



The (Active) State of Tcl

12th Annual Tcl Conference (2005)

Jeff Hobbs

ActiveState Corporation

- **Introduction**
- **What has happened...**
- **Developments in the Tcl community**
- **The Active State**
- **Developments of the Tcl/Tk core**
- **Future directions**



- **ActiveState provides multi-language, cross-platform software & services**
 - Tcl, Perl, PHP, Python, Ruby
 - AIX, HP-UX, Linux, Mac OS X, Solaris, Windows, ...
- **Dynamic Tools for Dynamic Languages**
 - Make programming easier using dynamic languages
 - Software development tools (IDEs, Dev Kits)
 - Active distributions
 - Programmer Resources (ASPN)
- **ActiveState, a division of Sophos**
 - Flexible, extensible email management software at the gateway for enterprises
 - Spam and virus protection



History of Tcl

1. **Tcl created** as general-purpose command/scripting language by John Ousterhout

4. **Scriptics formed:**

- Evolve and extend Tcl platform
- Create development tools

7. **ActiveState** introduces Tcl support and services

2. **Open source distributions**

- from U.C. Berkeley:
- Easy GUIs under Unix
- Extensible applications

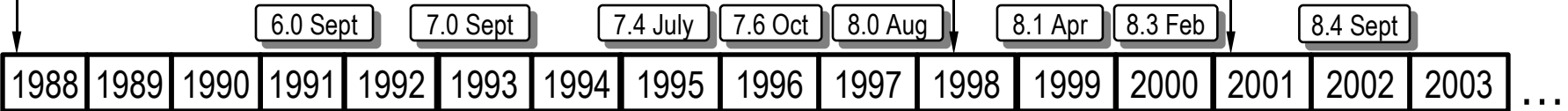
5. **Tcl Core Team** formed (August)

6. **Scriptics/Ajuba Acquired** by Interwoven (Nov)

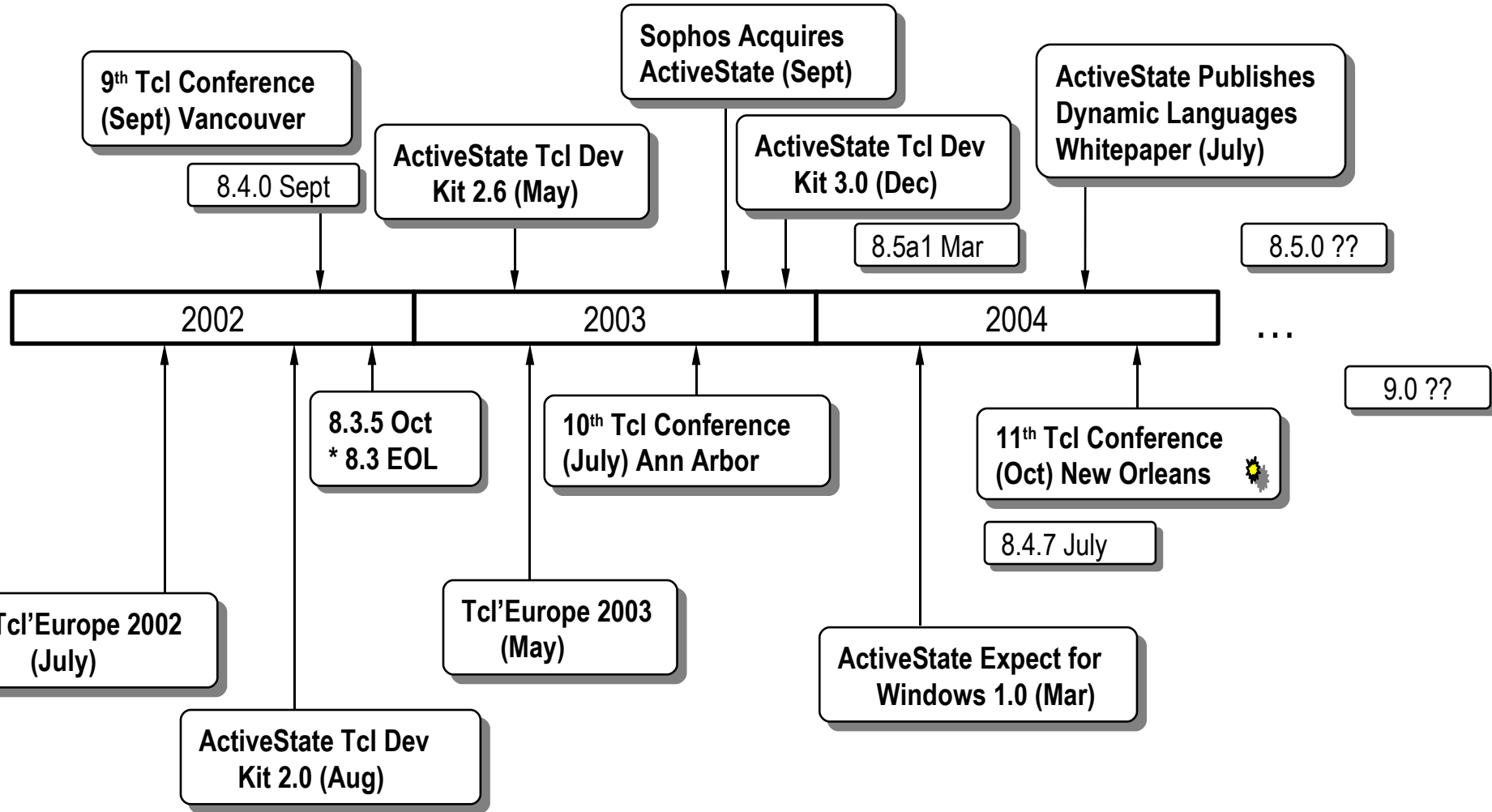
3. **Tcl enhanced at Sun Microsystems:**

