

web content in GNOME

future visions

using WebKit to enhance the desktop



Are we there yet?

- ☞ Applications moving towards hybrid desktop/web technologies
- ☞ A lighter and more integrated web toolchain for GTK+ enables
 - **Incremental enhancements** to existing applications
 - **Entirely new approaches** to application design
- ☞ GNOME 2.24 shaping up as a leader in web/desktop integration
- ☞ **WebKit gives us the tools to go forward**

JavaScriptCore
portable C API

WebCore
content engine



WebKit
public API



applications
C, C++, C#, C++, Vala, Python, Perl



...

WebKit language bindings

🐾 Vala bindings

- Maintained by Jürg Billeter

🐾 Python bindings

- Created by the OLPC team
- Maintained by Jan Alonzo

🐾 C#/CLR bindings

- Also features a JS bridge

🐾 Perl bindings

- Available from CPAN

🐾 gtkmm

Language binding features

1
WebKit widget
and related classes

2
DOM binding

3
JavaScript runtime
bridge

Web standards and features

- ☞ Full-featured SVG implementation
- ☞ HTML5 parser/renderer
- ☞ HTML5 canvas
- ☞ Fast JS/AJAX
- ☞ Strong CSS standards support
- ☞ CSS extensions for implicit animations and transformations
- ☞ Offline Web application support

Introducing WebView

🐾 Write a browser in a dozen lines

```
import gtk
import webkit

view = webkit.WebView()

sw = gtk.ScrolledWindow()
sw.add(view)

win = gtk.Window(gtk.WINDOW_TOPLEVEL)
win.add(sw)
win.show_all()

view.open("http://planet.gnome.org/")
gtk.main()
```

WebView modes: Scrollable

☞ Packed in a **GtkScrolledWindow**

- Provides a full-featured browser engine for document display and editing



WebView modes: Packed

- ☞ Packed directly into the UI
 - Acts as an **integral part of the surrounding GTK+ UI**
 - Place Web content in amongst GTK+ widgets
- ☞ Web content / GTK+ size request interop
(landing soon)
- ☞ Develop and design in parallel
 - Let programmers work on the core
 - Let designers produce UI elements using web skills

When to use a WebView

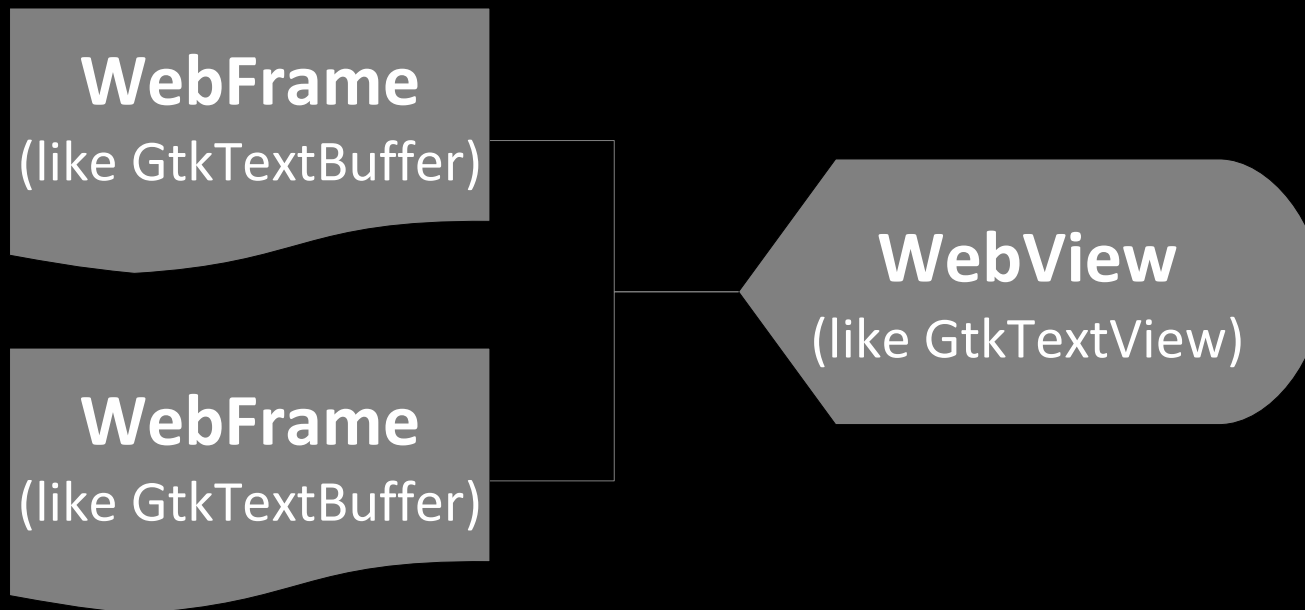
- ☞ When do you use straight GTK+?
- ☞ When does Web content enrich the experience?
- ☞ Great power; great responsibility
- ☞ **WebView** isn't the right tool for every job
 - Continue to use **GtkTextView** for light viewing and editing
 - Use **GtkTreeView** and **GtkIconView** unless you really need a custom look

“The idea was that anybody who used the web would have a space where they could write and so **the first browser was an editor**, it was a **writer as well as a reader.**”

Tim Berners-Lee

A writer as well as a reader

- Enable WebKit's powerful content editor with one line of code
- WebView is designed from the ground up to work as an **enhanced GtkTextView**



Edit with style

- `webkit_web_view_set_editable (WEB_VIEW (view), TRUE);`
- Push and retrieve HTML/SVG content with simple accessors or use the upcoming **GIO** streaming interface
- Perform formatting operations
 - With the basic editing command API
 - Or by manipulating the upcoming **GObject DOM** directly
- Work on your application's killer features and leave formatting to `WebView`

Using WebFonts

- ☞ SVG/TTF custom fonts are a W3C recommendation
- ☞ Apply a distinctive look **without compromising usability**
- ☞ Continue to internationalise with gettext and .po files
- ☞ Text selection and editing works as usual
- ☞ **No installation required**

```
@font-face {  
  font-family: 'Bitstream Vera Sans';  
  src: url('http://www.freedesktop.org/~alp/tmp/Vera.ttf') format(truetype);  
}
```

```
h1 {  
  font-family: 'Bitstream Vera Sans', sans-serif;  
}
```

