



WebKit GTK on (electronic) paper

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Electronic paper

- Looks like paper
- Stable image, no refreshes
- Reflective, there is no backlight
- Wide viewing angle
- Comfortable to read

Limitations

- Grayscale only (at the moment)
- Slow refresh
 - Only limited animations are possible
- Reduce the number of refreshes
 - Consumes power
 - Black / white flash → distracting



BUSINESS DAY

Hoping for Another iPod, Apple Introduces iPhone

With characteristic showmanship, Steven Jobs introduced Apple's long-awaited entry into the cellphone world, pronouncing it an achievement on a par with the Macintosh and the iPod. ▶▶

Cingular executives went

last year to get

for a deal with Apple,

did so without so much

otype.

Past Glories

U.S. automakers try to find a winning game plan to reverse their sliding market share, they seem to be looking back to the classic American muscle car. ▶▶

Venezuela Shakes Markets

Investors reacted with alarm in the United States and throughout Latin America as they measured the impact of President Hugo Chávez's plan to nationalize key areas of the economy. ▶▶

Business Briefing ▶▶

CLOSE

BACK

5 of 6

SPORTS WEDNESDAY

Two Leap to Hall of Fame, But Steroid Cloud Stops 3rd

Cal Ripken Jr. and Tony Gwynn were both elected to the Baseball Hall of Fame in near-unanimous votes that reflected their standing within the sport. But their achievement was overshadowed by the voters' rejection of Mark McGwire, a slugger who seemed like a modern-day Babe Ruth. But McGwire's reputation for suspected steroid use. ▶▶

Sports Briefing ▶▶

OBITUARIES

Jane Bolln

A judge whose appointment by Mayor Fiorello H. LaGuardia in 1939 made her the first black woman in the United States to become a judge, she was 98. ▶▶

Iwao Takamoto

The artist who created the mystery-solving Great Dane, Scooby-Doo, and many other indelible cartoon characters.

iRex e-readers

iRex Digital Reader 1000 series

- Document reader
 - More than just an e-books
 - PDFs, Mobipocket PRC, images, text files and simple HTML pages
- Stylus to annotate PDFs
 - Take notes, etc.

The screen

- 10.2" screen
- 1024 x 1280
- Touch screen
 - Wacom sensors behind the screen
 - More accurate for note taking
 - Doesn't reduce brightness

Specs for the DR 1000S

- Freescale i.MX31L
- 128 MB RAM
- Weight: 570 g (1.25 lbs)
- No internet connectivity

Specs for the DR 1000SW

- Freescale i.MX31L
- 128 MB RAM
- Weight: 570 g (1.25 lbs)
- Wi-Fi and Bluetooth

Software stack

- Poky Linux
- Gnome mobile
 - D-Bus, Hal, support for .desktop files
 - Cairo, GLib, Pango, GTK+ and Gconf
 - Poppler (for viewing PDFs)

Changes in the stack

- Redraw simplifications
 - No widget pre-lighting or multi-step actions
 - No cursor blink
- Delayed button depressing
- Batched GtkEntry update
- Refresh hooks for screen updates

Software licensing

- Only the document viewer framework is closed source
 - Plugins are free
 - The plugin interface is open and documented
- <http://developer.irexnet.com/pub/iOn/>

Digital Reader 1000WS

- Wi-Fi connectivity
 - We need appropriate software
- Browser
 - Gecko is hard to adapt and slow
 - WebKit had missing features

A black and white photograph of a vintage compass and a hand-drawn map. The compass is in the foreground, showing its face with degree markings and a needle. The map is in the background, featuring a cross, a small house icon, and handwritten text including "HAUNTED House" and "FOREST".