- Windows, Macintosh ports
- Web/Internet support
- Java support

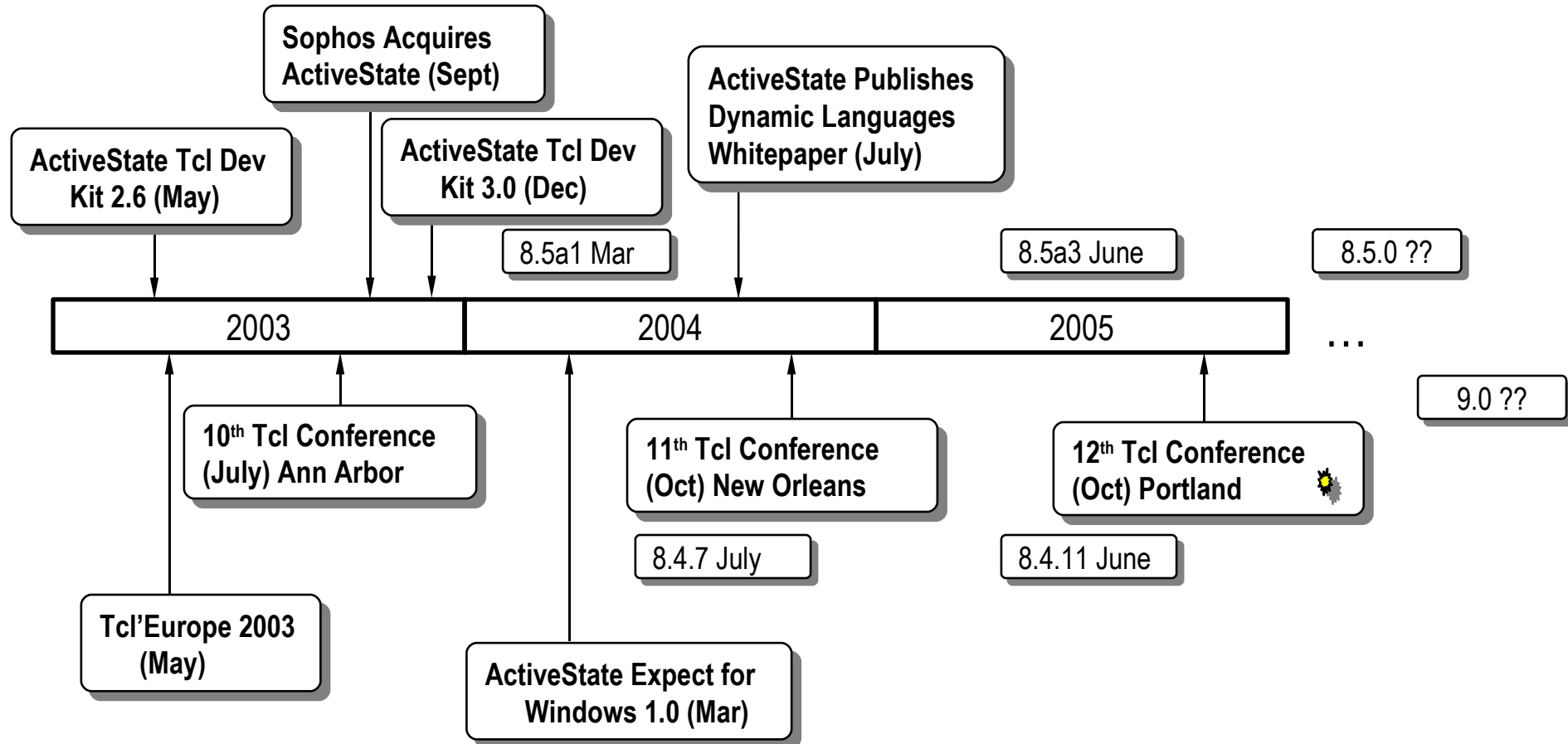
8. **ActiveState** acquired by Sophos (Sept)



Recent History of Tcl



Recent History of Tcl



- **October 11-15 in New Orleans**
 - New - partial streaming conference feed
- **Tcl/Tk 8.4.7 was the standard stable version**
 - Further stabilization
 - 8.4 now base standard in all distros
 - Over 2 years in development
 - Numerous enhancements and additions
- **Primary topics ...**
 - Food
 - Hand Grenades
 - Tk



- **Formed in August 2000 with 14 charter members**
 - Elected by community vote
 - Collectively manage development of the core
 - Now at 16 members

Mo DeJong	Andreas Kupries
Donal Fellows	Karl Lehenbauer
Mark Harrison	Joe English (2005)
D. Richard Hipp	Jan Nijtmans
Jeffrey Hobbs	John Ousterhout
George Howlett	Don Porter
Jim Ingham	Brent Welch
Kevin Kenny (2001)	Miguel Sofer (2004)



- **TIP page for Tcl**
<http://tip.tcl.tk/>
- **TIPs are intended to guide and document development on the core**
 - They focus on new or changing features, not bugs
 - Voted on by the TCT following community discussion using the TYANNOTT process
- **Currently 258 TIPs**
 - Divided into process, informational & project TIPs
- **TCT discussion is open on the public mailing list:**
tcl-core@lists.sourceforge.net



- **Tcl/Tk maintainers are separate from the TCT**
- **Maintainers oversee a specific area of the core, as defined in TIP #16 (Tcl) and TIP #23 (Tk)**
- **They assist, but are not solely responsible for, fixing bugs and adding docs in their area**
- **They are responsible for reviewing code and approving code changes to their area**
- **Open to anyone willing to learn the core**
- **New volunteers always welcome**



The Maintainers...

Tcl (TIP #24):

Daniel Steffen	Jim Ingham	Kevin Kenny	Jeff Hobbs
Miguel Sofer	Andreas Kupries	Rolf Schroedter	Vince Darley
Don Porter	Jan Nijtmans	Donal Fellows	Mo DeJong
Pat Thoyts	Joe Mistachkin	Pavel Goran	

Tk (TIP #30):

Allen Flick	Peter Spjuth	Todd Helfter	Jeff Hobbs
George Smith	Frédéric Bonnet	Kevin Griffin	Vince Darley
Chengye Mao	Jan Nijtmans	Donal Fellows	Mo DeJong
Joe English	Daniel Steffen	Ben Riefenstahl	Miguel Bañón

Always open for new recruits ...



- **Tcl Developer Xchange:** <http://www.tcl.tk/>
 - Official home page for Tcl and Tk
- **SourceForge for developers:** <http://tcl.sourceforge.net/>
 - Bug and patch database, mailing lists, CVS repositories, file server, web pages, ...
 - Managed by TCT and Tcl/Tk maintainers
- **Tcl'ers Wiki:** <http://wiki.tcl.tk/>
 - Community contributed and maintained
- **References to Scriptics should all be changed to** <http://www.tcl.tk/> **or** <http://tcl.sf.net/>
 - Still 1250 link:scriptics.com Google hits



- **ActiveState established 1997**
 - “Dynamic Tools for Dynamic Languages”
 - Used to be Perl specific
 - Well known ActivePerl distribution
 - Added Python and XML/XSLT expertise in 2000
- **Jeff Hobbs & Andreas Kupries hired in 2001**
 - Other knowledgeable Tcl'ers on staff
- **Wealth of scripting knowledge at ActiveState**
- **Acquired by Sophos in September 2003**
- **ActiveState remains dedicated to tools and languages**



- **ActiveState provides the Tcl community with...**
 - Improvements to open source Tcl core
 - Host of the Tcl Developer Xchange
 - Enterprise support infrastructure
 - Professional services for Tcl
 - High quality development tools
 - ActiveTcl
 - Batteries-Included free distribution
 - ActiveTcl Pro Studio (formerly ASPN Tcl)
 - Tcl Dev Kit, Komodo IDE, Expect for Windows, Safari
 - <http://www.ActiveState.com/Tcl/>



ActiveState 2003



ActiveState - Applied Open Source

File Edit View Favorites Tools Help

Google

Perl Python PHP Tcl XSLT

Active STATE

PRODUCTS | SOLUTIONS | STORE | SUPPORT | ASPN | CONTACT US | ABOUT ACTIVESTATE **ASPN**

Products

- ASPN Perl
- ASPN Tcl
- Komodo
- Perl Dev Kit
- PerlEx
- PerlMx
- Tcl Dev Kit
- Visual Perl
- Visual Python
- Visual XSLT

Solutions

- Enterprise Support
- OEM Redistribution
- Partner Programs
- Professional Services
- Training

Resources

- Betas
- Cookbooks
- Documentation
- Mailing Lists
- .NET
- Perl Modules
- Web Services

Introducing...  based on TclPro®

Tcl Dev Kit 2.0

Professional tools for Tcl developers

[more >>](#)

Sick of Spam? You need PerlMx.