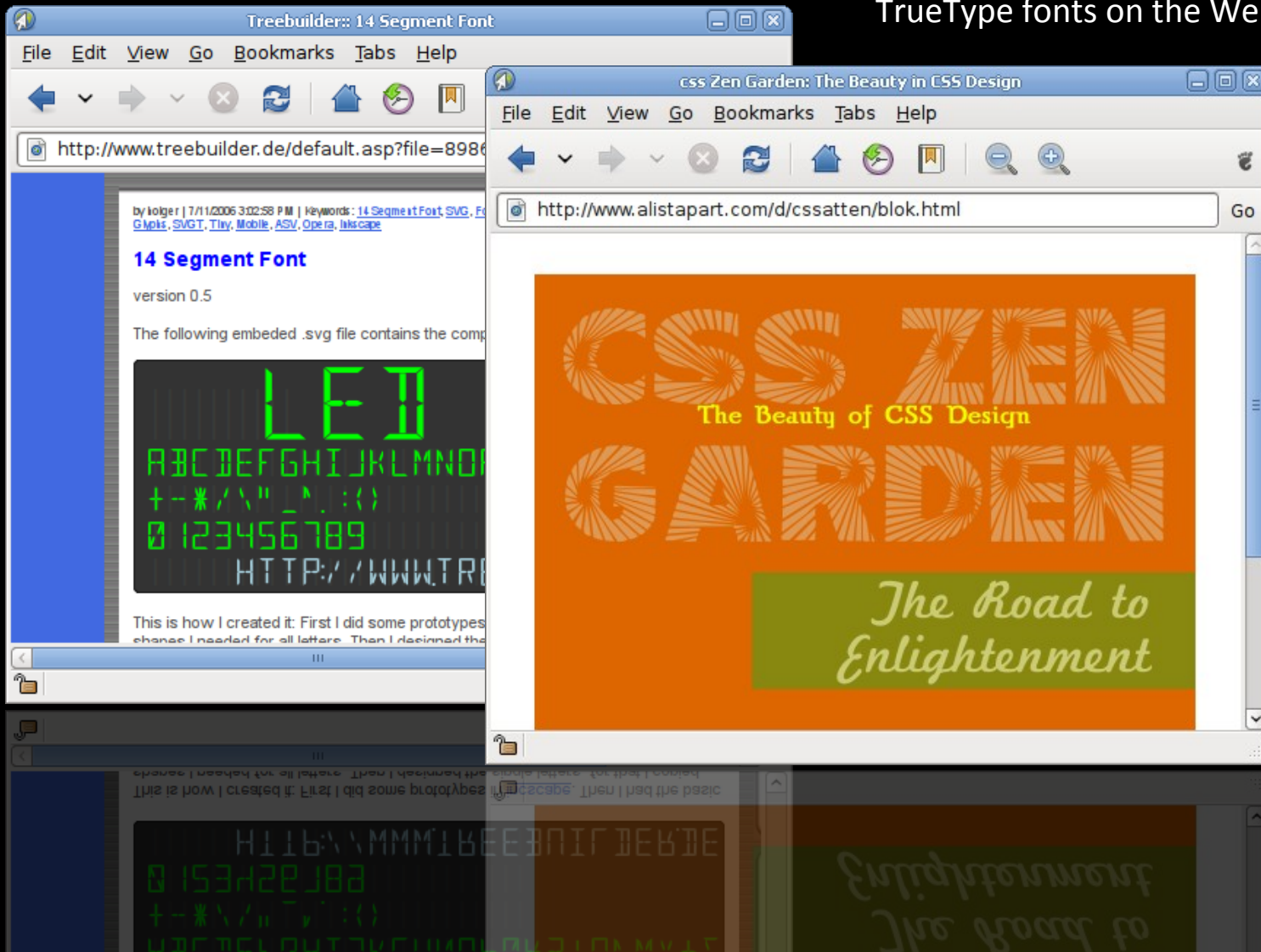
Custom fonts in action

SVG fonts

Easy to design with tools like Inkscape

WebFonts

TrueType fonts on the Web



GObject DOM access

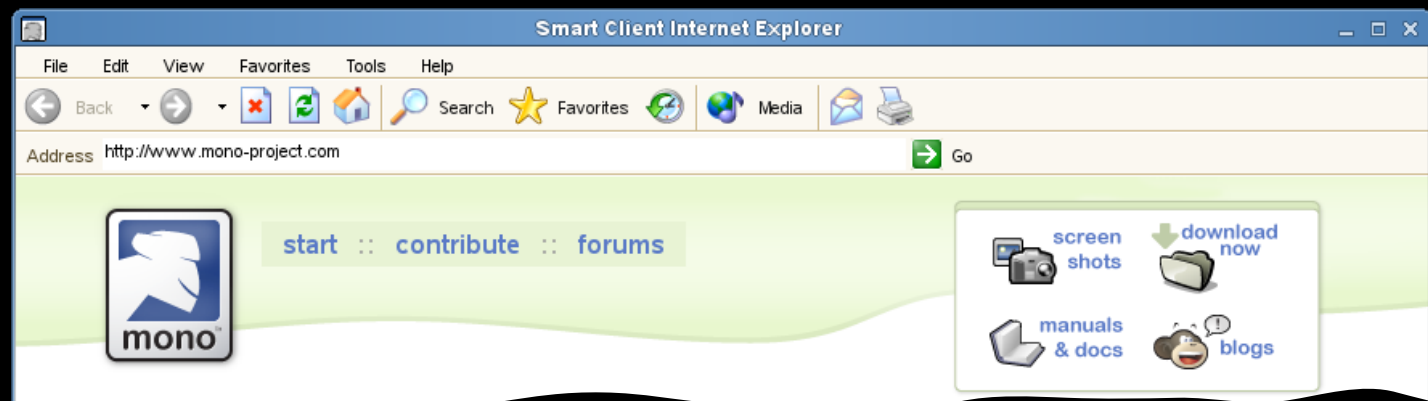
🐾 Upcoming GObject DOM features

- Complete access to the DOM (all levels)
- Stable API
- Access to underlying platform objects (eg. GStreamer pipeline, Cairo context)
- Available in bindings
- Develop complete web applications in your favourite language, not just JavaScript

COM DOM access on Linux

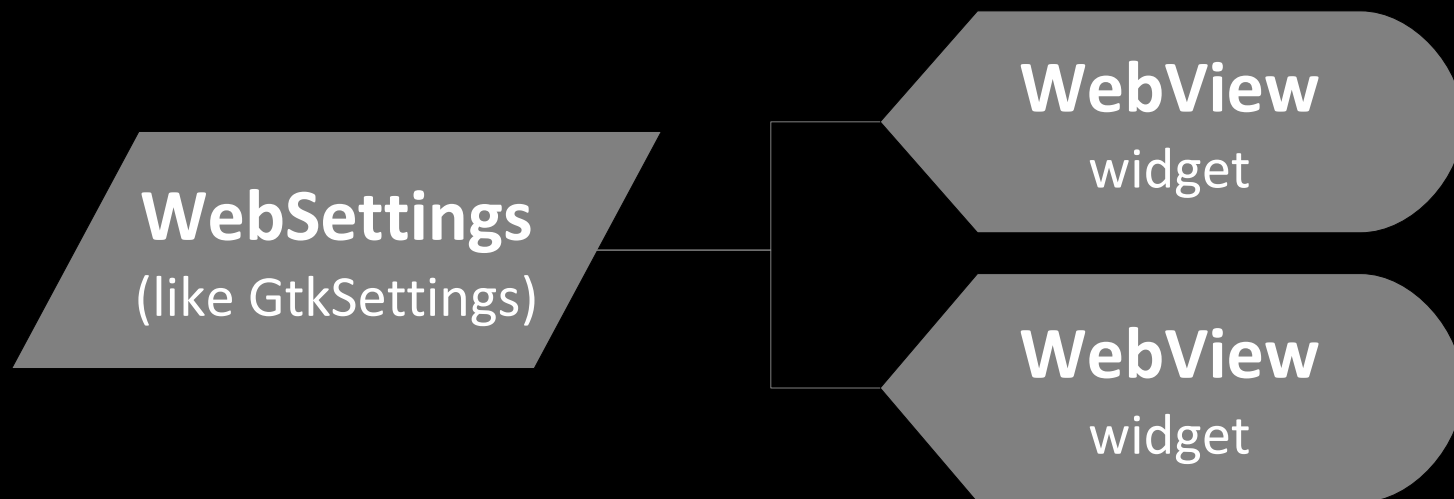
- DOM access with COM and WebKit/GTK+ on any platform
- Useful stepping-stone for applications migrating from XPCOM/Gecko to WebKit
- GObject DOM is preferred to COM for new applications

Mono 2.0
.NET-
compatible
WebControl
using WebKit



API: Apply settings with ease

- Use **WebSettings** to group settings for multiple WebViews
- Keep **granular settings** per WebView or enforce global settings when necessary



