

WebKit

everywhere

making the web mobile



Web standards and features

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

JavaScriptCore
portable C API

WebCore
content engine



WebKit
public API

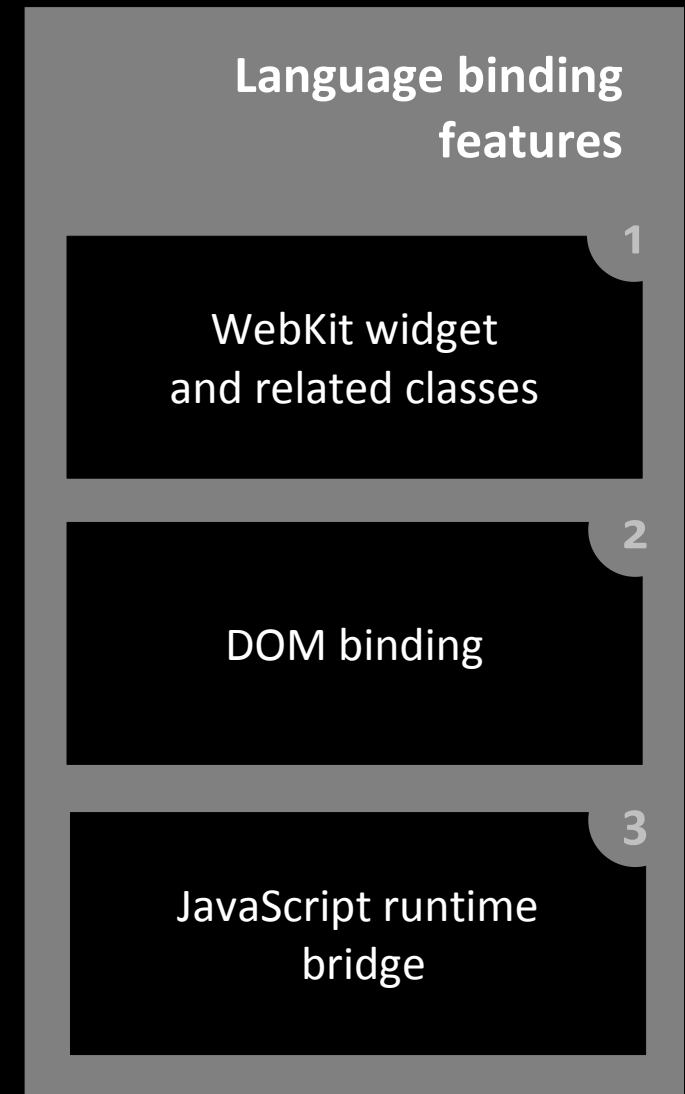


applications
C, C#, C++, Vala, Python, Perl



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



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

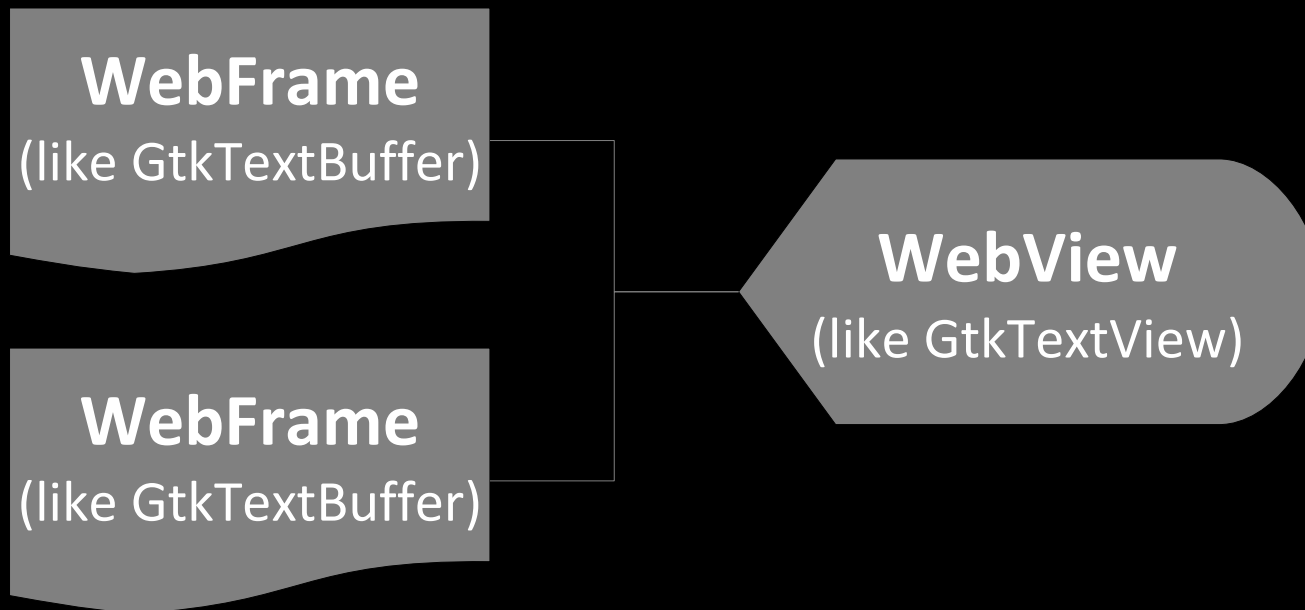
- ♦ When do you use straight GTK+?
- ♦ When does Web content enrich the experience?
- ♦ Great power; great responsibility
- ♦ **WebView** isn't the right tool for every job
 - Continue to use **GtkTextView** for light viewing and editing
 - Use **GtkTreeView** and **GtkIconView** unless you really need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