Stop over 98% of spam with PerlMx's powerful content filtering technology.

[more >>](#)

Perl, Python, and XSLT for Visual Studio .NET

Visual Perl, Visual Python, and Visual XSLT combine the power of open languages with Visual Studio .NET's ease-of-use.

[more >>](#)

NEWS

September 16
[ActiveState Releases PerlMx 2.1](#)
Spam, Virus and Content Filtering for any MTA

August 20
[Tcl Dev Kit Now Available](#)
New Tcl tool suite based on TclPro

July 10
[Get Tcl'd in Vancouver](#)
Tcl'2002 Conference Sept. 16-20

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ActivePerl
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ActivePython
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ActiveTcl
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Internet

ActiveState Dynamic Tools for Dynamic Languages

Perl PHP Python Tcl XSLT


TOOLS LANGUAGES OEM LICENSING ENTERPRISE SUPPORT EDUCATION SUPPORT & RESOURCES COMPANY STORE **ASPN**

ActivePerl Pro Studio [more info](#)

Everything a Perl programmer needs in one package:
Komodo, Perl Dev Kit, Visual Perl, Safari Bookshelf
Linux, Solaris and Windows

Perl Dev Kit [more info](#)

Professional Perl tools to develop and deploy Perl applications
Linux, HP-UX, Solaris and Windows



Komodo Pro
Award winning IDE for:
Perl, PHP, Python, Tcl and XSLT
Linux, Solaris and Windows
[more info](#)

ActiveTcl Pro Studio [more info](#)

Everything a Tcl programmer needs in one convenient package:
Komodo Pro
Tcl Dev Kit
Expect for Windows
Safari Bookshelf
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Tcl Dev Kit [more info](#)

Professional Tcl tools to develop and deploy Tcl applications
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TOOLS
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[Komodo](#)
[PerlASPX](#)
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[Tcl Dev Kit](#) **NEW**
[Visual Perl](#)
[Visual Python](#) **NEW**
[Visual XSLT](#)
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[ActiveTcl](#) **NEW**
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ENTERPRISE SUPPORT
Reduce costs with guaranteed language support services
[ActivePerl Enterprise Edition](#)
[ActivePython Enterprise Edition](#)
[ActiveTcl Enterprise Edition](#)

OEM LICENSING
Include ActiveState technologies in your applications
[ActivePerl licensing](#)
[ActivePython licensing](#)
[ActiveTcl licensing](#)

IN THE NEWS
October 12
[Test Drive Komodo 3.5 Beta 2 for Mac OS X and Alpha 1 for Windows & Linux](#)
Now with full Ruby support!

September 29
[Podcast: Perl Features in Komodo](#)
PerlCast interview with senior Komodo developer Shane Caraveo.

August 23
[ActiveState Adds Expect for Windows to ActiveTcl](#)
The popular automation tool is now free for download.

Read [The ActiveState Blog](#)

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ActivePerl

Tcl Cookbook on ASPN

ASPN : Tcl Cookbook : Array Compare Function - Mozilla Firefox

File Edit View Go Bookmarks Tools Help <http://aspn.activestate.com/ASPN/Cookbook/Tcl/Recipe/176t>

ASPN ActiveState Programmer Network [sign in](#) | [join](#) **ActiveState**

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Title: Array Compare Function
Submitter: Unknown or non-registered user
Last Updated: 2003/02/05
Version no: 1.0
Category:

--Rate--

 Not Rated yet

Description:
 Comparing two arrays for differences.

Source: [Text Source](#)

```
#
# cmpArray { a1 a2 }
#
# returns <list of indexes where there are differences>
#

proc cmpArray { ary1 ary2 } {
    upvar $ary1 a1
    upvar $ary2 a2

    set ilit1 [array names a1]
    set ilit2 [array names a2]

    foreach idx $ilit1 {
        # Make sure ary2 HAS this element!
        if {![info exists a2($idx)]} {
            # We don't have this element so...
```

SEARCH

 this section
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2. [Socket based communicatio...](#)
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4. [Simplified mega-widget ...](#)
5. [LCD Number Display](#)
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http://www.tcl.tk/

Tcl Developer Xchange

www.tcl.tk

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Welcome to the Tcl Developer Xchange! October 07, 2004
Are you a new Tcl user? [Get Started!](#)

This is the main Tcl Developer Xchange site, www.tcl.tk.

Latest Releases

[Tcllib 1.7](#) Oct 06, 2004
[ActiveTcl 8.4.7.0](#) (8.4.7 core based) July 29, 2004
[Tcl/Tk 8.4.7](#) July 29, 2004
[Expect for Windows 1.0](#) (Expect 5.40 based) March 16, 2004
[Tcl Dev Kit 3.1](#) March 16, 2004
[Download Tcl/Tk 8.4.7](#)
[Tcl/Tk 8.3.5](#) Oct 18, 2002
[Thread 2.5](#)

[Info on other Tcl packages available via CVS](#)

Tcl Features

[OpenACS](#) The king of all oss web server content management systems, built on [AOLServer](#).
[ActiveSlide](#) is PowerPoint on steroids, and is scriptable with Tcl.
[Magic](#), Ousterhout's VLSI layout tool is still going strong.

Tcl News

[11th Annual Tcl/Tk Conference](#) will take place in New Orleans on Oct 11-15. Papers, Comaraderie, Tcl News and the French Quarter. What more do you need? The call for Papers is open. Suggestions for Tutorials are being accepted.

The [10th Annual Tcl/Tk Conference](#) took place July 28 - Aug 2, 2003 in Ann Arbor, Michigan.

[TCT interview](#) at [OSnews](#)

[Papers from the 9th \(2002\) Tcl/Tk Conference in Vancouver, BC](#)

[Other News and Events](#)

Tcler's Wiki

[The Tcler's Wiki](#) is a collaborative

Tcl Resources

Browse and contribute to our Tcl/Tk

[Web Resources](#)
[Documentation](#)
[Software](#)
[Community](#)

Enter the Coolest Tk Screenshot Contest

Win an ActiveTcl Pro Studio subscription!

[enter now](#)

Tcl Core Team

The [Tcl Core Team](#) is the group dedicated to maintaining and improving Tcl/Tk.

[TCT mailing list archives](#)





Welcome to the Tcl Developer Xchange!

*Join the many thousands of software developers who are already more productive with help from the **Tcl programming language** and the **Tk graphical user interface toolkit**.*

Tcl (Tool Command Language) is a very powerful but easy to learn dynamic programming language, suitable for a very wide range of uses, including web and desktop applications, networking, administration, testing and many more. Open source and business-friendly, Tcl is a mature yet evolving language that is truly cross platform, easily deployed and highly extensible.

Tk is a graphical user interface toolkit that takes developing desktop applications to a higher level than conventional approaches. Tk is the standard GUI not only for Tcl, but for many other dynamic languages, and can produce rich, native applications that run unchanged across Windows, Mac OS X, Linux and more.

► [Learn More about Tcl/Tk](#)

► [Get Tcl/Tk Now](#)

Latest Tcl News

The **12th Annual Tcl/Tk Conference** will be held Oct 24-28, 2005 in Portland, Oregon. Plan your attendance now!

Read the papers from the **5th European Tcl/Tk Meeting**, which took place this past May 27 - 28, 2005 in Cologne, Germany.