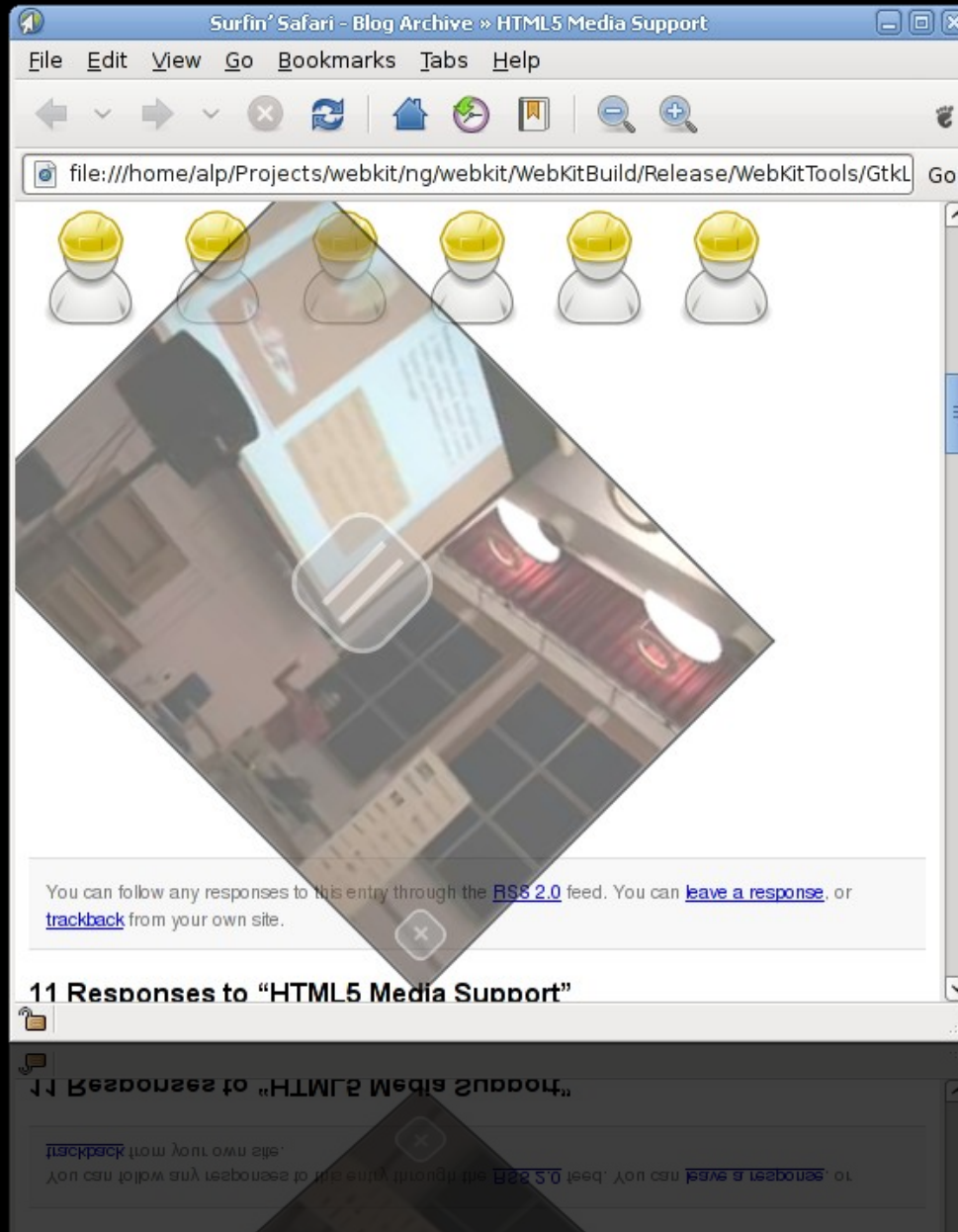
API: Going asynchronous

- ☞ Use decision objects to delegate actions requiring user input or network queries
 - Authentication challenges
 - Navigation requests
 - Script alert and print dialogs
- ☞ A dream come true for browser developers
- ☞ Allows programmers to **eliminate modality**
- ☞ Lets users get on with what they're doing

HTML5 video with GStreamer

Open Source

Web video without
proprietary plugins



Versatile

Create stylish DVD/DVB
players, video
conferencing tools

Perfectly native widget styling

WebKit Bugzilla

[Find a Specific Bug](#)

Advanced Search

[Give me some help](#) (reloads page.)

Summary: contains all of the words/strings

Product: **Component:** **Version:**

WebKit	Accessibility	312.x
	CSS	412
	Drosera	412.x
	Evangelism	416.x
	Forms	417.x

A Comment: contains the string

The URL: contains all of the words/strings

Keywords: contains all of the keywords

Status:	Resolution:	Severity:	Priority:	Hardware:	OS:
UNCONFIRMED	FIXED	Blocker	P1	All	All
NEW	INVALID	Critical	P2	Macintosh	Windows 2000
ASSIGNED	WONTFIX	Major	P3	Macintosh PowerPC	Windows XP
REOPENED	LATER	Normal	P4	Macintosh Intel	Windows Server 2003
RESOLVED	REMOVED	Minor	P5	PC	Windows Vista
VERIFIED	DUPLICATE	Trivial		S60 Hardware	Mac OS X 10.3
CLOSED	WORKSFORME	Enhancement		S60 Emulator	Mac OS X 10.4

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UNCONFIRMED	FIXED	Blocker	P1	All	All

Status: **Resolution:** **Severity:** **Priority:** **Hardware:** **OS:**

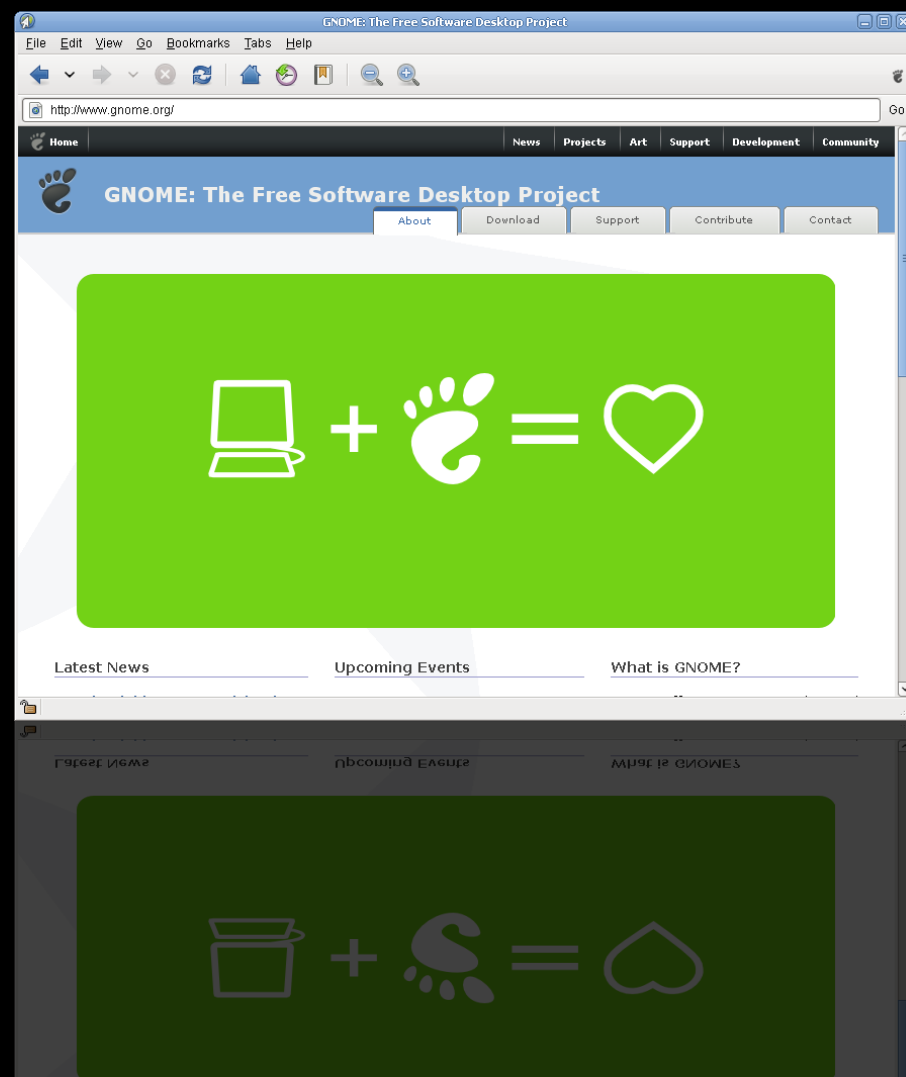
WebKit for browser engineers

- Engine core written in a sensible dialect of C++
- Approachable to C hackers
- Follows a coherent coding style
- Project-wide refactoring and reorganisation is encouraged
- Internal APIs are “informally” abstracted and change frequently while the public API is strictly stable (similar policy to the Linux kernel)

