



Tcl Plugin: Take 3

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- **History of the Tcl plugin**
- **Functionality**
- **Writing a Tclet**
- **Deployment**
- **Development Status**
- **Future Plans**



- **Version 1 at 1996 Tcl Workshop**
- **Origin at SunLabs**
 - First Tcl only plugin by Jeff Hobbs
 - Tcl/Tk plugin work primarily by Jacob Levy and Laurent Demailly (v2)
- **Safe Tcl & Tk implemented**
- **Limited user exposed security policy mechanism**
- **Embedded Tk support for X11, Win32 and Mac (classic)**
- **Numerous supported platforms**



- **Version 2 around 1998**
- **Based on Tcl/Tk 8.0**
- **Fully open source**
- **Updated security policies, added “standard” configurations**
- **Improved `javascript` communication**
- **Allowed external `wish` process**
 - Enabled other extensions to be used
- **Improved debugging support**
- **Worked up to Netscape v4 NPAPI browsers (MSIE < 5.5)**



- **First availability December, 2002**
- **Available in the Tcl Dev Kit in January, 2003**
 - Moved out of Tcl Dev Kit in 2005
- **Moved to Tcl/Tk 8.4 base**
 - Major rewrite of the codebase
 - Made use of latest Tcl features
 - Simplified initialization
 - Works for 8.5 as well
- **Works with modern NPAPI and ActiveX (MSIE) browsers**
 - Some known issues



- **NPAPI (Netscape Plugin API)**
 - ActiveX host control for MSIE
 - Tcl interpreter hosted in process of browser
 - Each tclet an interpreter (or optionally an external process)
- **Security model based on safe interpreters**
 - Padded cell
 - “Infinite shades of grey” flexibility, all in Tcl
 - Policies control common security features
 - network, persist, stream, unsafe, url, ...
 - Configurations define standard security levels
 - home, inside, outside, trusted, ...



- Two layer tag needed for ActiveX and NPAPI recognition
- Global `embed_args` array contains plugin parameters
 - Pages can pass arguments via `embed_args`

```
pack [button .b -text "Hello World!"]
```

```
<OBJECT ID="PluginHostCtrl"  
  CLASSID="CLSID:14E78123-A693-4F27-B6EE-DDDE18F93D3A"  
  WIDTH="400" HEIGHT="22">  
  <PARAM name="type" value="application/x-tcl"/>  
  <PARAM name="pluginspage" value="http://www.tcl.tk/software/plugin/">  
  <PARAM name="src" value="http://www.tcl.tk/software/plugin/welcome.tcl"/>  
  <EMBED TYPE="application/x-tcl"  
    PLUGINSOURCE="http://plugin.tcl.tk/"  
    FRAMEBORDER="NO" WIDTH="400" HEIGHT="22"  
    SRC="http://www.tcl.tk/software/plugin/welcome.tcl" >  
  </EMBED>  
</OBJECT>
```



- **Be aware of the safe Tcl/Tk limitations:**
 - <http://www.tcl.tk/man/tcl8.4/TkCmd/loadTk.htm>
 - <http://www.tcl.tk/man/tcl8.4/TclCmd/safe.htm>
- **Work to the size you are given**
 - `embed_args(width) && embed_args(height)`
- **Make liberal use of `catch`**
 - Returning errors will be reflected by master interpreter
- **Take advantage of debugging output**



- **TCL_PLUGIN_DLL_LOGFILE = <file>**
 - All C-based log messages
 - Use when plugin seems completely non-functional
 - Full plugin lifecycle logging
- **TCL_PLUGIN_LOGFILE = <file>**
 - All Tcl-based log messages
 - Use for debugging problem tclets
 - Full tclet lifecycle logging
- **TCL_PLUGIN_CONSOLE = 0|1**
 - Enables `tkcon` as an in-process debugging console



- **Basic requirements: nptcl DLL/so and Tcl DLL/so**
 - (lib)nptclX.Y[info sharedlibextension] in browser plugin dir
 - Tcl DLL can be a stardll or standard system DLL
 - Loaded Tcl must have `plugin 3.0` package
- **Custom installation**
 - Special binary installs components into appropriate locations
 - MSIE requires ActiveX host control registration
- **XPI installation**
 - Mozilla-based browsers only
 - One-click install
 - Specialized zip file with `install.js` “install script”



- **All code is open source**
 - <http://tclplugin.sourceforge.net/>
 - <mailto:tclplugin-core@lists.sourceforge.net>
- **XPI packages available for Windows, Linux and Solaris**
 - <http://www.tcl.tk/software/plugin/>
 - Outdated v2 plugin documentation, but still mostly relevant
 - Makes use of ActiveTcl basekits and basekit dlls
- **No Mac OS X port (yet)**
 - State unknown for Tk embedding on OS X



Tclet Examples

- <http://www.impactweather.com/tclplugin/RA.html>
 - Courtesy of Devin Eyre
 - Tracking of Hurricane Katrina
 - Display forecast track and winds for hurricanes
 - All images used in the plugin are made using only Tcl/Tk
- <http://www.tcl.tk/software/plugin/applets.html>
 - Standard demo page
- <http://www.tcl.tk/software/plugin/tetris.html>



- **Out-of-process Tclets only on X11**
 - Change of Xt event handling in Mozilla
 - Core Tk changes likely required
- **Initial focus issues on X11**
- **Can't do in-process tclets on X11**
- **Limited scope of available packages**
- **Policies and configurations are still “static”**
- **XPI delivery is only for Moz/Firefox**
 - Expects install into global browser Plugins folder
- **“First-install” problem not solved for MSIE**



- **Finish Mac OS X port**
- **Address focus and Tk embedding issues**
 - Add support for X11 XEmbed protocol?
 - <http://standards.freedesktop.org/xembed-spec/latest/>
 - <http://www.mozilla.org/projects/plugins/xembed-plugin-extension.html>
- **Testing, testing, testing ...**
- **Rewrite security policy management**
 - More on-the-fly flexibility
 - Allow tclet-level security requests
- **Update website information**
- **Any volunteers?**

