>
```

For instance <http://www.pleus.net/credits/> is hosted on a LAMP stack.

Client-side

Silverlight supports all mainstream browsers and operating systems:

http://en.wikipedia.org/wiki/Microsoft_Silverlight#Operating_systems_and_web_browsers

It integrates very well with HTML, DOM and AJAX. This allows creating either Silverlight only applications or rich Silverlight islands embedded in HTML, JSP or JSF applications. Silverlight can interact with the browser and has access to HTTP requests. It runs in a sandbox much like Java applets, preventing access to the local system. Cookies and isolated storage can be used to store client-side information.

Tools

Developer performance is very important today. That is why the tooling is vital for a successful technology. Although Silverlight applications can be created with any text editor, this is not recommended. The following tools are available for Silverlight development.

Visual Studio.NET is intended for the typical developer. It focuses mainly on coding aspects.

<http://www.microsoft.com/germany/visualstudio/>

Visual Web Developer Express is a free edition of Visual Studio.NET for web development. It can be used for Silverlight development. <http://www.microsoft.com/express/vwd/>

Expression Blend is intended for Developers and Designers. It is required for serious Silverlight development as it focuses on the visual aspects making it possible to visually design an application. If needed it allows focusing on GUI design only and integrating art directors into the development process. <http://www.microsoft.com/expression/>

Eclipse 4 Silverlight is an Open Source Plug-In for Java development. <http://www.eclipse4sl.org/>

Expression Blend is a must have. In combination with either Visual Studio.NET or Eclipse4SL it is a very productive environment.

As XAML is a XML dialect and C# is a programming language like Java, it can be integrated in a continuous build process with all kinds of quality checks. Batch build is possible using MSBuild or NMaven.

JEE integration

Line of business applications are usually data driven. That is, data is read from the server, visualized, modified, validated and finally sent back. The widget library offers great visualization capabilities.

For client/server connectivity Silverlight supports SOAP, REST,POX and JSON over HTTP. Raw Sockets are also supported. There is no support for direct database access, fostering to utilize a service layer.

To exchange data with the service layer on the server-side, Silverlight can easily connect to Java SOAP or REST Services as you can see here:

<http://www.eclipse4sl.org/documentation/userdoc/html/webservice/>

The widgets support data binding, allowing to present data with little code. SSL can be used to secure the data transmission.

RIA features

Silverlight contains a lot of cutting-edge features allowing it to create next generation RIA applications. Some examples are:

Web based distribution

Silverlight combines the web based deployment model with the richness of standalone applications. Silverlight applications are deployed via the web like normal web applications. In traditional web applications the presentation and data is transferred on every HTTP request, causing the user interface to react slowly. AJAX tries to mitigate this, but does not entirely solve the problem. In Silverlight the presentation is transferred once when the application is started. While the application is running only data is exchanged with the service layer. This leads to very responsive user interfaces.

Storyboards and Transformations

Most of us love flying images, shading and animations in applications, because it gives us a great user experience. Most of those effects are based on 2D and 3D transformations. Using storyboards those transformations can be brought to life. The <http://www.pleus.net/credits/> application has two storyboards, one for the blinking stars and the other one for the flying 3D credits.

Out-of-browser

If configured to do so Silverlight applications can be installed locally. Silverlight can detect network availability making it easy to create offline applications. Updates can be performed in the background, keeping the application up-to-date.

<http://samples.msdn.microsoft.com/Silverlight/SampleBrowser/index.htm#/?sref=OutOfBrowser>

High quality video and audio

Audio and video can be integrated to create a state of the art user experience.

http://samples.msdn.microsoft.com/Silverlight/SampleBrowser/index.htm#/?sref=media_ovw_controlling_media

Full screen mode

With one line of code the application can be switched to full screen mode. Click on the second yellow star in the upper left corner of <http://www.pleus.net/credits/> to switch to full screen mode.

Those are just some examples that highlight the great features of Silverlight.

Pricing

On the client side Silverlight is a free browser plug-in that is installed when the application is started for the first time. It requires Administrator privileges. In an enterprise environment it has to be part of the internal software distribution.

No server runtime is required, beside the one that you already have, e.g. Oracle Weblogic Server or JBossAS.

The only cost that is involved is for the development tools. For instance Expression Studio costs around 600\$ (<http://www.microsoft.com/expression/products/Purchase.aspx>). If you look at the productivity gain one gets, it is a fair price. If your company owns a Microsoft subscription (which is very likely) you already have the license.

Strategy

If you look at the market today you will see that lots of acquisitions are taking place. This leaves the question of who is a good partner on the longer term. Probably IBM, Oracle and Microsoft are the most stable ones. So betting for instance on Oracle on the server side and on Microsoft on the client side seems to be a reasonable idea. The strong vendor support gives Silverlight great momentum. It is extremely unlikely that it will disappear.

Bringing IT and business closer together is a common challenge. To mitigate this problem, Silverlight comes with the Sketch Flow concept. This allows using Expression Blend to create GUI drafts and prototypes. It is quick and easy to use, so that it can be used in GUI workshops with the business departments. It contains a live environment in which the draft can run and the users can give interactive feedback. This helps to follow a 360° roundtrip approach for GUI development and helps to quickly turn concepts into productive applications. The following resources describe Sketch Flow in more detail.

<http://www.bestechvideos.com/2009/04/15/mix09-sketch-flow-from-concept-to-production>

<http://www.infoq.com/articles/guest-simon-sketchflow>

Summary

All in all Silverlight is a very powerful technology for user interface design and development. Taking the mentioned aspects into consideration, it is an ideal choice not only for .NET but also for JEE applications. Please look at <http://www.silverlight.net/showcase/> to get inspired on how your next GUI might look like.

About the author:

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