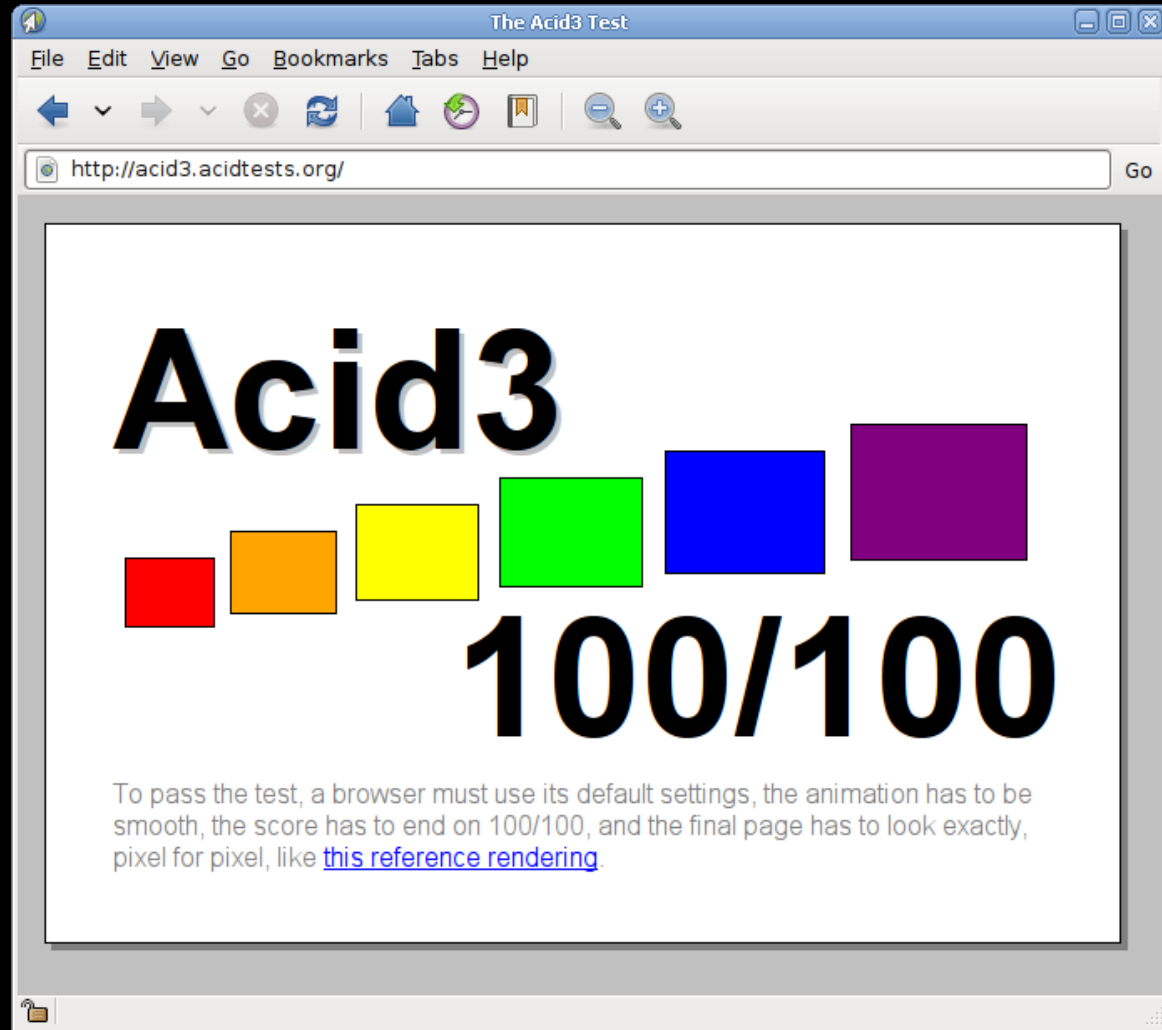
Browse with Epiphany



- 🐾 Epiphany, the GNOME web browser
- 🐾 Originally a GTK+ UI around the Gecko rendering engine
- 🐾 Experimental WebKit support added by Xan Lopez at GUADEC 2007
- 🐾 Boosts performance, standards support and ease of development
- 🐾 Currently stabilising for 2.24



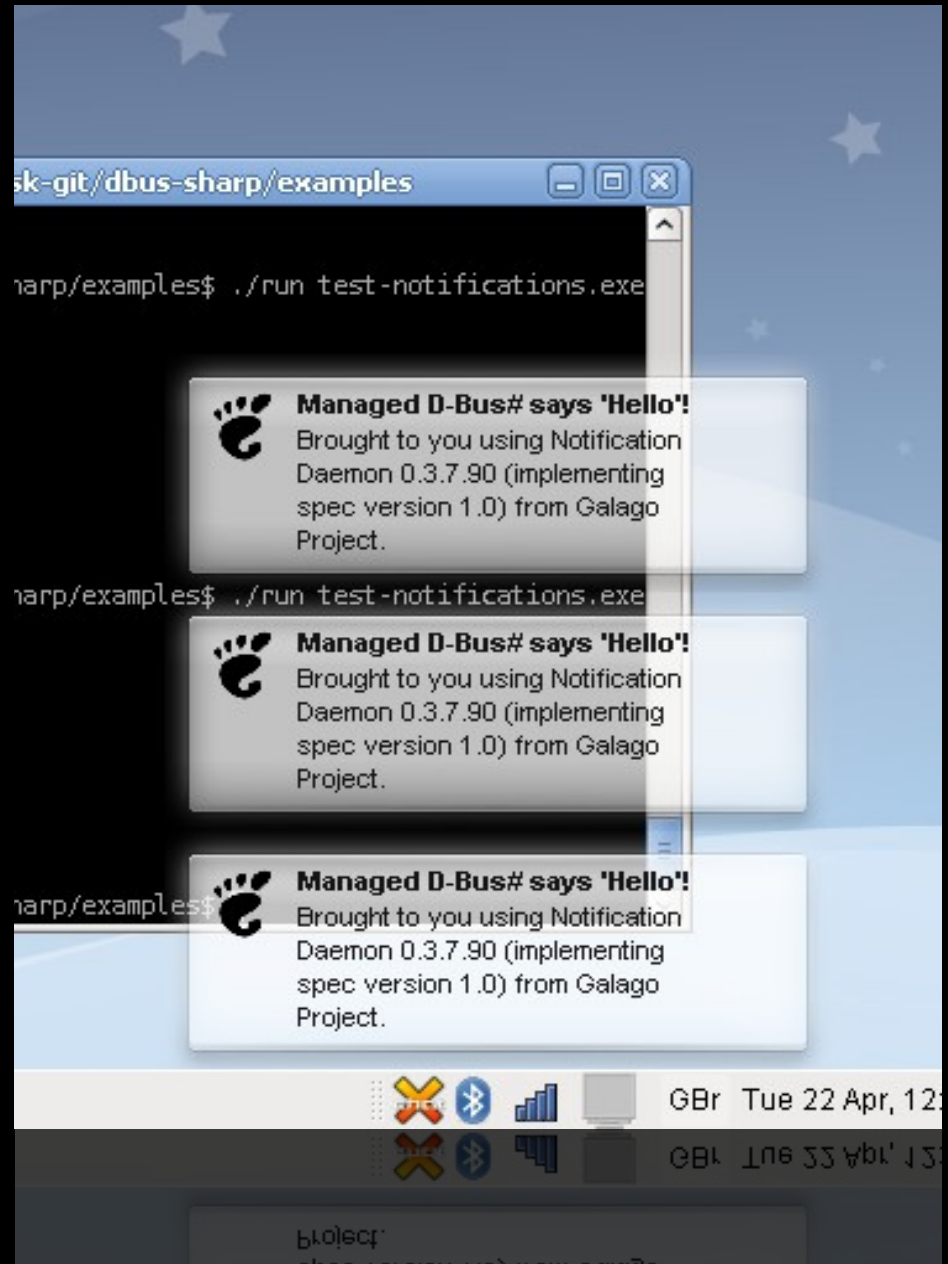
A boost in web standards



Epiphany using WebKit/GTK+
First Open Source browser to pass ACID3 on Linux

Theming notifications the easy way

- 🐾 notification-daemon
- 🐾 Writing themes was hard work (C, Cairo) for artists
- 🐾 WebKit-based themes now possible using HTML and CSS
- 🐾 Accessible by default
- 🐾 Compatible w. Gnome



Styling IM/chat clients

- ☞ Use GTK+ to provide the core UI and shell
- ☞ Use **WebView** to emphasise content
- ☞ Allow users to customise their applications
- ☞ **Create a community** around your application

Pidgin IM client

WebKit support by Sean Egan



Hosting widgets

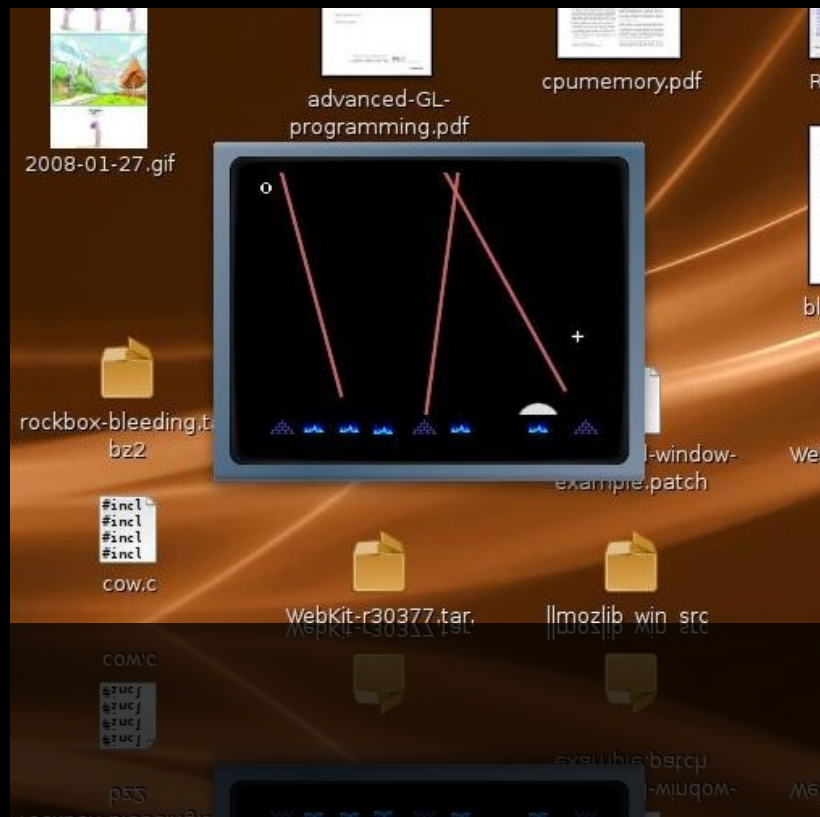
```
GtkWidget *web_view = webkit_web_view_new ();  
webkit_web_view_set_transparent (  
    WEBKIT_WEB_VIEW (web_view), TRUE);
```