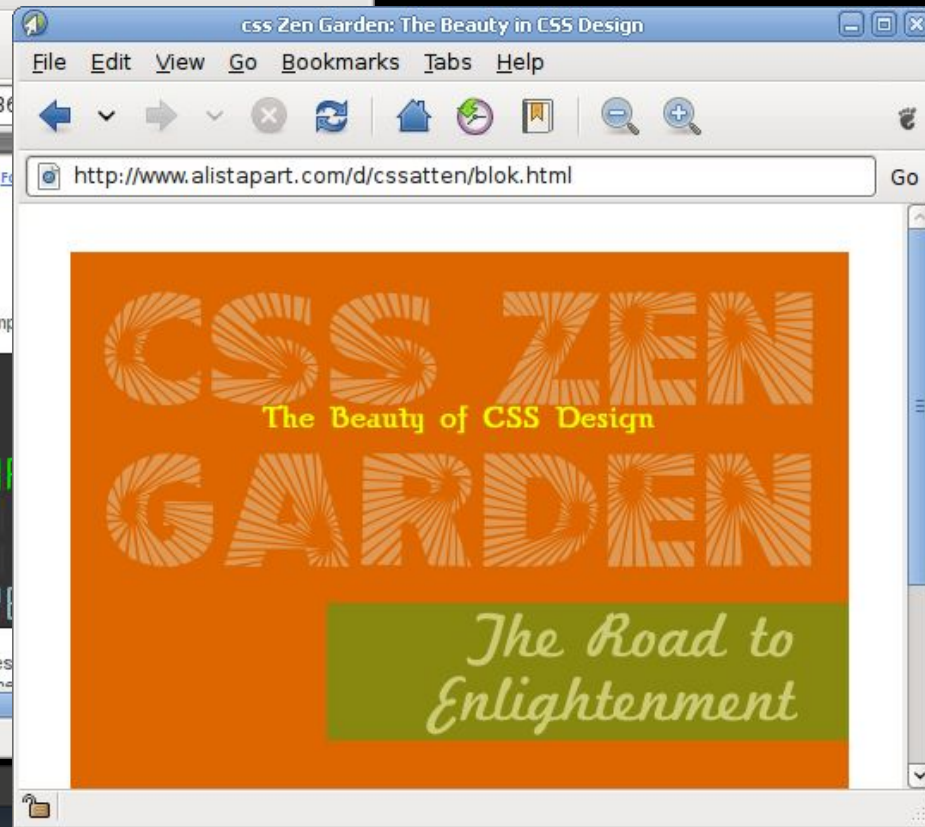
SVG fonts

Easy to design with tools like Inkscape



WebFonts

TrueType fonts on the Web



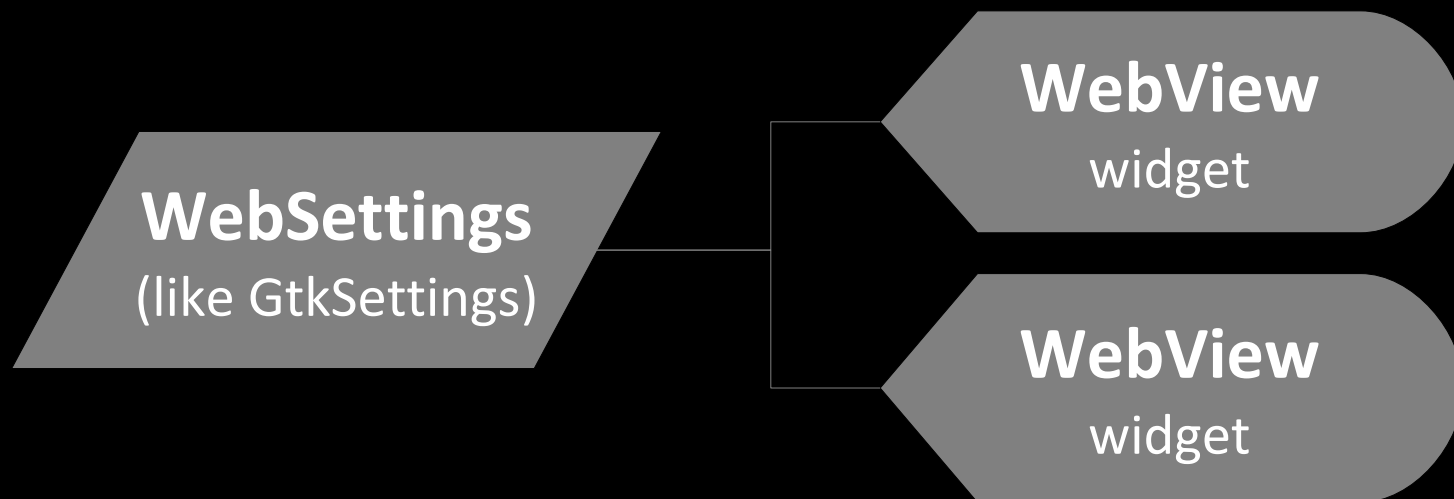
DOM bindings

- ♦ Existing DOM bindings
 - **ObjC DOM**, used extensively in Safari/Mac
 - **COM DOM** (new), used on Windows
- ♦ Upcoming GObject DOM features
 - Complete access to the DOM (all levels)
 - Stable API

LIVE DEMO

Apply settings with ease

- ♦ Use **WebSettings** to group settings for multiple WebViews
- ♦ Keep **granular settings** per WebView or enforce global settings when necessary
(makes porting Gecko-based applications a breeze)