Latest Software Releases

Tcl/Tk 8.4.11 Jun 28, 2005
[Download Tcl/Tk 8.4.11](#)

ActiveTcl 8.4.11.2 Oct, 2005
ActiveTcl 8.5.0.0 Beta 4 Oct, 2005

Tcllib 1.8 Oct 14, 2005
Tcl Dev Kit 3.2 Apr 27, 2005
Tcl/Tk 8.5a3 Jun 4, 2005
Expect for Windows 1.1 Jun, 2005
[Thread 2.6](#)

Core Development

A wide variety of developers contribute to the open source Tcl and Tk core, which is hosted

Tcl/Tk Community

The vibrant Tcl user community provides a variety of support resources to help working

Save a Bundle on
ActiveTcl Pro Studio



- Thanks to Mark Roseman!
- <http://tcl.projectforum.com/website/Home>
- Check it out – give us your feedback
 - webmaster@tcl.tk
- **Tcl Developer Xchange still “primary” site**
 - Formal front-end, downloads, advocacy, history, ...
 - Open to a new name
- **Wiki is the primary community discussion forum**



- **Based on the 8.4.11 Tcl core**
 - Released October, 2005 – on your CD
- **Enhanced with many popular extensions**
 - XOTcl, [incr Tcl], TclX, expect, tcllib, tklib, Bwidgets, iwidgets, tktable, tkcon, tile, SQLite, ...
- **A standard batteries-included distribution for Tcl users**
 - Available for **AIX**, HP-UX, Linux, **Mac OS X**, **Solaris (x86 and sparc)**, Windows
 - Windows and OS X builds are fully threaded
 - Other platforms supported in Enterprise Edition
- **Code repository in the works**
 - Come to the BoF (Thursday, 20:00-21:00)



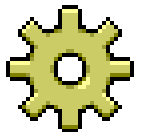
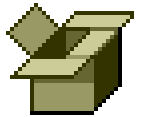
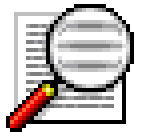
- **Based on the 8.5a4-prerelease Tcl core**
 - Released October, 2005 – on your CD
- **Distributed without extensions**
 - Can utilise the 8.4 extension set
- **Experimental – for bleeding edge users**
 - An enhancement to the stable 8.4 distribution
 - Available for AIX, HP-UX, Linux, Mac OS X, Solaris, Windows
 - All builds are fully threaded (including known pthread/fork issues)
- **May rely heavily on a code repository**



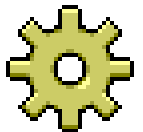
- Released under the Tcl license in August 2005
- One of many OSS project contributions by ActiveState
- Branch and reorganization of original Expect unix source base
 - Source integration into Expect SF project waiting on core developer time
 - Fully 8.4+ compatible and stubs enabled



- **Formerly ASPN Tcl**
- **Introduced December 2001**
- **Professional Tools for Tcl Developers**
 - Tcl Dev Kit 3.2 (based on TclPro)
 - Komodo Pro IDE 3.5
 - Safari Bookshelf online books

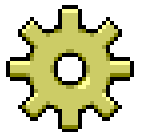


- Originally based on TclPro
- Revamped with new and updated tools
- 3.2 released April, 2005
 - *Debugger*: source-level debugger with GUI
 - *Checker*: find errors without running application
 - *TclApp (Wrapper)*: create self-contained applications for distribution
 - *Compiler*: protect your source code
 - Enhanced features and UIs for original tools
 - Version independent from ActiveTcl
 - ActiveTcl ships with basekits since 8.4.9

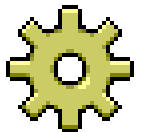
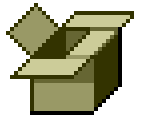