HTML5 canvas
for drawing

Shell access
for local operations

D-Bus IPC
coming soon

HTML5 local storage
for data persistence



Invent a new look and feel

Composited desktop
SVG circles

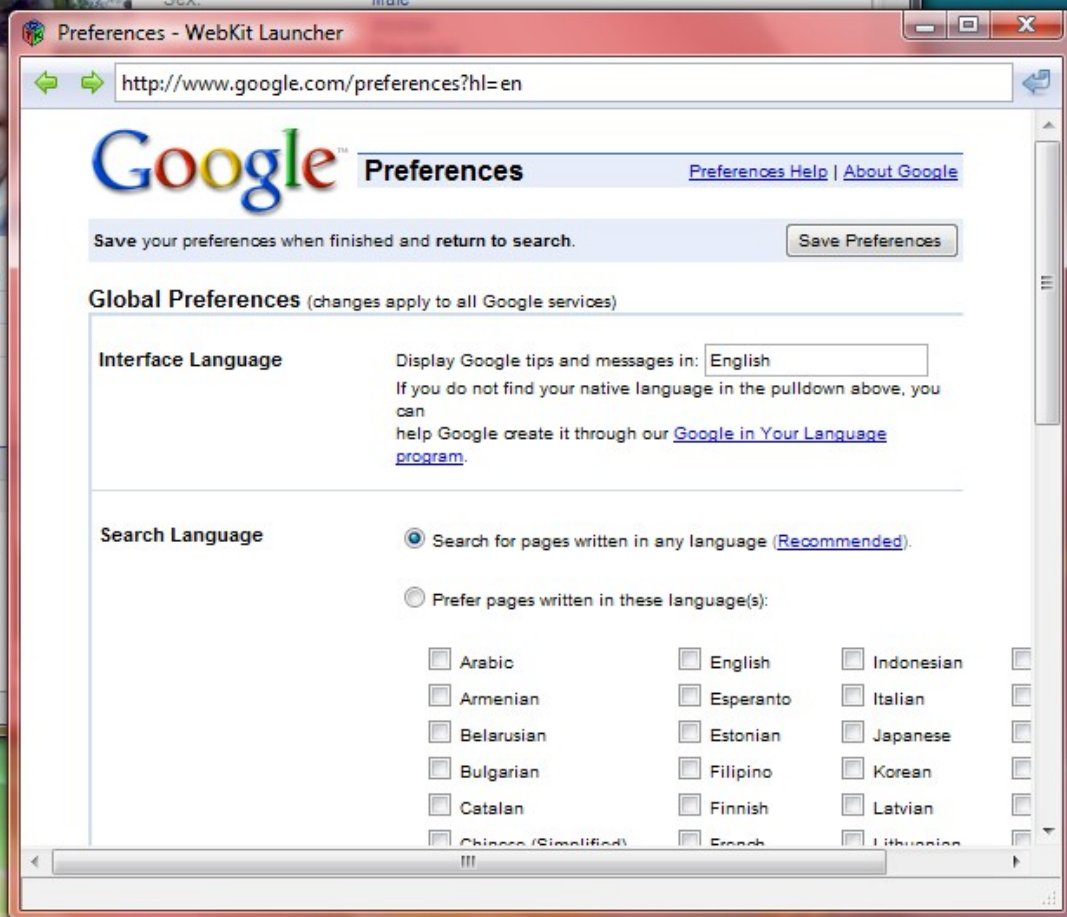
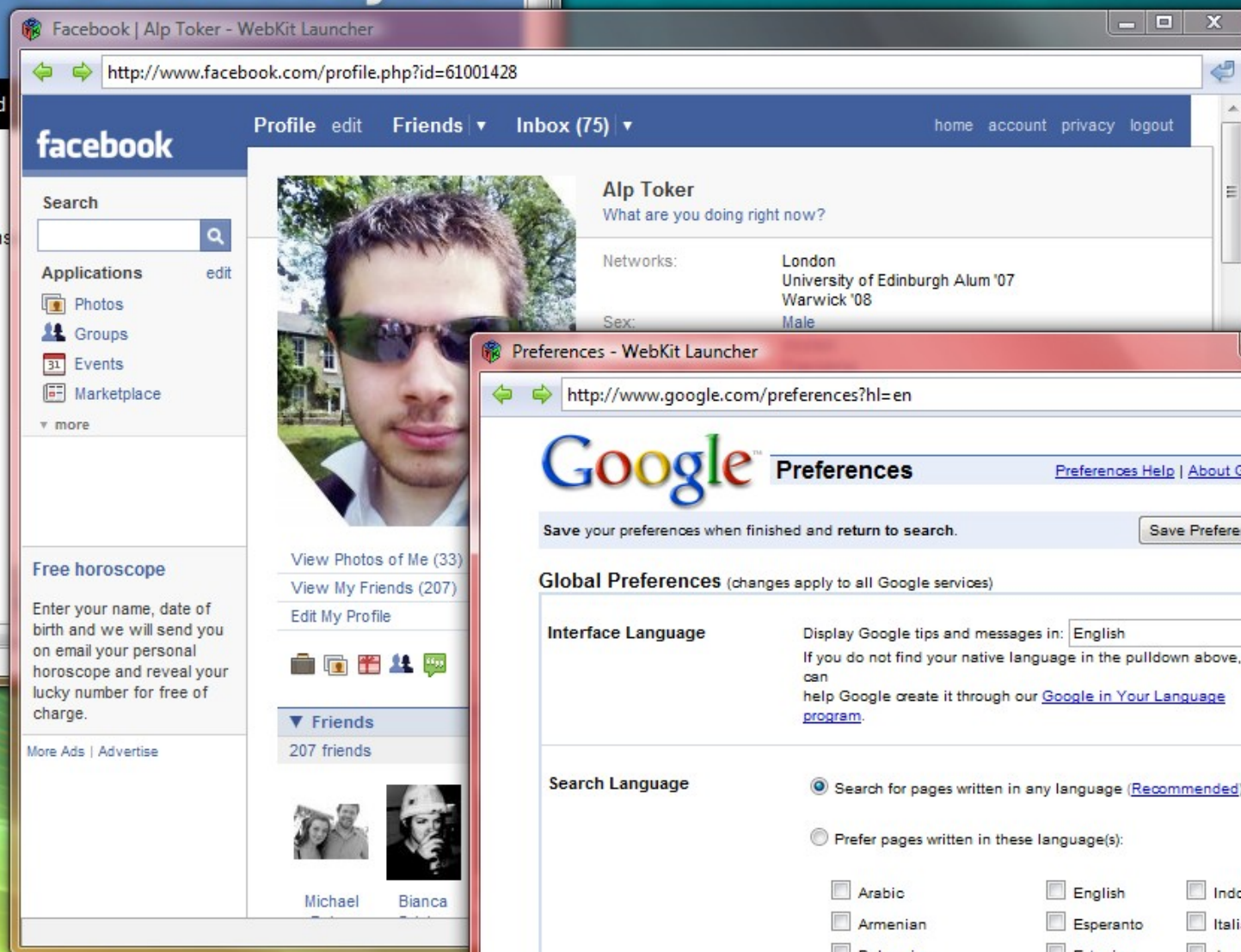


Experiment
with fun new UI
concepts

Cross-platform

☞ Supported platforms

- GNU/Linux (X11, DirectFB)
 - All major distributions (**Debian** and **Gentoo** packaging teams in particular have helped a lot upstream)
- FreeBSD, DragonFlyBSD (X11)
- OS X (Native, X11, DirectFB)
 - Imendio and Nuanti working to complete the native GTK+ backend
- Windows (Native, X11)
 - Maintained by Nuanti, final patches hitting SVN now



