WebTools for GemStone/S

ESUG 2011, Friday, 11:00 – 11:45 am

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Abstract

- **GemStone/S 64 Bit includes a new goodie, WebTools, with which you can quickly and easily interact with a running GemStone system through a web browser. With WebTools you can browse code, view version information, view statistics, and analyze statmonitor files.**

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Presenter

- **Software Background**
  - As a junior-high student in 1971, I discovered the local university's computer center and a life-long obsession with computers began.
  - I was introduced to Smalltalk/V for the Mac in the mid-90s, and became a Smalltalk bigot.
  - I am on the Smalltalk Engineering team at VMware, and am a passionate advocate for GemStone and Seaside.

- **Past Careers**
  - Commercial Pilot
  - Lawyer

- **Other interests**
  - Economics
  - Politics
  - Religion

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Agenda

- **Existing tools**

- Motivation

- Demo: WebTools in Action

- Design

- Demo: Adding a new tool

- JavaScript lessons

- Future

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Agenda

- **Existing tools**
  - Topaz
  - Visual Statistics Display (VSD)
  - GemBuilder for Smalltalk (GBS)
  - GemTools
  - Jade

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Topaz

- **Primary GemStone/S user interface**
  - Used internally to create distribution image
  - Used internally for testing and debugging
  - Recommended for batch and maintenance jobs (backups, etc.)
  - Preferred for reproducible bug reports

- **Command-line driven**
  - Analogous to command shell (bash): Enter command and get response
  - Run, DoIt, & PrintIt to execute Smalltalk code

- **Debugger**
  - View stack frames and variables

- **Applicability**
  - Low-level work by those comfortable with vi, emacs, and Unix
  - Less comfortable for typical Smalltalker

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Visual Statistics Display (VSD) - 1

- **Statmonitor**
  - The product distribution includes statmonitor, an executable that captures hundreds of statistics about a running GemStone/S system
  - Statmonitor produces a text file of data (optionally compressed)
  - Recommendation that all production systems capture this data constantly
    - Allows analysis in event of crash
    - Allows comparisons over time (how does this year compare to last year?)

- **VSD**
  - View statistics in graphics format
  - Separate application (not part of product distribution)
  - Cross-platform
  - Templates for common issues
  - Ability to zoom, combine, etc.

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Visual Statistics Display (VSD) - 2

- **Issues**
  - TCL-based application
  - Building third-party libraries on several platforms
  - Cannot run if there is a space in the executable path
  - Doesn't run on Windows 7
    - Actually, it just requires "XP Compatibility Mode"
  - File size limits (sometimes there is a lot of data!)
  - Font size

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GemBuilder for Smalltalk (GBS)

- **The traditional GUI-based tools**

- **Add-on library for client-based Smalltalk**
  - Cincom Smalltalk
  - VA Smalltalk

- **Various GemStone/S tools**
  - Code browser
  - Debugger
  - UserProfile editor

- **Limitations**
  - Not free (GBS is not available for the 'no-cost' license)
  - Requires installation and use of yet another product
  - Most updating focuses on host Smalltalk changes

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GemTools

- **Pharo-based tools for 'GLASS'**

- **Various GemStone/S tools**
  - Code browser
  - Debugger
  - Monticello browser
  - Metacello browser (new!)

- **Limitations**
  - Requires specific server-side code
  - Requires installation and use of yet another product
  - Many network round-trips to server
    - Impractical for remote (e.g., hosted) server
  - GUI is based on OB

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Jade

- **Microsoft Windows application**
  - Created in Dolphin
  - Small footprint (EXE is 1.3 MB; takes ~8 MB of RAM)

- **Various GUI-based tools**
  - Monticello browser
  - Code browser
  - Debugger

- **Avoids 'two-object-space' problem**
  - Built with Dolphin, but not (necessary to) run in Dolphin

- **Disadvantages**
  - Windows-only
  - Yet another application to download and install
  - Unofficial 'goodie'

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Motivation

- **GUI**

- **Light-weight**
  - Simple to install and use
  - Minimal network and CPU usage

- **Cross-platform**
  - Preferable with minimal effort

- **Extensible**
  - Allow users to enhance

- **Experiment with new technology**
  - Because it is fun!

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WebTools

- **Open web browser on http://vienna:8080/**

- **Explore tools**

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Design: Code in GemStone

- **Web Server**
  - One class, couple dozen methods
  - Not a generalized web server
- **Serves files in $GEMSTONE/examples/www**
- **Returns Json for recognized methods**
  - Search path for class and method to handle request
- **Each 'tool' represented on server by subclass of Tool**
  - Required class-side methods: `#'displayName'` and `#'description'`
  - Optional class-side methods: `#'fileName'` and `#'sortOrder'`
  - Required instance-side method: `#'json'`
  - Optional instance-side methods: any needed by client

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Design: Files in the File System

- **Place files in $GEMSTONE/examples/www**

- **Convention**
  - HTML in /
  - Simple JavaScript libraries in /scripts
  - Shared style in /css
  - Complex JavaScript frameworks in /

- **Each tool identifies an html file in `Tool class>>#'fileName'`**
  - By default, use class name , '.html'

- **HTML for tool is obtained using Ajax call and then added to the existing document**
  - Use embedded (or linked) JavaScript to add behavior
  - Use embedded (or linked) CSS to add style

- **Okay to have HTML, JavaScript, and CSS in one file?**

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Why not Seaside?

- **Preference for a light-weight solution**
  - Development is in GemStone/S 64 Bit 3.0
  - But should be easy to port to earlier versions, including older 32-bit product
  - Seaside requires later 64-bit version

- **Expect heavy use of JavaScript**
  - Somewhat rigid to have server send HTML data
  - Added `#'printJsonOn:'` to a handful of classes

- **Fair question!**
  - Desire to explore something else?
  - Show some objectivity in advocacy by occasionally choosing something else!

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Avi Bryant on Seaside

- **Smalltalk Solutions 2011**
  - March 2011 in Las Vegas, Nevada, USA

- **Web Architecture Changes**
  - Old: Get/Post returning fat HTML file
  - Seaside offers saving state on server
  - New: Async background requests for Json
  - Stateless interaction reduces value of saving state on server

- **What will Next Generation Web Framework Look Like?**
  - No components, no continuations, and no canvas
  - Json builder with callbacks

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Adding a Configuration Report Tool

- **Add ConfigurationReport class**
  - Copy and edit three class-side methods from VersionReport
  - Copy and edit one instance-side method

- **Add ConfigurationReport.html file**
  - Copy VersionReport.html
  - Edit JavaScript
  - Edit CSS
  - Edit HTML

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JavaScript Lessons for a Smalltalker

- **Editing in a text file vs. in an image**

- **Assignments & comparisons**
  - = vs. :=
  - == and ===

- **Closures**
  - $.each(list, function(index, each) { newList.add(this * 2); });
  - list do: [:each | newList add: each].

- **Scope**
  - Block (curly braces) does not provide a scope
  - Scope is limited by function

- **Fifty-nine (59) reserved words**
  - Cannot use for temporary variables and difficult to use for instance variables

- **Not tiny: Chrome has 4 processes at 20 to 150 MB each**

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Future

- **Current Tools**
  - Code Browser: view/set breakpoints, class hierarchy, more context menus
  - Statistics: zoom, multiple per chart, AI analysis
  - Debugger: step, edit & continue

- **New Tools**
  - Inspector
  - Monticello
  - Metacello

- **Or nothing!**
  - Not an officially supported product
  - Shipping in $GEMSTONE/examples/www
  - Feedback welcome

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Questions?

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