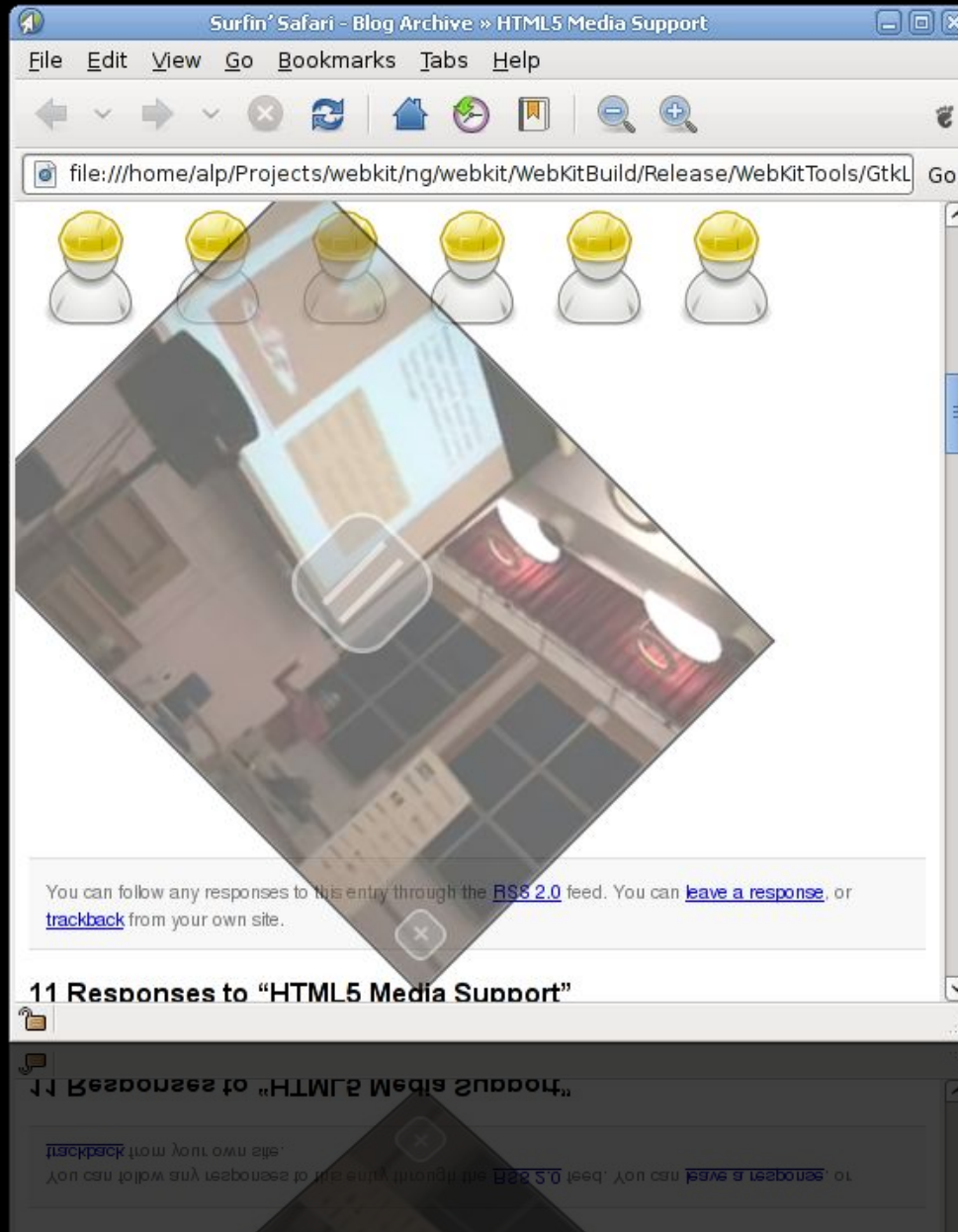
Go asynchronous

- ♦ Use **WebDecision** 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

Search

Product: WebKit

Component: Accessibility
CSS
Drosera
Evangelism
Forms

Version: 312.x
412
412.x
416.x
417.x

A Comment: contains the string

The URL: contains all of the words/strings

Keywords: contains all of the keywords

Status: UNCONFIRMED
NEW
ASSIGNED
REOPENED
RESOLVED
VERIFIED
CLOSED

Resolution: FIXED
INVALID
WONTFIX
LATER
REMIN
DUPLICATE
WORKSFORME

Severity: Blocker
Critical
Major
Normal
Minor
Trivial
Enhancement

Priority: P1
P2
P3
P4
P5

Hardware: All
Macintosh
Macintosh PowerPC
Macintosh Intel
PC
S60 Hardware
S60 Emulator

OS: All
Windows 2000
Windows XP
Windows Server 2003
Windows Vista
Mac OS X 10.3
Mac OS X 10.4