JavaScriptCore C API

🐾 Integrates with the GObject API

- Stable
- Fully documented

🐾 Portable

- Installed with WebKit/GTK+
- Ships with OS X

🐾 Standalone use

- Provides a light scripting engine for any application

🐾 Fastest mainstream JavaScript implementation, SquirrelFish

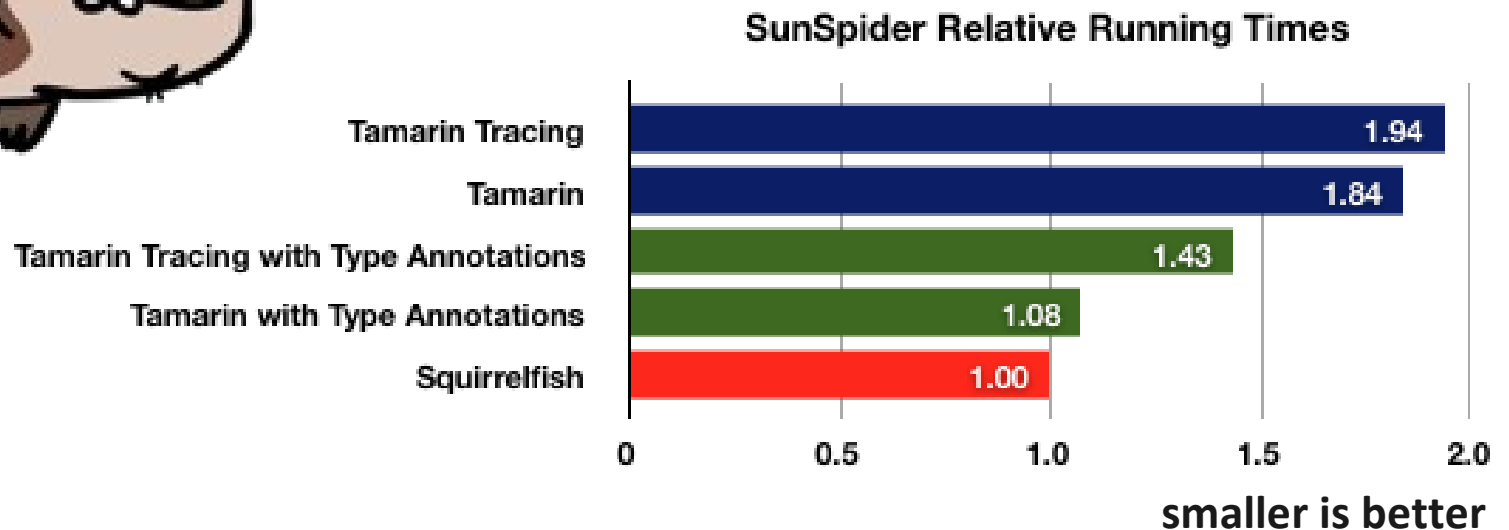
🐾 Use it to

- Export functions to JavaScript
- Invoke JavaScript
- Build dynamic language bindings

Portable application code		
OS X	Linux	Windows
WebKit	n/a	
WebKit/GTK+		

SquirrelFish VM

A new register-based, direct-threaded, high-level bytecode engine, with a sliding register window calling convention. Lazily generates bytecodes from a syntax tree, using a simple one-pass compiler with built-in copy propagation.



Independent benchmark result, June 3 2008

<http://www.satine.org/archives/2008/06/03/squirrelfish-is-faster-than-tamarin/>



Evolution

- Evolution, the GNOME email/collaboration client
- Partial WebKit support beginning 2.24 to add enhanced viewing capabilities
- Advanced WebKit-based editing capabilities targeted for 2.26

LIVE DEMO

WebKit and Yelp



🐾 Yelp, GNOME documentation browser

🐾 Maintainer Don Scorgie says

- “**Blazing fast.** Startup goes from 2.8s to 1.9s.”
- “API rocks. It's **like a real gtk+ API.** I can understand what's going on in it.”

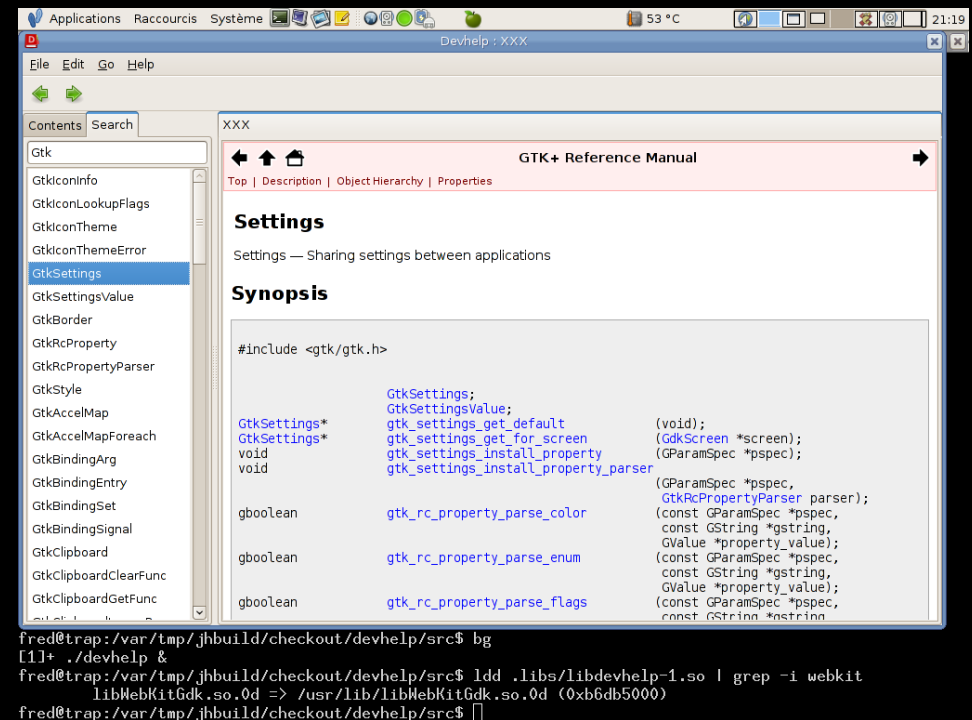
🐾 WebKit support now in SVN, stabilisation in progress



WebKit and Devhelp

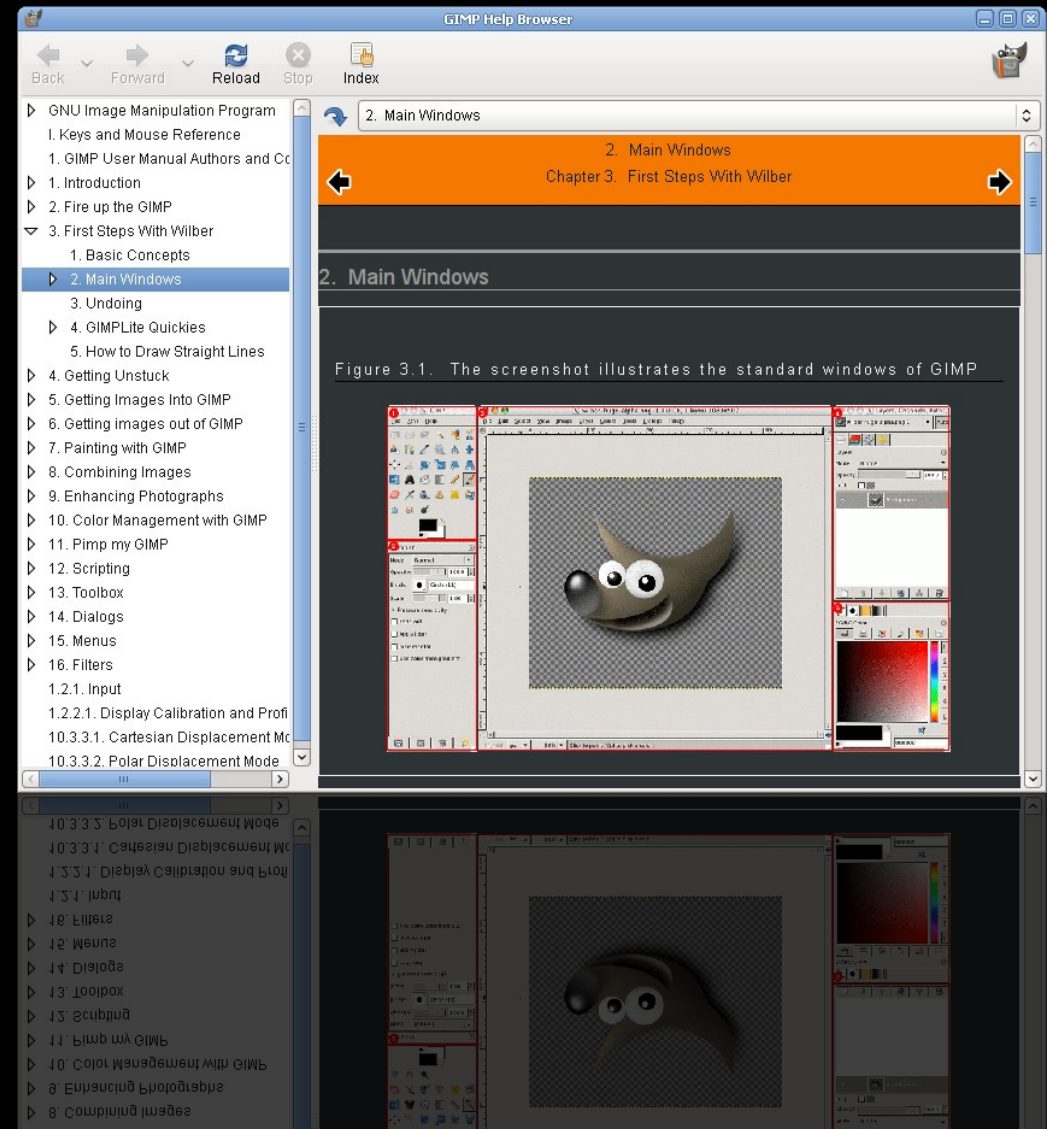


- 🐾 A browser for Gtk+/GNOME API documentation
- 🐾 Switch from GtkMozEmbed to WebKit reduced code size by ~1000 LoC
- 🐾 Faster startup
- 🐾 Lower memory footprint
- 🐾 New features
 - Printing support
 - Inline search highlighting