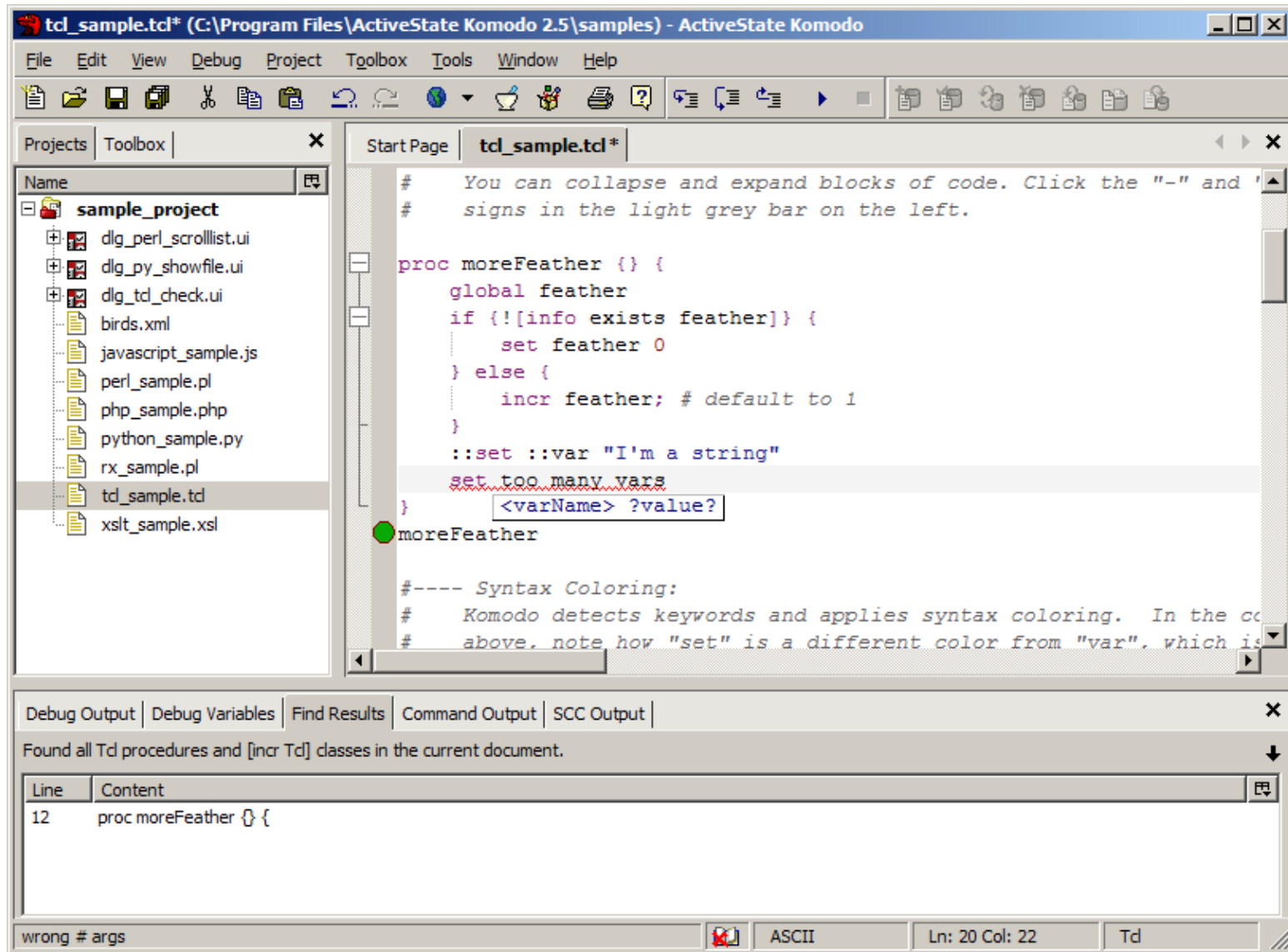
- **New and enhanced tools**

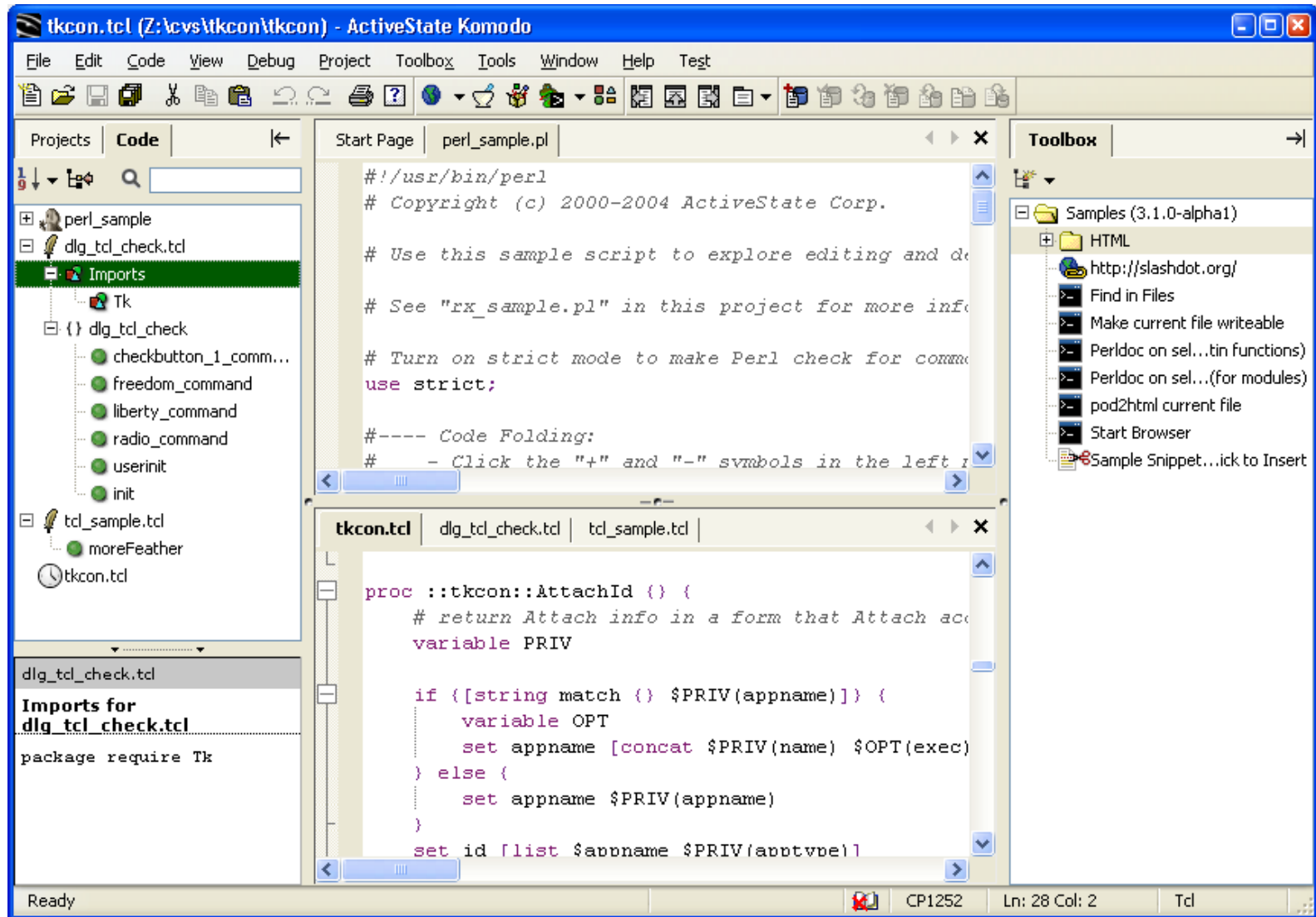
- *Coverage*: coverage and hot-spot analysis built into the Debugger
- *Tcl/Svc*: create and manage Tcl scripts as Windows NT services
- *TclApp*: rewrite of the wrapper based on VFS and starkit architecture
- *Inspector*: runtime Tcl application browser to complement the Debugger
- *X-ref*: examine dependencies in your code
- *VFS Explorer*: examine starkits/starpacks



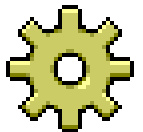
- **Professional IDE for scripting languages**
 - Professional IDE features
 - Tight integration with Tcl Dev Kit
 - Unique Tcl editing features
 - Integrated Tk GUI Builder
 - Cross-platform (Windows, Linux, Solaris & OS X)
 - Also supports Perl, Python, PHP, Ruby and more
- **3.5 now in beta**
 - Mac OS X port
 - Ruby support
 - UI updates, including AA fonts on X11
 - Performance improvements and bug fixes



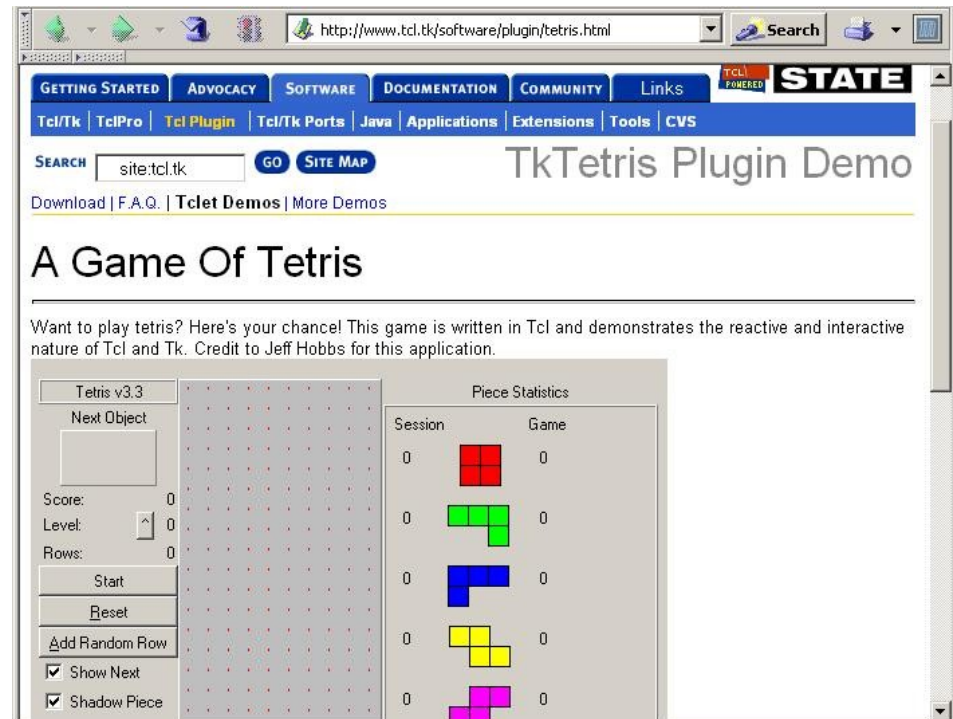




- **Continuing development of Tcl tools**
- **Tcl Dev Kit 3.X in development**
 - Native OS X port
 - Themed styling on all platforms
- **GUI Builder 4 on the drawing board**
 - Alternate geometry management
 - User defined widgets sets
 - Themed widget (Ttk) support
- **Primary focus: Tk**