WebKit

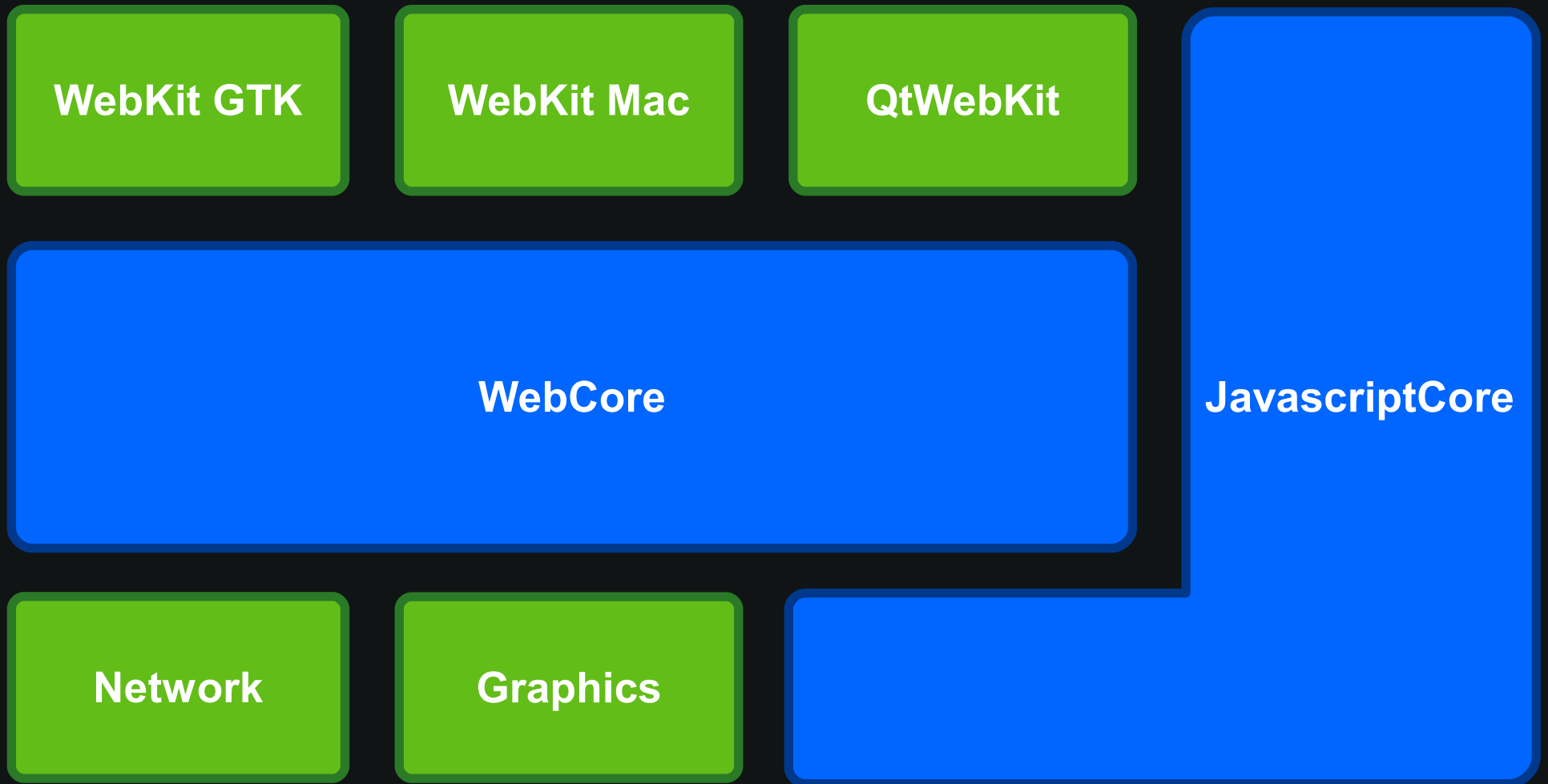
What is WebKit?

- Web browser engine
- Not a full browser
- Not used only by browsers
 - Chat windows in Adium
 - Editor in email clients

What does WebKit do?

- Retrieves the pages from the network
- Parsing
- Layout
- Rendering
- Javascript (with JavaScriptCore)

Architecture



Architecture



GTK-esque

- GObject, signals, properties, etc.
- WebKitWebView is a normal widget
 - Example: insert it in a GtkScrolledView to get scrolling
- Trying to copy the GtkTextView and GtkTextBuffer API where possible

An iRex DR tablet is shown at an angle, displaying a file manager interface. The screen shows a grid of folder icons with labels such as 'Library', 'Agenda', 'Books', 'Inbox', 'Music', 'Newspapers', 'Internet', 'Office', 'Other', 'Presentations', 'Manuals', 'Cooking books', 'Form', 'Dictionaries', 'From Willem', 'Important', and 'Files'. A golden compass icon is overlaid on the screen, pointing towards the top right. A dark grey banner with yellow text is positioned across the middle of the screen.