WebKit in GIMP

- 🐾 Web content used for inline help
- 🐾 Adds advanced HTML rendering capabilities
- 🐾 Adds network support for online capabilities
- 🐾 Documentation as an integral part of the application



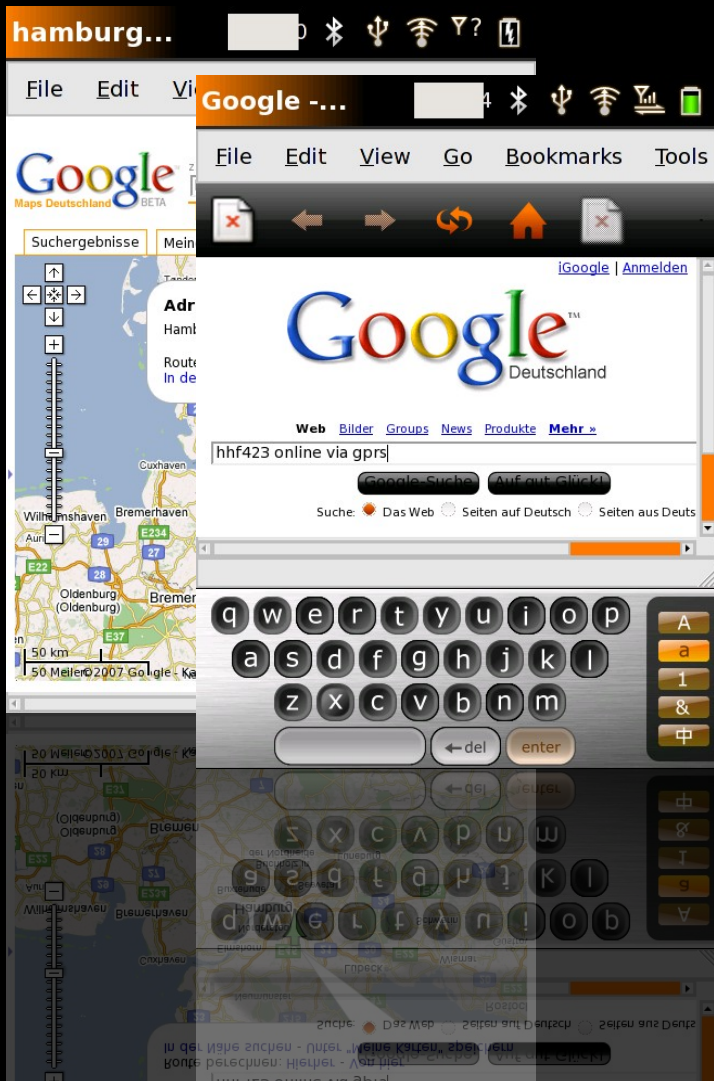
Location-aware web apps

- External module to expose location metadata to Web apps
- Implements the **locationaware.org** spec
- Spec not final
- Uses Gypsy GPS library (alternative location sources possible)
 - <http://folks.o-hand.com/iain/gypsy/>

```
var geolocator = navigator.getGeolocator();
geolocator.request(function(location) {
    alert(location.latitude+', '+location.longitude);
});
```

OpenMoko

- 🐾 OpenMoko WebKit applications
 - Browser
 - Feed reader
- 🐾 Maintained by Holger Freyther (also a WebKit developer)
- 🐾 OpenMoko supports the WebKit project by providing a build server for continuous integration



OLPC Sugar activity

Fast
Starts up to 5
seconds faster

renders fast

BrowseKit Activity

Share with: Private

Log in / create account

Activity

Browse

1

→

✕

article

discussion

view source

history

The OLPC Wiki

(Redirected from [Home](#))

This page is maintained by the OLPC team. Please use the **discussion tab** for your comments.

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Welcome to the OLPC Wiki, home to collaborative notes about the One Laptop per Child project and related projects and communities. We currently have 3,760 pages and roughly two-thousand registered contributors; please join us and share your ideas. There is also a non-wiki [laptop.org](#).


[Submit new content](#)


What's new

- Intel joins OLPC as its newest member.
- B4 machines are being distributed to developers who have joined the [Developers Program](#). Those without machines can still run [emulators](#) on their current computers. [Test Group Release Notes](#) are being updated daily. Also, visit the [Activities](#) page to see the latest on activity developments.
- We have a new skin for this wiki; thanks to [Simon Dorner](#) and the crew from OLPC Austria (you can change skins via [Special:Preferences](#) after you log in).
- Add an [OLPC badge](#) to your website.
- A report from OLPC in Nigeria: [School Galadima](#)
- OLPC wins the [Bridging Nations](#) Bridge Builder Award: Technological Innovation for Bridging Digital Divide.
- New milestone: working autonomous mesh operation while the XO is suspended.
- Latest release: The new stable build, [Build 406.15](#), and a new firmware release, [Q2C18](#), are available. Please update your machines. The [autoreinstallation image](#) makes this easy; you'll find many improvements in virtually all system functions ([Release notes](#)). Directions for [Customizing NAND images](#) have been added to the [wiki](#).
- Localization: The Spanish translation of [www.laptop.org](#) is now on line, thanks to the tireless efforts of [Xavier Alvarez](#). The templates for adding additional languages can be found at [Localization/www.laptop.org](#). The [Simplified Chinese translation](#) is also on line, thanks to [Scott Zhu](#); as is the [Portuguese translation](#), thanks to [Paulo Drummond](#); and the [Korean translation](#), thanks to [Do Young-Min](#).

Weekly updates can be found in [Current events](#).

About One Laptop per Child

 *It's an education project, not a laptop project.*
— Nicholas Negroponte

 *It's an education project, not a laptop project.*

About One Laptop per Child

Weekly updates can be found in [Current events](#).

About OLPC

- Home
- Table of contents
- OLPC overview
- Latest news
- Common questions
- Ask a question
- Mailing lists
- Contact OLPC

About the laptops

- Hardware
- Software
- Content
- Educators
- Emulation
- Chat and IRC

About the site

- Recent changes
- Help using the site

Search

Go Search

Toolbox

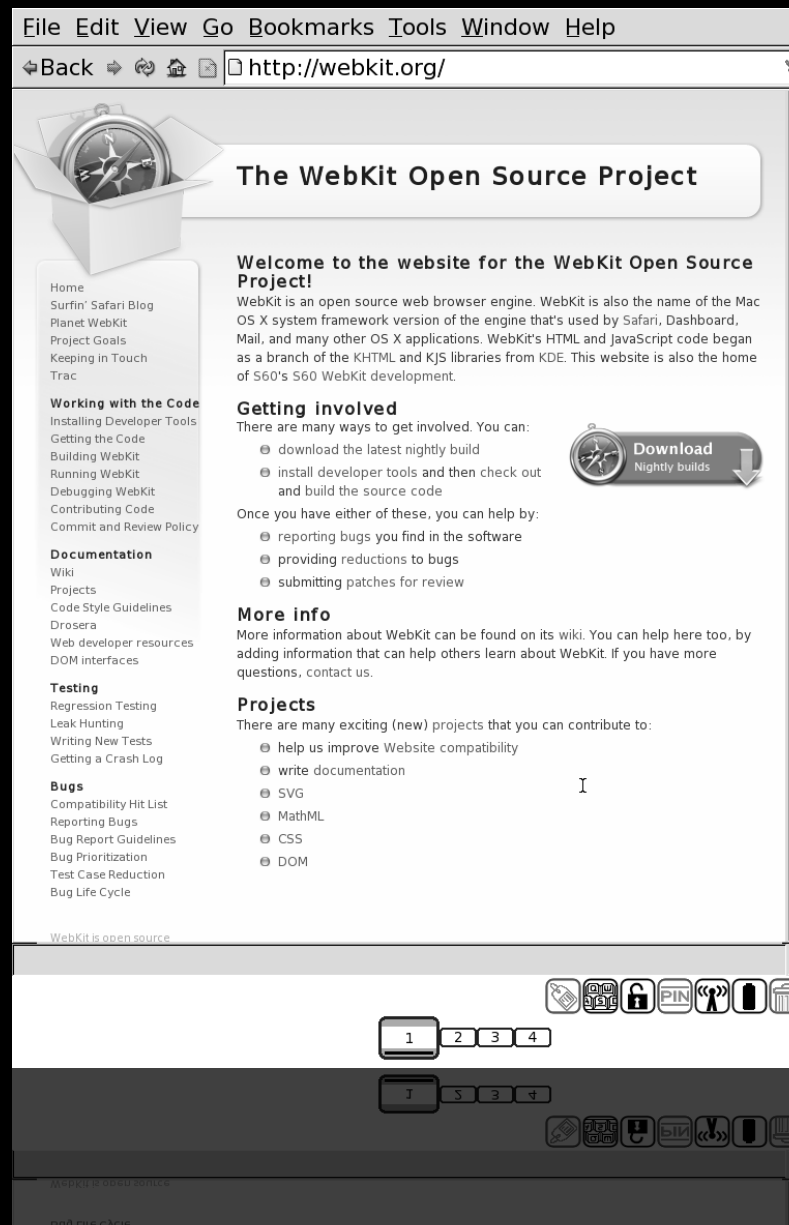
- What links here
- Related changes
- Upload file
- Special pages
- Printable version