- **Don't forget the plugin!**
 - Support for IE6 and latest NPAPI browsers
 - <http://tclplugin.sourceforge.net/>
- **Still in v3 alpha status**
 - Loosen security?
 - Installers!
- **Experimental XPIs**



- **Tcl Dev Kit 3.2**
 - Wrapper, Compiler, Inspector, TclSvc, Debugger with Checker, X-ref, VFS Explorer
- **Komodo 3.5**
 - Revamped UI
 - Improved performance
 - Enhanced Tcl debugging and checking
 - Code browsing
 - OS X port
- **Plugin 3.0**



- **The Tcl'ers Wiki has ~7600 content pages now:**
 - <http://wiki.tcl.tk/>
 - Wiki chat has constant traffic
 - HTTP-based with IRC bridge
- **The Tcl Developer Xchange official URL:**
 - <http://www.tcl.tk/>
 - <http://tcl.ActiveState.com/>
- **Tcl-URL! continues to provide weekly news:**
 - <http://www.ddj.com/topics/tclurl/>
 - Or subscribe: tcl-announce@listserv.activestate.com
- **Lots of extension updates**

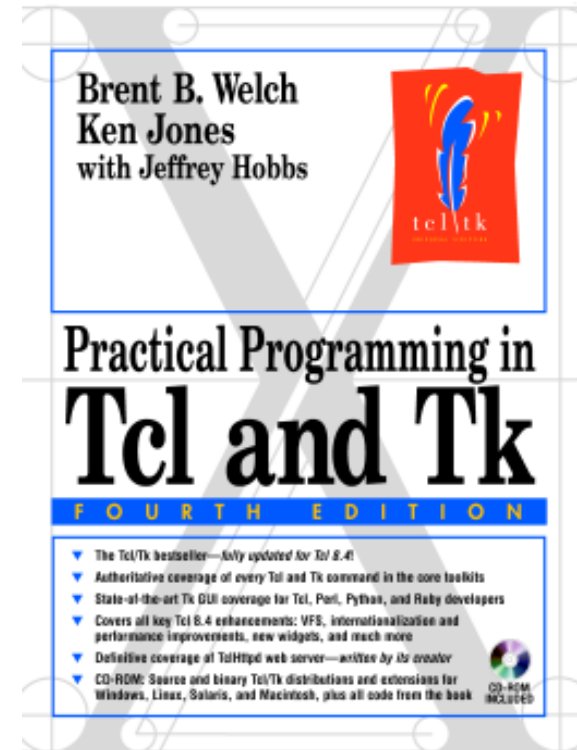


- **8.4.11 released June, 2005**
 - This is considered the stable version
 - Approximate quarterly releases
- **Several core feature enhancements**
 - Virtual File System (VFS)
 - lset, lsearch, trace command, ...
 - 64-bit integer and file-system support
 - Improved locale support in Tk
- **Significant work on performance**
 - 20+% performance improvement over 8.3
 - Near or better than 8.0, but now Unicode aware and thread-safe



Tcl/Tk 8.4 (cont.)

- New spinbox, labelframe, panedwindow widgets
- Most widgets have updated features
- Compound *buttons (simultaneous image and text)
- Asymmetric padding
- Windows/CE and OS X/Aqua ports
- New books from Flynt and Welch updated for 8.4



- **Currently in (very) active development**
 - 8.5a3 released June, 2005
- **Release schedule not finalized**
 - 8.5.0 targeted *roughly* for Spring, 2006
- **Numerous TIPs already targeting 8.5**
 - **81** TIPs accepted or final
 - **57** TIPs still targeting 8.5
 - TIP review to follow
- **Community input is important**



- New `dict` data structure
- New `expr` operators
 - `**`, `in`, `ni`, `min`, `max`
- Extended `lsort`, `lsearch`, added `lrepeat`, `lassign`
- Namespace improvements
- New `{expand}` `$aList` operator
 - ActiveTcl allows `{}``$aList` as well
- Completely revamped `clock` command
 - new parser, ensemble-based, improved `l10n`



- **Bignums!**
 - `expr 2 ** 1024`
 - 17976931348623159077293051907890247336179769789423065727343008115
77326758055009631327084773224075360211201138798713933576587897688
14416622492847430639474124377767893424865485276302219601246094119
45308295208500576883815068234246288147391311054082723716335051068
4586298239947245938479716304835356329624224137216
 - Every single bit hand-verified by Kevin Kenny
 - Work continuing on performance of bignums
- **New `chan` command to consolidate channel operations**
 - Channel transforms and reflection coming (VFS)
- **Tcl Modules (`.tm`) package handling**
 - Intended to improve packaging long term
- **Enhanced `return -code`**
 - Make pure Tcl control structures more powerful