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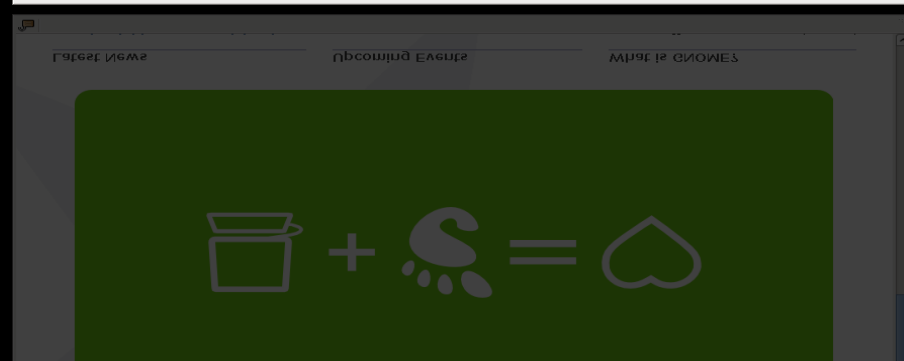
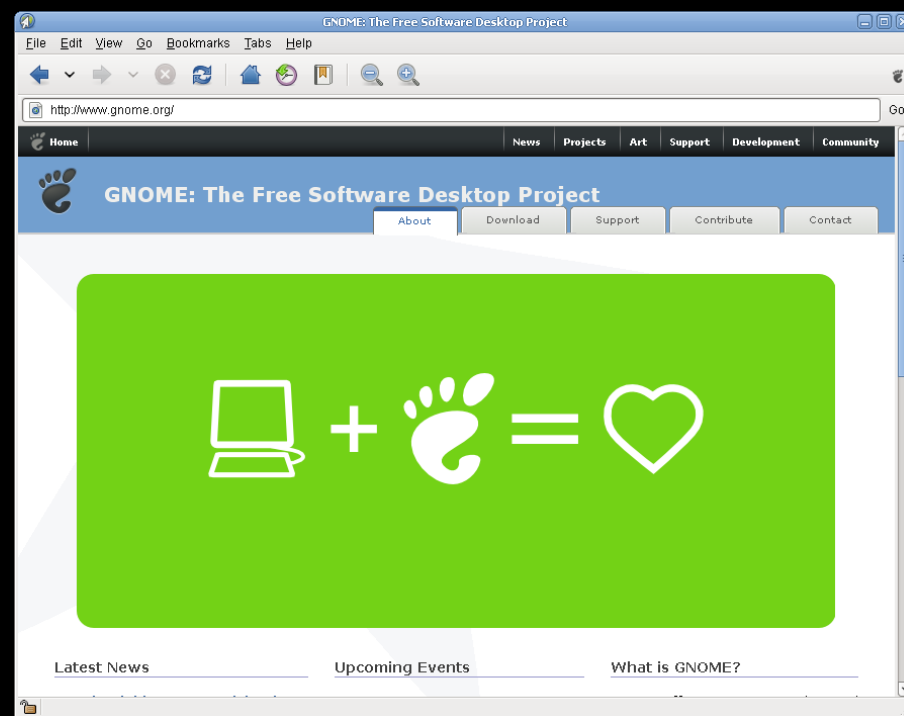
WebKit for browser engineers

- ♦ 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, a light-weight Web browser for GNOME
- ♦ Originally a GTK+ UI around the Gecko rendering engine
- ♦ Experimental WebKit support added by Xan Lopez at GUADEC 2007
- ♦ Switching to **dedicated WebKit support** for GNOME 2.24
- ♦ Talk of an Epiphany Mobile port



Make it awesome

- ♦ 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



Host widgets

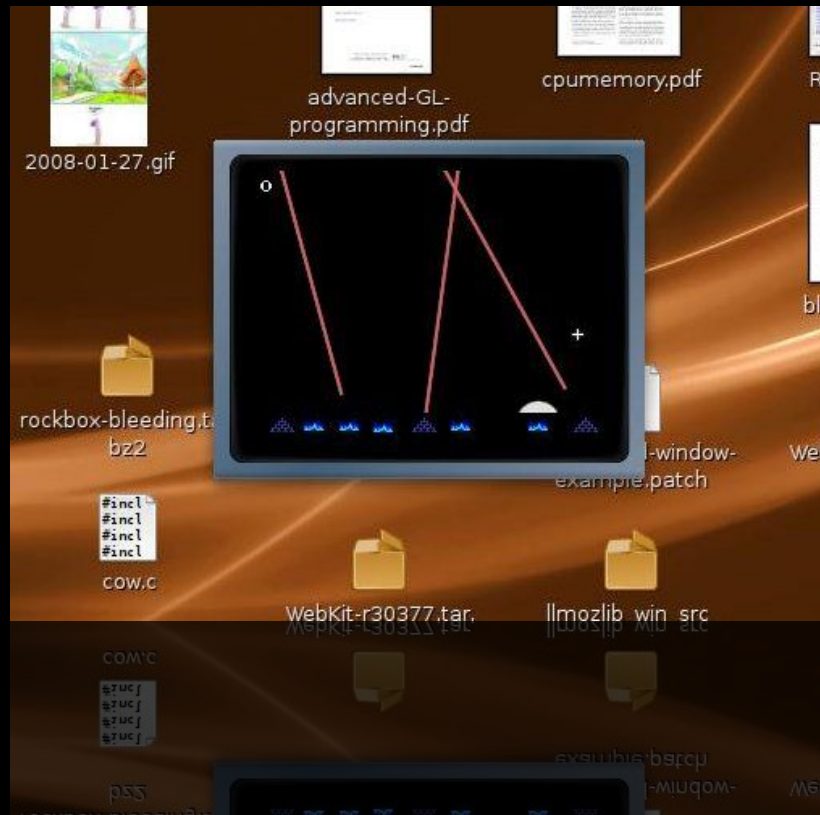
```
GtkWidget *web_view = webkit_web_view_new ();  
webkit_web_view_set_transparent (  
    WEBKIT_WEB_VIEW (web_view), TRUE);
```

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 working to complete the native GTK+ backend
 - Windows (Native, X11)
 - Patches to be merged soon

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
- ♦ 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+		