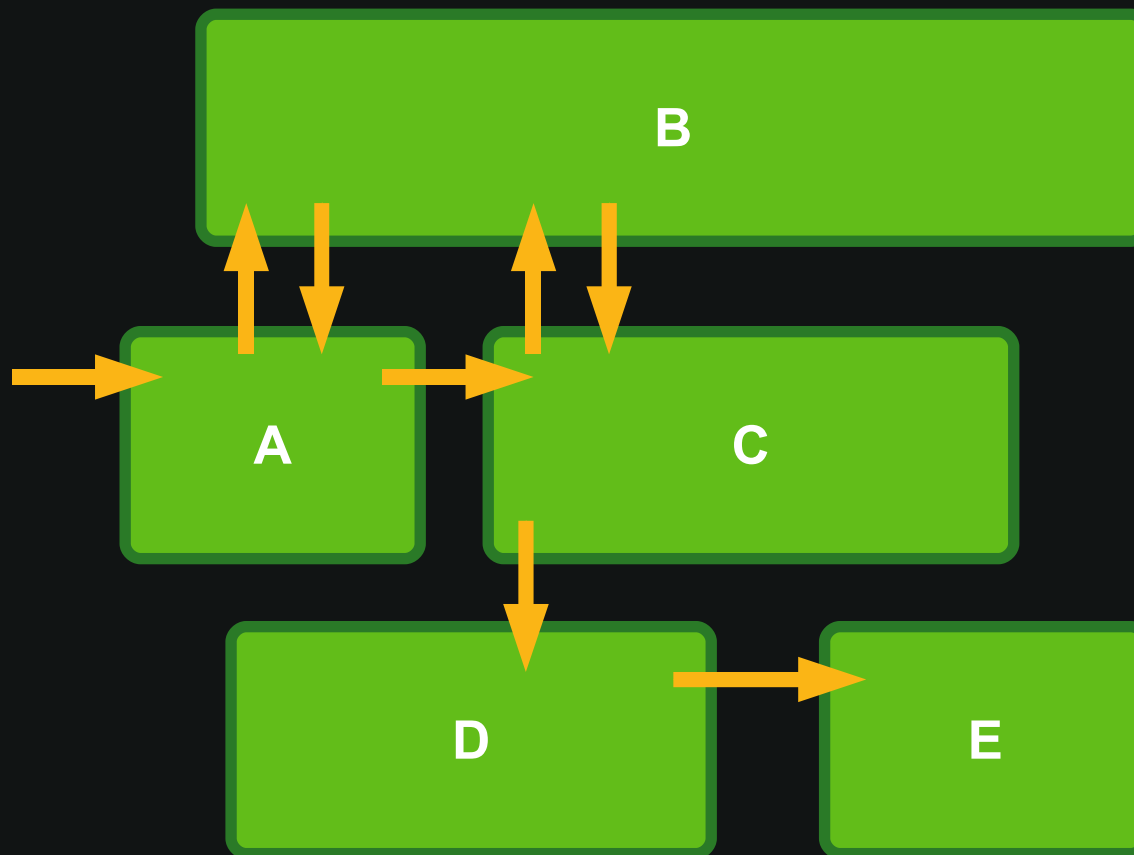
WebKit on iRex DRs

Missing features

- In April WebKit GTK was very good at rendering
- But missing features needed for browsers
 - Download
 - Zoom
 - Saving
 - On-disk cache
 - Pop-up blocking
 - Etc.

Keyboard navigation

- Directional, not just TAB and SHIFT-TAB



Reduce the refreshes

- WebKit has optimizations for embedded devices
 - Content shown as soon as possible
 - Bad for devices based on electronic paper!
- We need the opposite
 - Refresh only when really needed

Animations

- Real animations are impossible
 - A full refresh takes ~0.7 seconds
 - Partial black and white only refreshes are ~0.2 seconds
- Only the first frame for animated GIFs

Flash

- First frame often uninteresting
- Move some seconds forward
- Stop if user interaction is required
- Patched swfdec