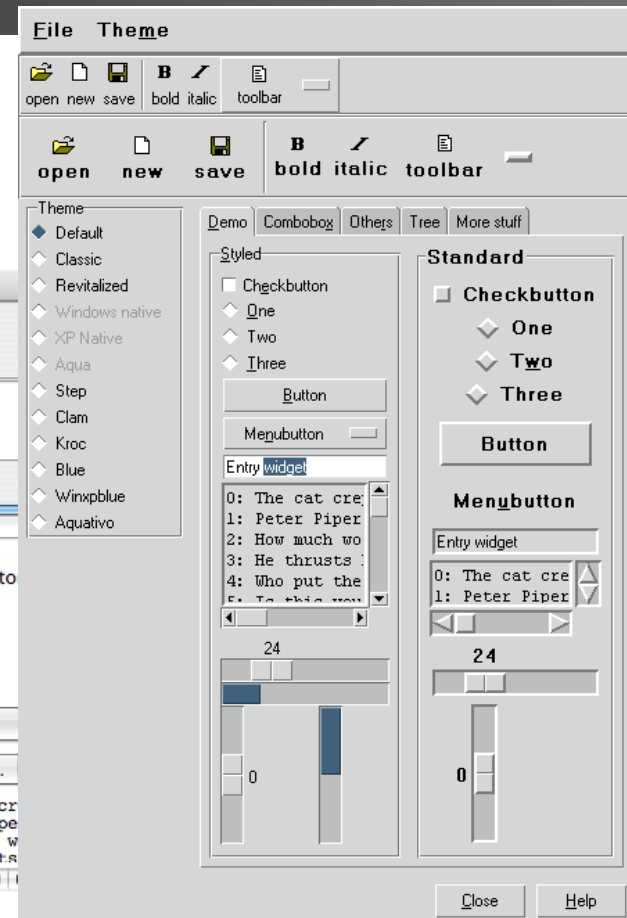
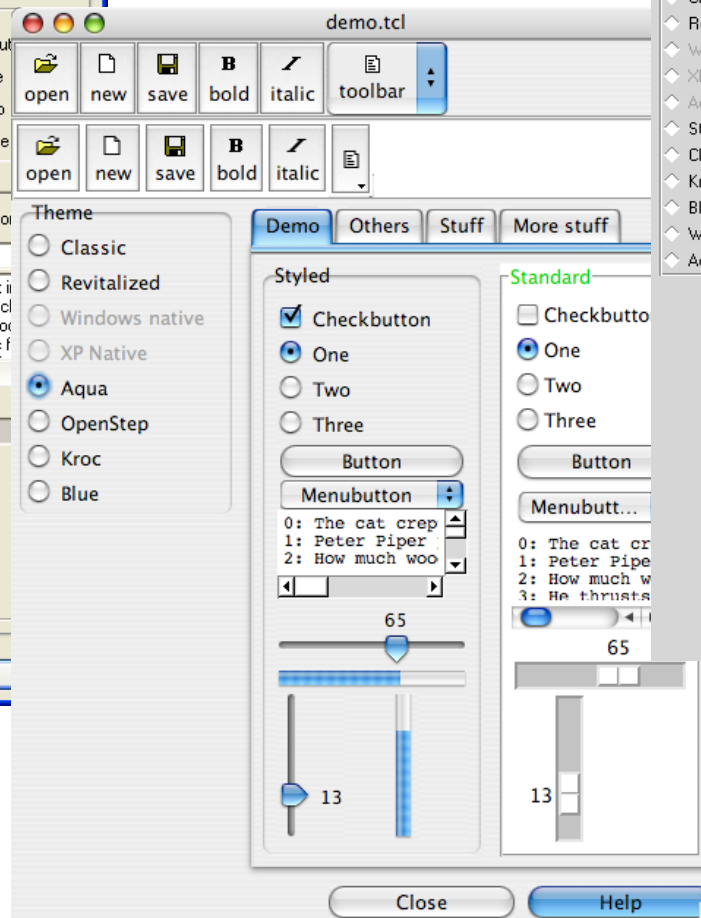
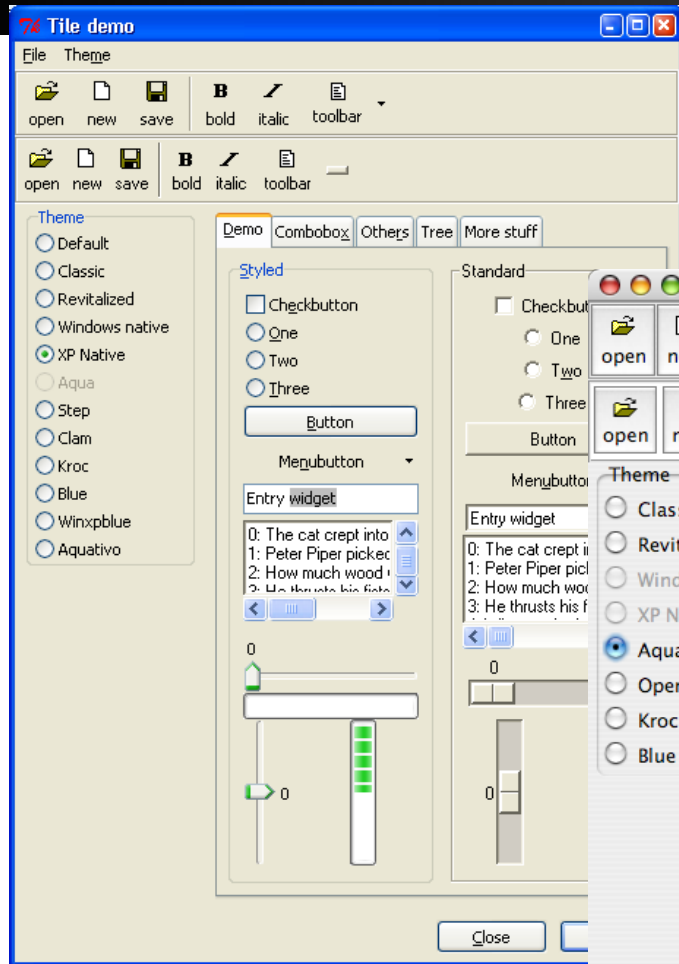
- ***Themed Widgets!***
 - Based on tile 0.7 work by Joe English
 - Finalizing integration this week
 - Complements of most classic Tk widgets
 - Some new widgets
 - notebook, combobox, progressbar, separator
- **Enhancements to existing widgets and dialogs**
 - Peering and smooth-scrolling text widgets
 - Tri-state checkbutton
 - panedwindow `-stretch` and `-hide` options
- **Xft support in X11 (anti-alias fonts)**



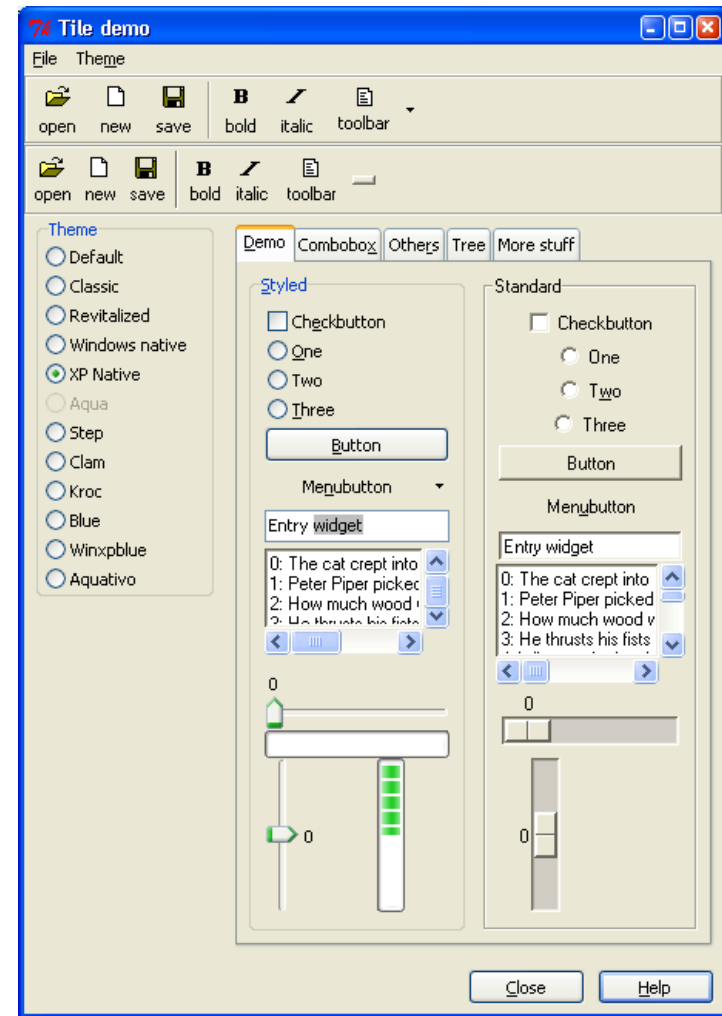
- **Enhanced wm commands**
 - More toplevel attribute control
 - Photo images for icons
- **Cubic Bezier curves on the canvas**
- **Improved grid geometry management**
 - row/columnconfigure by widget name
 - Overall grid anchoring
- **Virtual event user data (%d)**



Tk 8.5: The Future is Now!