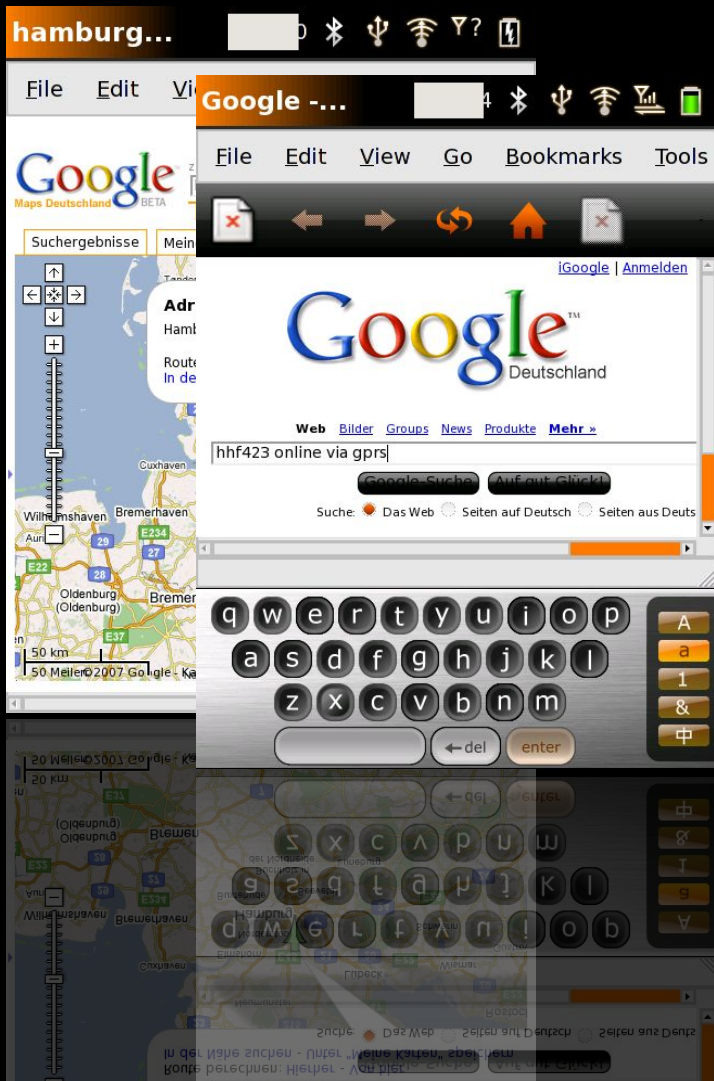
Location-aware Web apps

- ♦ 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);
});
```

WebKit and 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



Nokia S60 port

- ♦ Hosted on webkit.org
- ♦ Highly diverged from trunk
 - No obvious way to re-sync with TOT
- ♦ Successful as a “mobile web” browser
- ♦ Falling behind the current state of the art

OLPC Sugar activity

Fast
Loads fast
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](#).

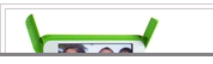
[Submit new content](#)

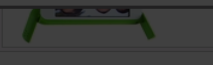
What's new

- 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.*

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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

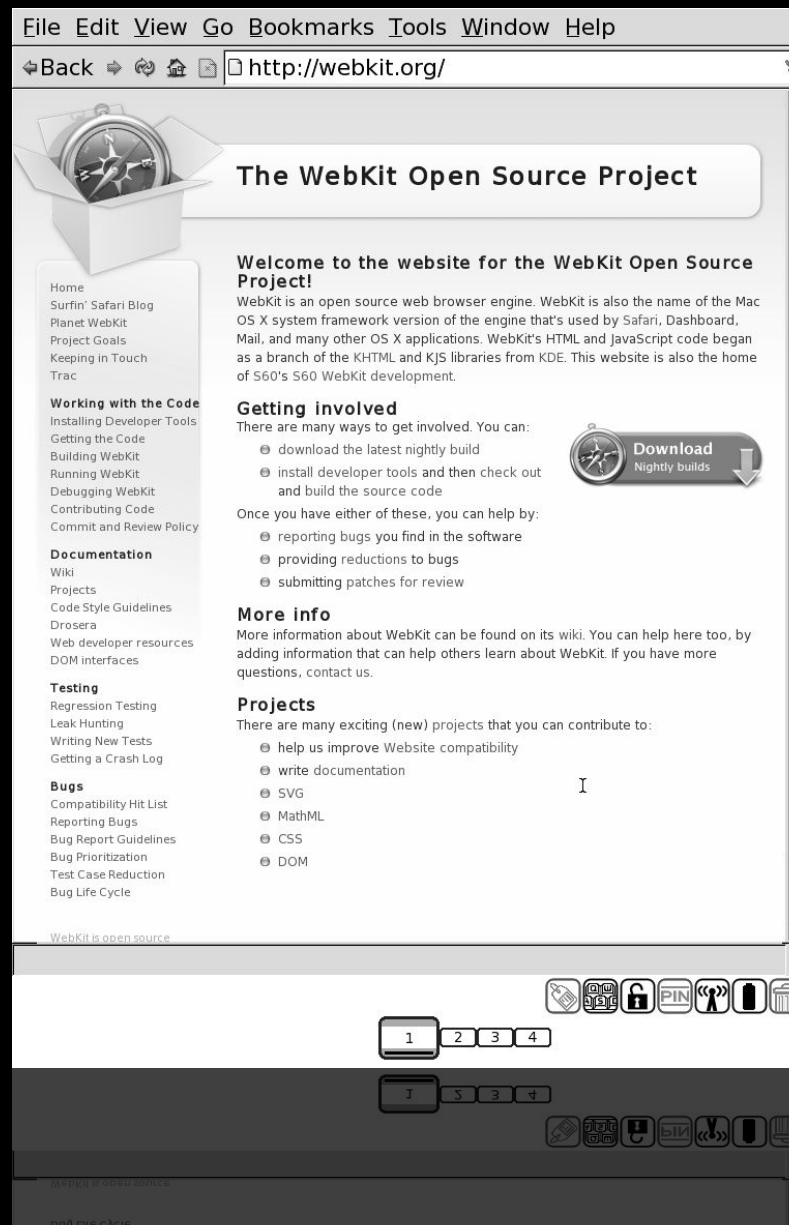
Light
Small memory
footprint

WebKit and OLPC

- ♦ WebKit/GTK+ Sugar activity done by Dan Winship (Red Hat) in one day