Light
Small memory
footprint

~10M less
resident
memory use

WebKit e-paper with the Irex iLiad

Midori browser on iLiad
WebKit port by Adam Boeglin

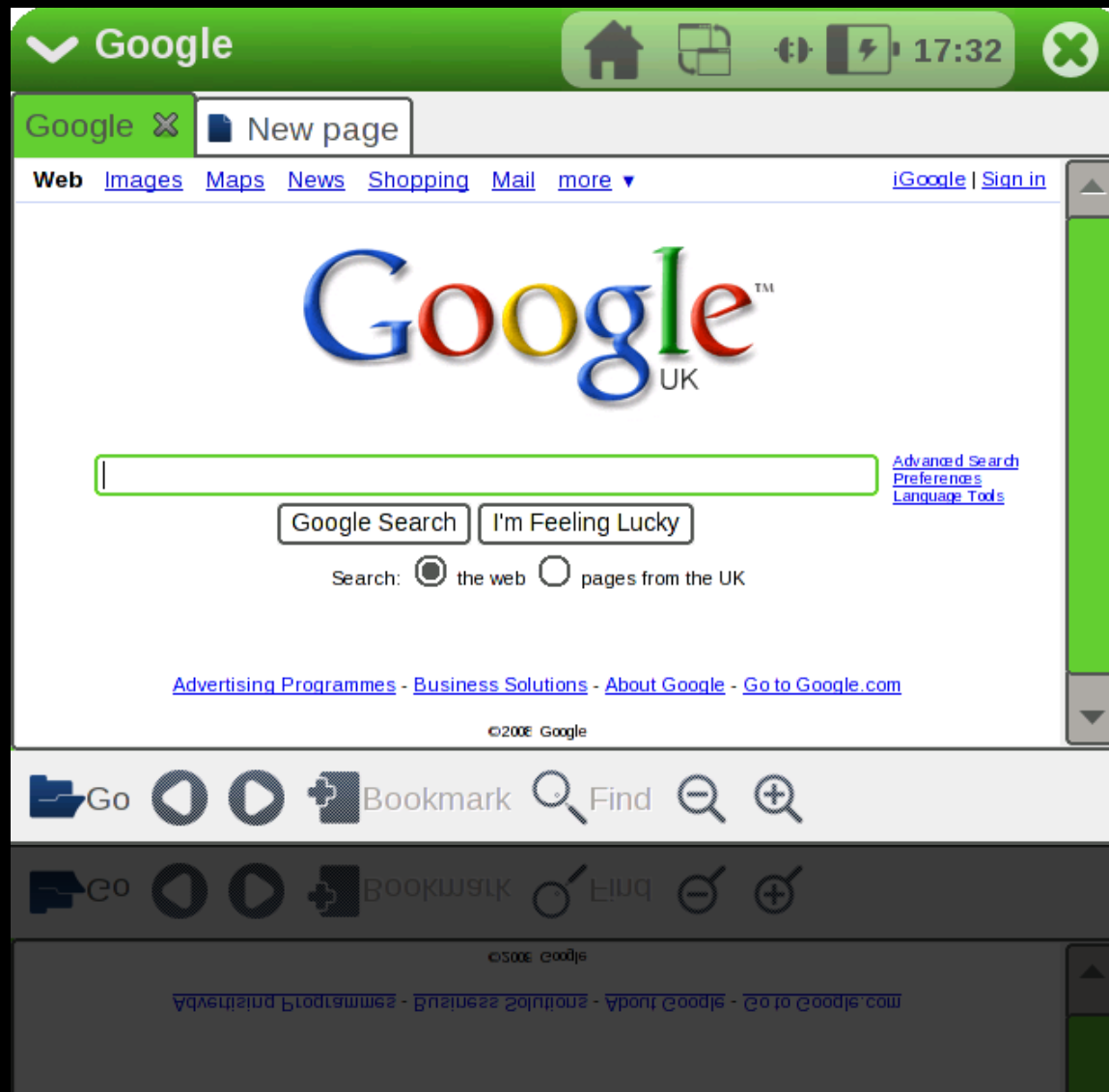


Open questions

How do we reduce repaints?
Can we save memory for
grayscale displays?

Poky Linux

Default browser
for the Poky mobile
Linux distribution



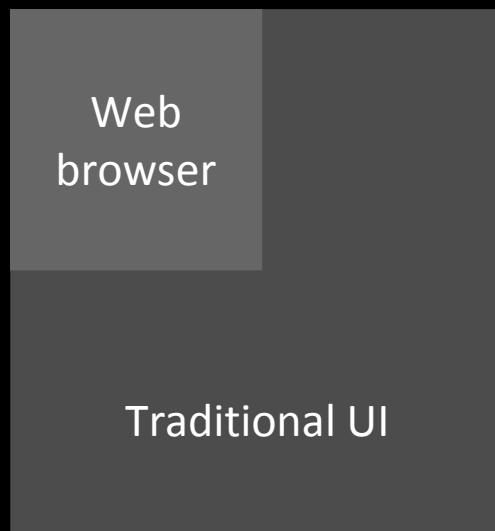
WebKit for Maemo



Media center devices

- Set top boxes often use DirectFB
- Aim to provide a media-oriented user experience
- Integrated multimedia and web capabilities

Extend
traditional
user interfaces



... or switch to
a **Web-based**
main view

Browser plugin support

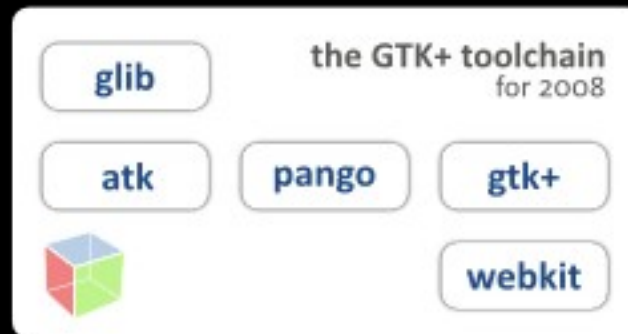
Compatible with
proprietary
plugins like **Flash**



Works with
open plugins like
totem, **swfdec**,
moonlight

Putting the Web in GTK+

- ☞ Berlin, March 2008, GTK+ hackfest goals
 - **Enhance** the GTK+ core to meet browser needs
 - **Extend** the GTK+ toolchain with Web capabilities
- ☞ The vision...



Aligning on technologies

- ☞ **GIO** stream loader API
- ☞ **libsoup** HTTP backend
- ☞ **GStreamer** video
- ☞ **Cairo** for graphics
- ☞ **Pango** for text
- ☞ **GLib** primitives and object model
- ☞ **GLib** for Unicode (WIP)
- ☞ **GTK+** backend/frontend and API



Web accessibility

- WebKit/GTK+ now features advanced accessibility capabilities, developed by Nuanti and Apple
- Uses ATK to expose core and optional AT-SPI interfaces
- For use by Orca, screen readers, Braille readers, specialised input devices
- Includes support for Accessible Rich Internet Applications (ARIA)

The web in 3D

LIVE DEMO

Future

🐾 GTK+ CSS theme engine

Release cycle

- WebKit/GTK+ schedule aligned with GNOME from 2.24 onwards
- Predictable development and stabilisation cycle
- Working directly with application developers
- API follows platform stability guidelines

The diagram consists of two horizontal grey bars. The top bar has a vertical line at its midpoint labeled 'WebKit 1.0.1'. The bottom bar has a vertical line at its right end labeled 'GNOME 2.24 (freeze)'. Below the bars, the text 'May 2008' is aligned with the WebKit line, and 'September 2008' is aligned with the GNOME line.

WebKit 1.0.1

GNOME 2.24 (freeze)

May 2008

September 2008

“The *next big thing* is the one that makes the last big thing usable.”

Blake Ross

Are we really nearly there yet?

- ☞ Applications moving towards hybrid desktop/web technologies
- ☞ A lighter and more integrated web toolchain for GTK+ enables
 - **Incremental enhancements** to existing applications
 - **Entirely new approaches** to application design
- ☞ GNOME 2.24 shaping up as a leader in web/desktop integration
- ☞ **Let's make it happen**

Get involved

<http://live.gnome.org/WebKit>

<http://www.webkit.org>

IRC: #webkit, #webkit-gtk / FreeNode

IRC: #epiphany / GIMPNet