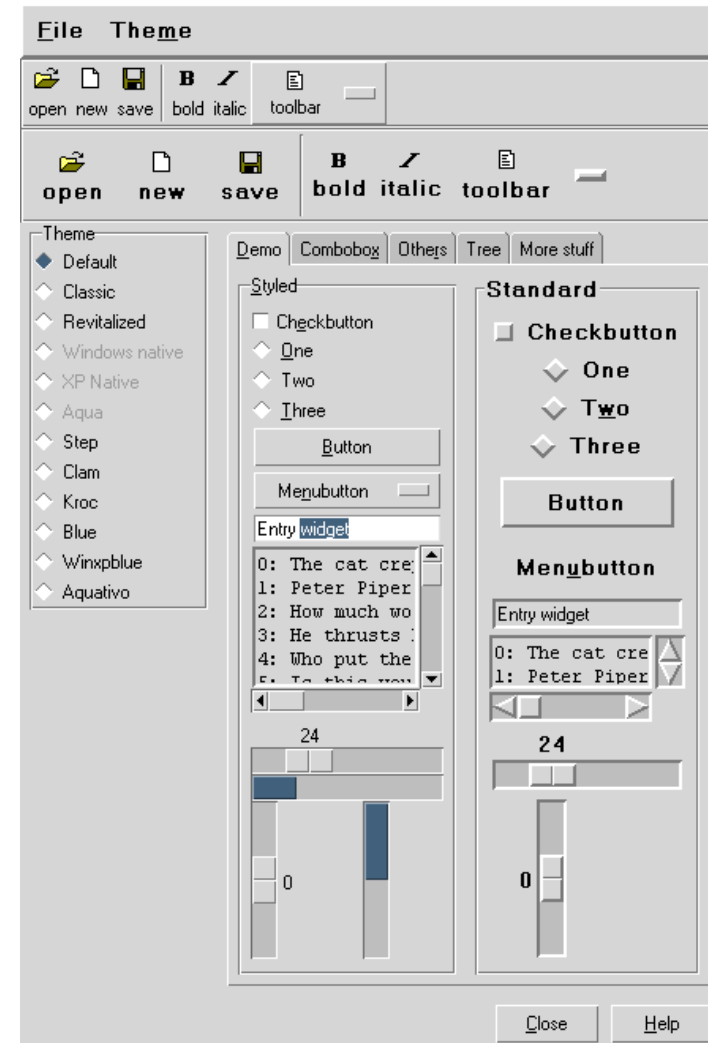


- **Revamp standard Tk look and feel**
 - New look for widgets on X
 - Improved bindings behavior
- **Themed Tk widgets (Ttk)**
 - Non-default alternative in 8.5
 - Default in 9.0
 - Includes new widgets
 - Classic Tk in `tk::*`
 - `tk::button ...`
 - Ttk in `ttk::*`
 - `ttk::button ...`
 - Tk and Ttk are complementary, not mutually exclusive



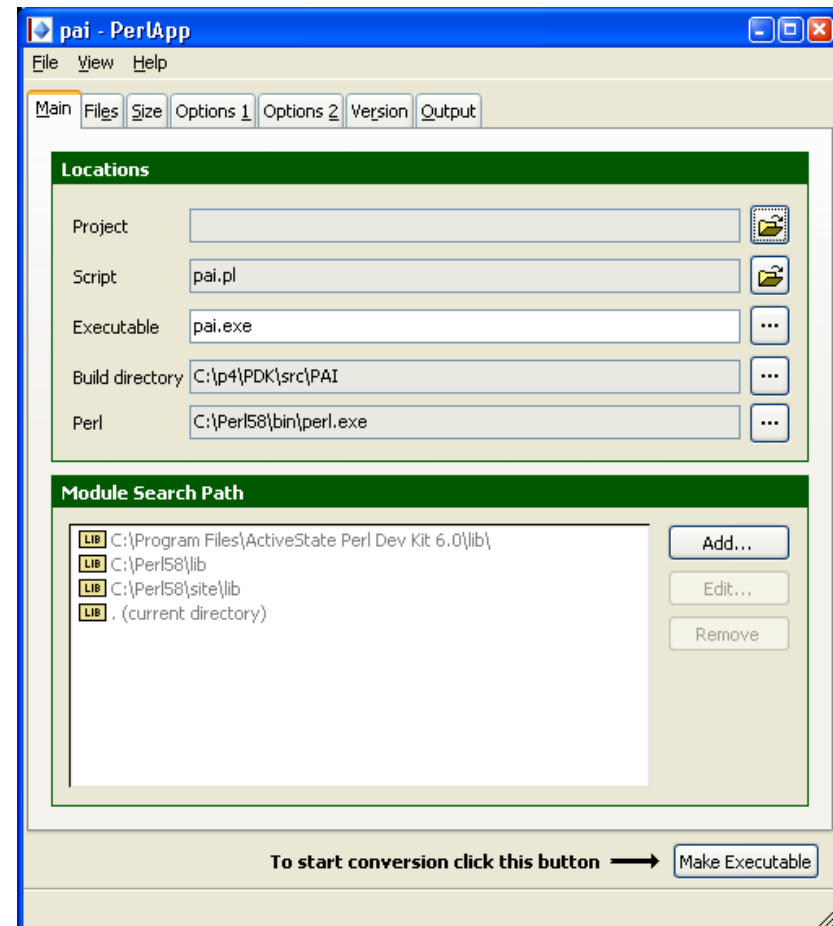
Tk 8.5: Roadmap

- Integrated drag and drop
- Improve accessibility support
- Dockable windows (TIP#125)
- Tooltips
- Demos
- Documentation
- **GOOBE!**
 - Great Out-of-Box Experience



Tk Revitalization at Work

- **ActiveState Perl Dev Kit 6.0**
- **First commercial use of tile**
- **First use of Perl Tcl::Tk**
- **First use of DLL tclkit**
- **Pushing the envelope for Tk into revitalization**



- **Still in the wishlist stage**
 - Rationalize C APIs
 - Possible restructuring of Tcl level commands and global data
 - More OO / encapsulation features in the core (ensembles)
 - Remove octal support (possibly in 8.5?)
 - Tcl_Obj improvements (hydra vs. stork)
- **Tcl 9 experience must not be like Perl 6**
 - Once started, we must dedicate effort to Tcl 9
 - We cannot rush it though ...



- **Versions in use**
 - Pre-8.0
 - 8.0
 - 8.2/8.3
 - 8.4
 - 8.5 (alpha)
- **Develop / Deploy:**
 - Windows
 - Macintosh OS X
 - Linux
 - Solaris
 - HP-UX
 - Other ...
- **Response**
- **Develop / Deploy:**



Ideas in the Pipeline

- Refactored bytecode engine
- Core .zip support (234)
- Core OO (257)
- Signal control (90)
- Process control / bgexec (240)
- Smaller, modular core
- Enhance core debug info (86)
- Try/Catch (89)
- IPv6 sockets (162)
- Lambda procs
- ...
- Drag & Drop
- Printing support
- Rotate canvas items (164)
- Megawidget framework (180)
- More core widgets
 - tree, table, opengl, ...
- Shaped windows
- Fine-tuned font control
- Core tooltip support
- Enhanced photo manipulation
- ...



- **The core is guided by community input**
 - Anyone can write a TIP
 - Anyone can be a core maintainer
 - 8.5 now in development
 - Looking for assistance at all levels
 - 9.0 on the drawing board
- **What issues are most pressing?**
- **ActiveState remains committed to Tcl**
 - Working with the Tcl community
 - Build more Tcl related products
 - Focus on Tk revitalization



Q & A

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