- ♦ John Palmieri compared it with the existing Mozilla-based activity
 - “uses on average **10 megs less** in resident memory”
 - “starts up five seconds **faster**”
 - “feels a bit **more responsive** when scrolling”
 - “just **more aligned to our needs** as a small and fast browser”

WebKit e-paper with the Irex iLiad

Midori browser on iLiad
WebKit port by Adam Boeglin

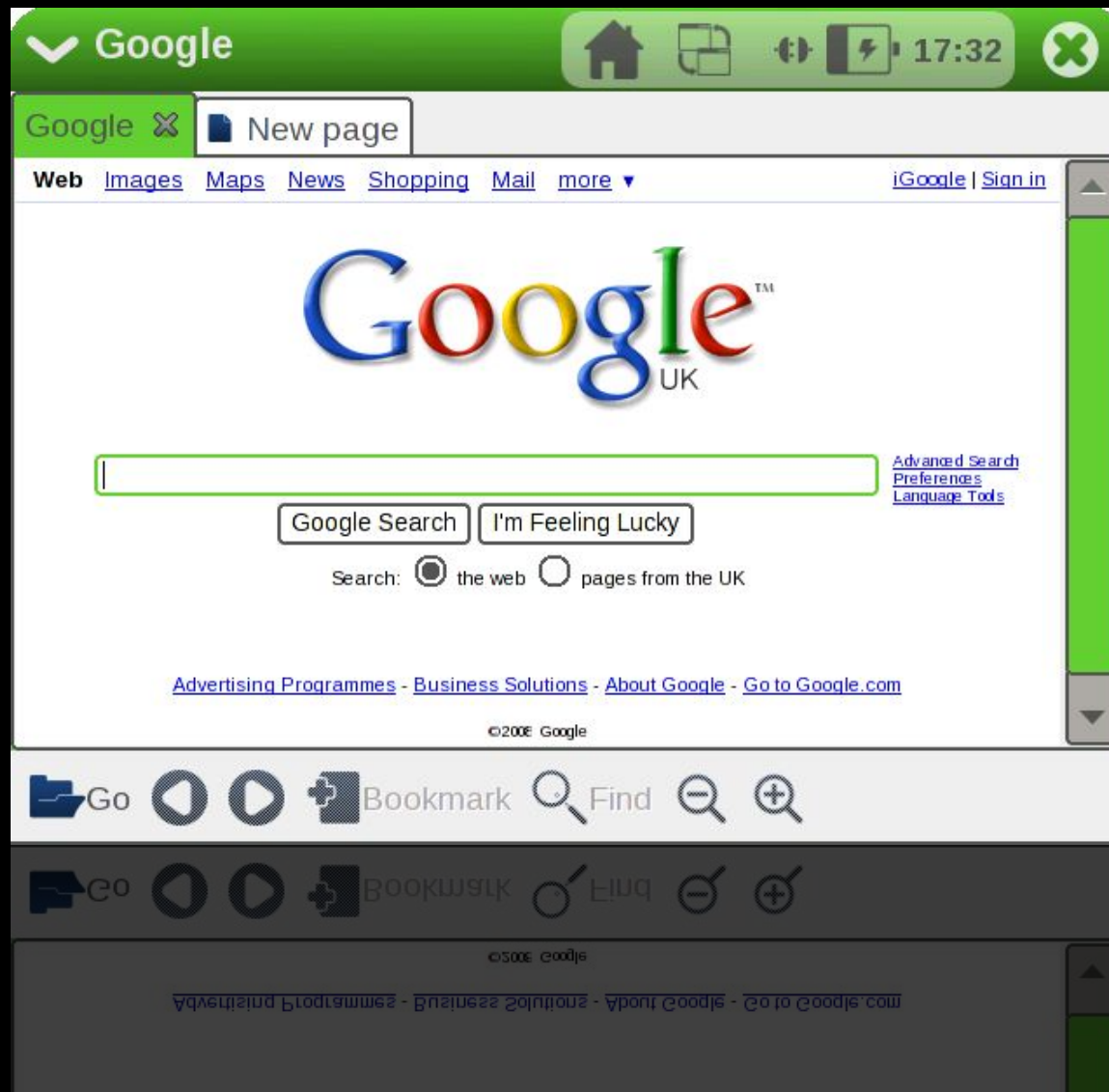


Open questions

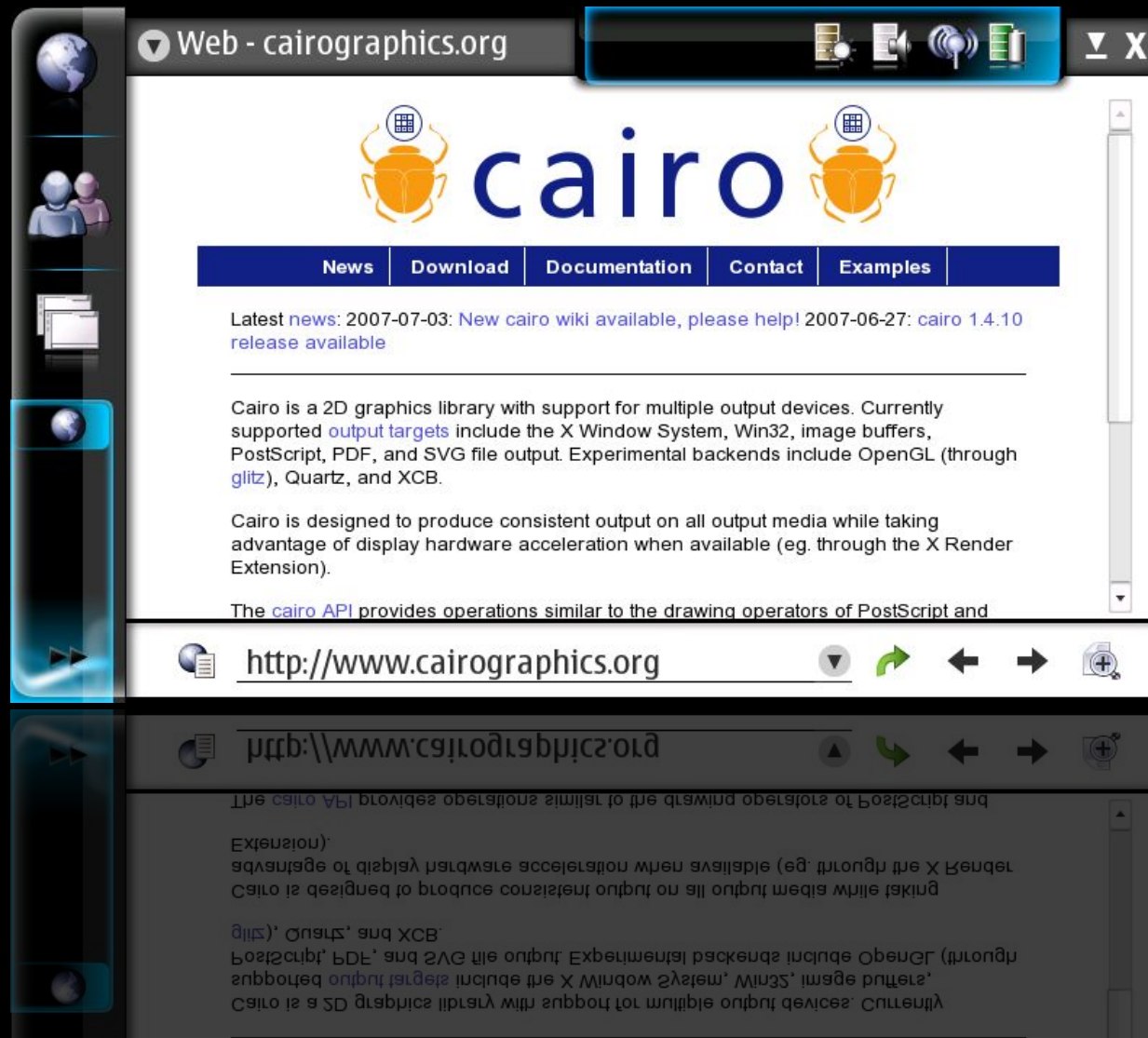
How do we reduce repaints?
Can we save memory for
grayscale displays?

Poky Linux

Default browser
for the Poky mobile
Linux distribution



WebKit for Maemo



WebKit SDK for Maemo

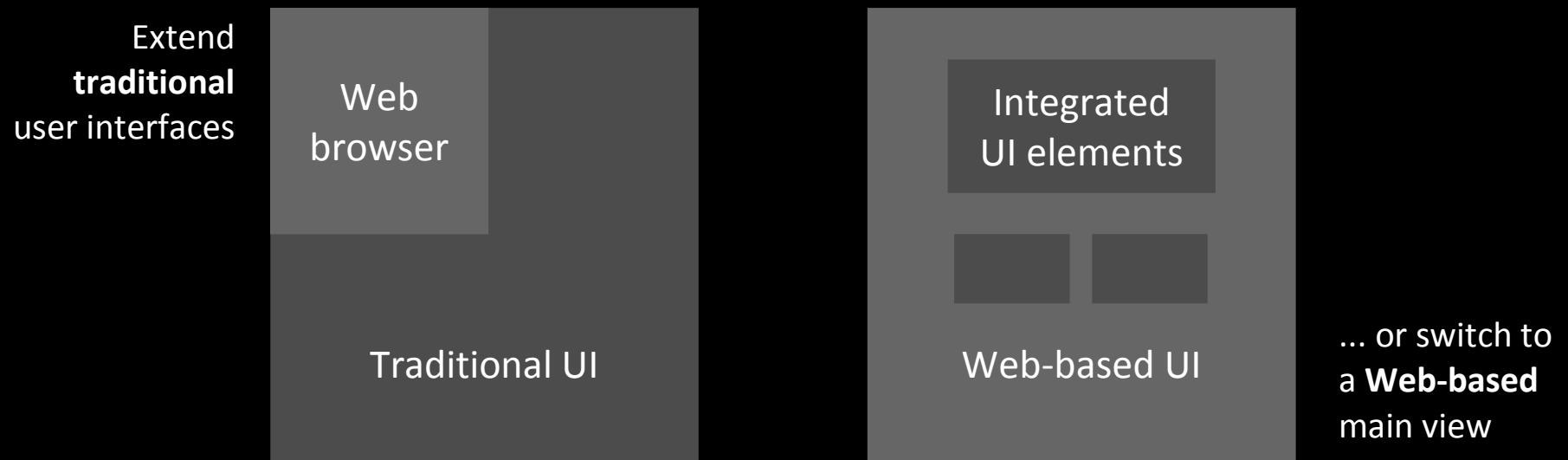
<http://maemo.webkit.org>

available today

- ♦ Pre-release developer packages now available
- ♦ WebKit SDK snapshot packages TBA
- ♦ A basis for new online and offline mobile RIAs

Media center devices

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