Reduce the scrolling

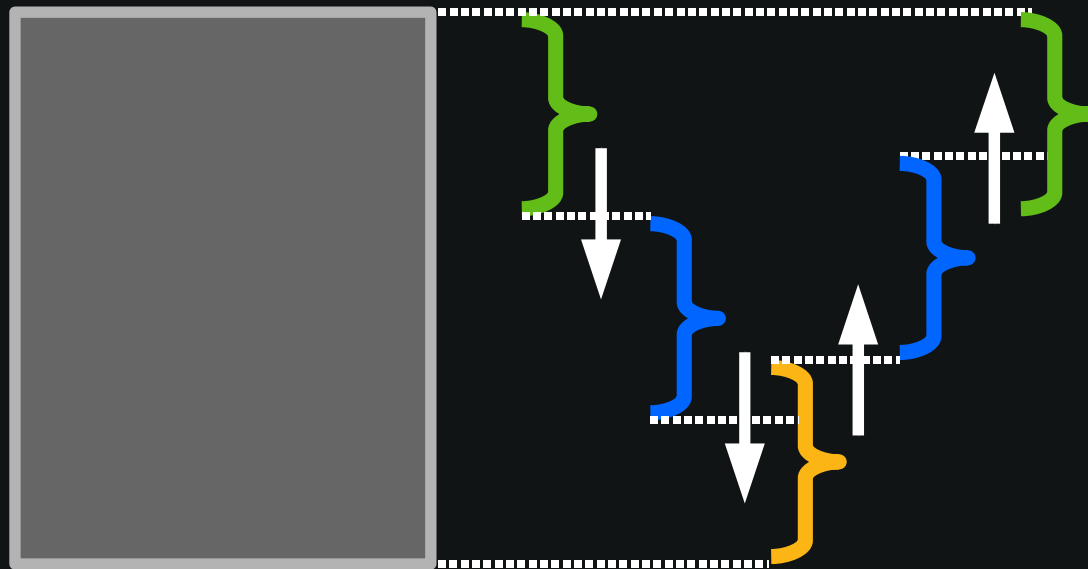
- High latency makes it impossible to scroll as on a normal computer
 - Both horizontally and vertically
- Ideally show web pages as a book

Use printing functionalities?

- Draws page by page to a cairo context
- Code written for printing, not for display!
 - WebCore loses track of active elements
 - Links are not clickable
- Too hard to reimplement

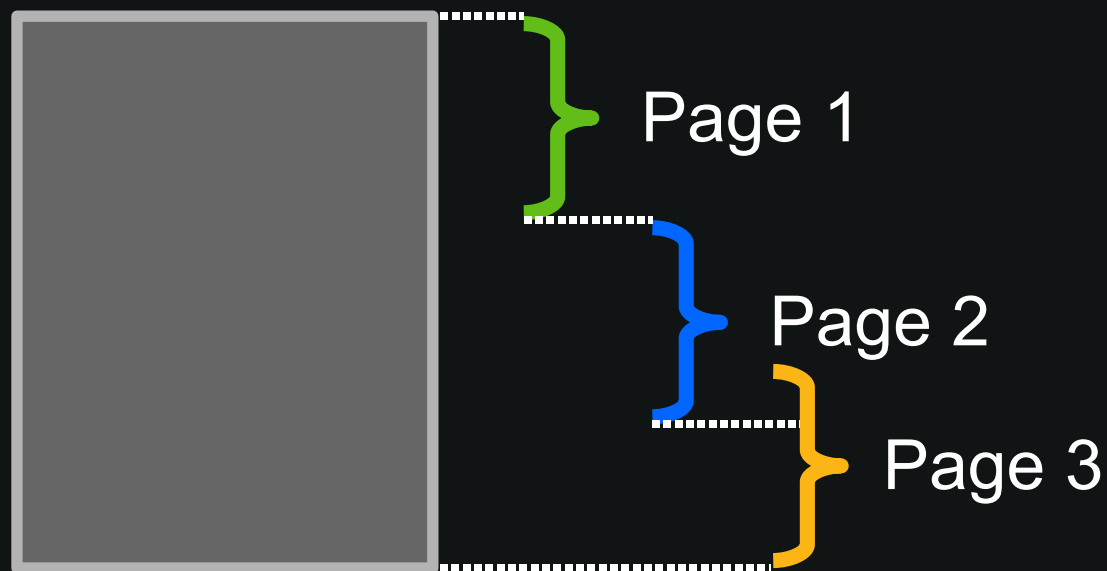
Vertical scroll

- Just modify the GtkAdjustment
- Not just PgUp / PgDown



Vertical scroll

- Just modify the GtkAdjustment
- Not just PgUp / PgDown



Horizontal scrolling

- Avoid it as much as possible
- Try to fit everything in the horizontal space
- Basically:
 - * `{ max-width: 100% !important; }`

Offline use

- Must be usable offline
- Need to save web pages to disk
- File HTML + directory for resources
 - Good for developers
 - Bad for file managers

MHTML archives for offline use

- Single MIME file
- Binary files are Base64 encoded
- No need to modify the HTML structure to update links

Links



www.collabora.co.uk



www.irextechnologies.com



www.webkit.org

live.gnome.org/WebKitGtk

#webkit-gtk on freenode

