Introducing Grasshopper

Mainsoft®
The cross-platform
development company

Grasshopper Overview

- **What is Grasshopper**
  - AKA: Visual MainWin for J2EE
  - Goal: Extend .NET development tools and framework to the J2EE platform.
- **Committed to pure J2EE runtime**
- **Focus on server technologies only**
  - System.Web – yes, Windows.Forms – no
- **Provide full .NET developer experience**
  - Development on Windows only
  - Provide full Visual Studio functionality
  - Based on a Visual Studio VSIP plug-in

Grasshopper Current Status

- ## Grasshopper 1.8.1
  - Visual Studio 2003
  - .NET Framework 1.1
  - Supported application servers: WebSphere Portal 6, WebSphere, Tomcat, and others.

- ## Grasshopper 2.0 Technology Preview
  - Visual Studio 2005
  - .NET Framework 2.0
  - Technology preview limitations: No VB support, No debugger, partial framework support.

Grasshopper Technical Overview

- **Byte code compiler (CIL → JBC)**
  - Use CECIL, ASM

- **Visual Studio integration including source level debugger (C# and VB, even Java)**

- **Core library**
  - Mscorlib implementation based on J2SE features

- **.NET Framework shared with Mono**
  - System.Web hosted on top of Java Servlets and JSR 168 Portlets
  - System.Data connected mode using JDBC
  - System.Drawing using Java2D

Mainsoft Focus on Mono

- **Mono class libraries recompiled to Java Byte code**
  - Focus on .NET class libraries
  - Full code sharing: no more GH/Mono synch-in and synch-out
  - Focus today exclusively on .NET 2.0 framework
  - Use of #if TARGET_JVM when Java runtime requires different implementation

- **Specific libraries**
  - System.Web – with some changes regarding hosting, ASPX Parsing, and PageMapper
  - System.Web.Services
  - System.Data: Connected mode is Java specific using JDBC
  - System.XML
  - Remoting, SOAP
  - DirectoryServices
  - System.Drawing – some sharing, based on Java2D.
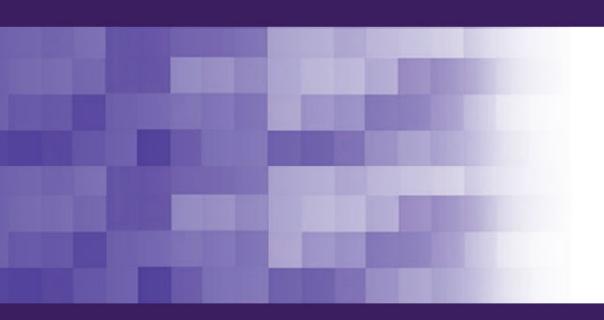 - Core lib (mscorlib) is not shared: Too Java specific

Team working within Mono

- **Kosta, Vladimir, Andrew, Igor, Boris – Class library development: Web, Web.Services, DirectoryServices, Drawing**
- **Tal, Yoni, Merav, Hagit – Test development**
- **Rafi, Guy, Boris – Visual Basic**
- **Roeie – Remoting, Soap**
- **Eyal – System, CECIL**

Mainsoft Contribution to Mono

Mono Meeting October 2006

Mainsoft Recent Areas of work

Year 2006: Focus only on .NET framework 2.0

- **System Web 2.0 Development**
  - Unit testing and integrative testing
  - Quality improvement
  - Feature development
- **VB .NET new Runtime implementation**
  - Checked with several test suites
  - Quality boost compared to previous implementation
  - Contains 2.0 features

System.Web: Initial analysis

- **Started in Q2Y06**

- **Prove System.Web 2.0 quality through a small but ASP.NET 2.0 focus application**

- **PWS (Personal Web Site) is a starter kit written by Microsoft (Available www.asp.net site).**

- **PWS was chosen as an externally written application that purposefully demonstrates System.Web 2.0 features but is fairly simple.**

System.Web Initial analysis: Outcome

- **Succeeded porting PWS to Mono**
- **Not a short exercise:**
  - More than 50 bugs identified and fixed.
  - Themes and skins were not functional.
  - Implement on the fly CreateUserWizard control.
- **Unwanted dependency on MS SQL Express**
  - For Membership & Role providers.
- **Conclusions:**
  - Launched a methodological unit testing effort
  - Required a cross-platform solution for ASPNETDB

- **Methological unit-testing**
  - New testing framework, providing lifecycle and post-back functionality.
  - Cover almost all ASP.NET 2.0 implemented controls
  - Investment: over 2.5 staff-years on both test creation and fixing.
- **Results at www.mono-project.com/ASPTests**
- **Currently 758 tests, 151 failures.**
- **Still lots of work remaining:**
  - Easy to contribute, take a control with failures and fix them

System.Web 2.0 Missing features

- **User Profiles (work in progress)**
- **Internationalization features**
  - Auto detection of browser language
  - Localize control
- **WebParts**
- **Encrypted view state**
- **Tracing extension**

Visual Basic current status

- **New implementation introduced last August**
- **Fully unit-test driven: ~12,000 tests**
  - mbas, vbnc, NUnit and stand-alone (Mainsoft)
- **Major quality improvement**
  - Pass rate progress increased by ~60%
- **Integration with new vbnc VB compiler**
- **New 2.0 features**
  - Essentially new 2.0 types, some new late binding capacities
- **Yet to be done:**
  - 'My' features
  - Compete late binding
  - FileSystem, …

.NET Framework – some missing features

- **Data: yet to be done**
  - Detailed unit testing plan (already begun)
  - DataTable ReadXml/WriteXml
  - Provider independent programming

- **Web Services: yet to be done**
  - SOAP 1.2 support
  - WS-I Profile 1.1. compliancy

Mainsoft Contrib to Mono

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