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...



The FOUC problem

- ♦ Flash Of Unstyled Content, typically on low bandwidth devices
- ♦ Browser ends up showing your Web page's content without yet having any style information
- ♦ Then, style data becomes available and the content layout changes
- ♦ User is distracted

Fixing FOUC

- ♦ **Stall the load**

- Wait for all styling information to become available

- ♦ **Don't stall the load**

- Better user experience, but breaks sites that make assumptions about styling availability

- ♦ **Stall on-demand**

- Parallelise loads and while continuing to parse
- Provides the fastest perceived load performance all round

Optimising JS/AJAX execution

- ♦ Target: N800/N810 internet tablets
 - Implement ARM ASM locking code
 - Later switched to compiler intrinsics (> **10x boost** in specific cases)
 - Fix alignment issues
 - Pathological String alignment (~**2x boost**)
 - Modify compilation process
 - Enable better link time optimisation (< **1x boost**)

Reducing footprint: ICU

- ♦ ICU Unicode library is ~10M
- ♦ Platforms shipping the full ICU
 - Iphone
 - OS X
- ♦ Ports using platform Unicode features instead
 - GTK+ (GLib unicode)
 - Qt
 - Android

Input methods for mobile devices

- ♦ Virtual keyboard support
- ♦ Predictive text input
- ♦ International character composition

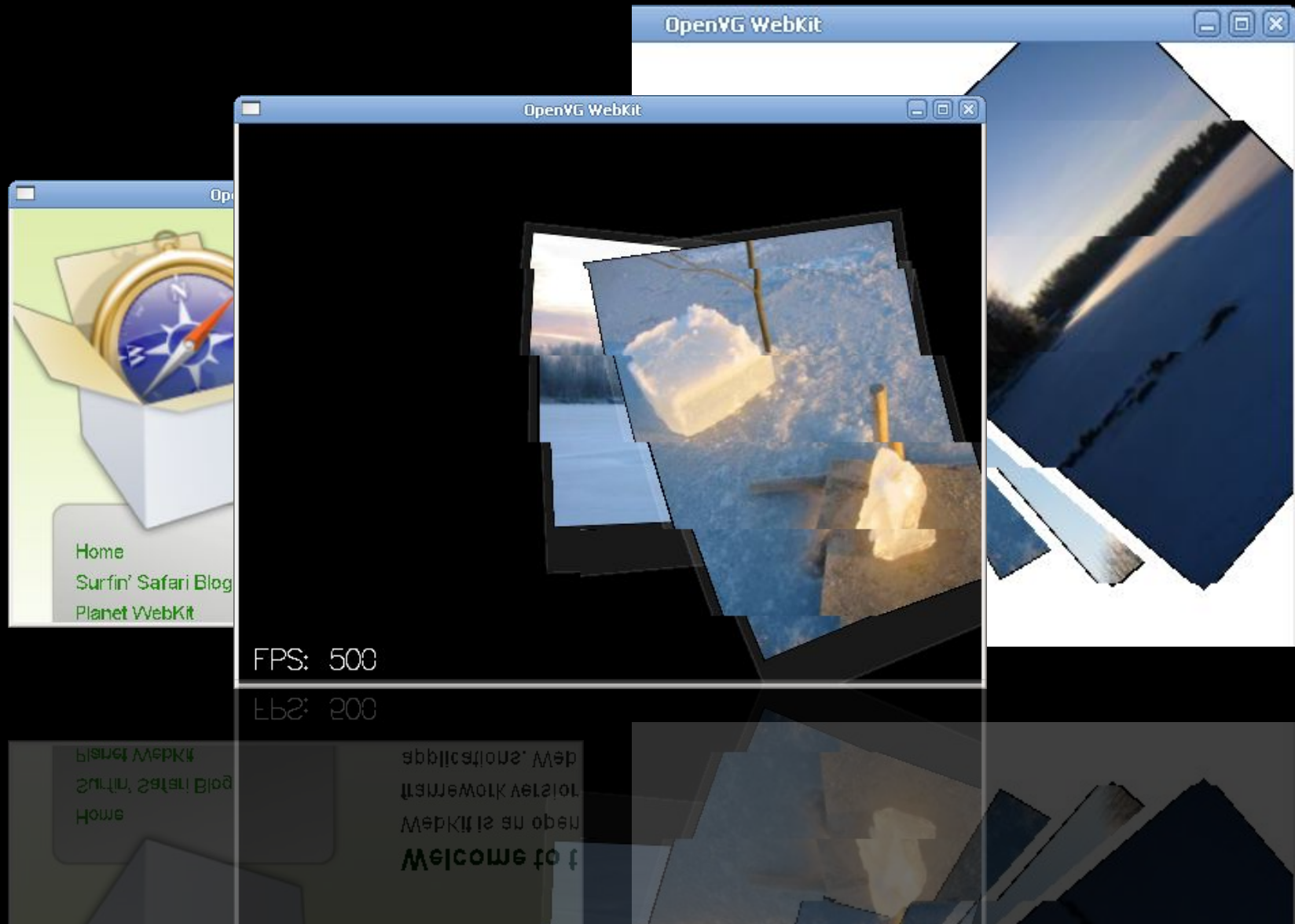
“The *next big thing* is the one that makes the last big thing usable.”

Blake Ross

Investigating multi-pointer input

- ♦ Scale and pick out content rapidly
- ♦ Scroll by flicking
- ♦ Expose multi-point input data via the DOM, allow web apps to interpret the data?
- ♦ Used in iPhone
- ♦ Also being developed for the GTK+ port using Multi Pointer X (MPX)

Graphics acceleration



Get involved!

<http://www.webkit.org>

IRC: #webkit, #webkit-gtk / FreeNode

