

# Outline

- Mobile browsers
  - The mobile browsing experience
  - The WebKit engine
  - Preinstalled browsers
  - User-installable browsers
- Mobile web application best practices
  - Security, privacy and user awareness
  - Conservative use of resources
  - User experience
  - Handling variances in the delivery context
  - Misc.

# The mobile browsing experience

- Navigation
  - Focus navigation
  - Cursor navigation
  - Touch navigation
  - Multitouch navigation
- Zoom experience
  - Basic zoom capabilities
  - Smart zoom capabilities
- Reflow engines
  - Reflows multicolumn pages to a one-column design

# The mobile browsing experience

- Proxied browsers using proxies to
  - Eliminate mobile incompatible content
  - Compress content
  - Pre-rendering for faster display
  - Convert content
  - Encrypt content
  - Cache content for frequently visited sites
- Multipage experience
  - One-page support only
  - Multiple windows
  - Window stack
  - Tab navigation

# The WebKit engine

- An open source layout engine for web browsers
- Originally developed by Apple
- Widely used in the mobile world
  - Many applications using it
  - Similar rendering experience can be expected on different mobile devices
  - But differences do exist between the implementations

# Preinstalled browsers

- Practically every new phone has a browser
  - Android browser
  - Internet explorer mobile
  - Safari
  - Symbian browser
  - ...

# User-installable browsers

- Users may install other browsers also
  - Firefox mobile
  - Opera mobile
  - Opera mini
  - Chrome
  - ...

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# Security, privacy, user awareness

- JSON data may represent a security risk
  - Don't `eval()` JSON data directly, use a JSON parser
- Signing in at every visit can be a hassle
  - Enable automatic sign-in (and then also sign-out)
  - But don't store unencrypted passwords



# Conservative use of resources

- Guidelines
  - Minimize application and data size
    - Remove whitespace/minify HTML, CSS and script files
  - Optimize network requests, such as
    - Batch up multiple requests if possible
    - Back off during periods of inactivity
  - Minimize external resources
    - Merge script and CSS files into as few files as possible
  - Minimize sending of cookie information
  - Keep DOM size reasonable
    - Use pagination

# User experience

- Guidelines
  - Optimize application start-up time
    - Consider partitioning large scripts
    - Use local storage where appropriate
  - Minimize perceived latency, e.g.
    - Enabling incremental rendering
    - Avoid page reloads
  - Make telephone numbers “Click-to-Call”
  - Add a hyperlink with `tel:` or `sms:` as protocol
  - Use Meta Viewport to identify desired screen size
  - Design for multiple interaction methods (focus based, pointer based and touch based methods)

# Variances in the delivery context

- Guidelines
  - Prefer server-side context where possible
    - MIME types, user agent and WAP profile data
    - Consider WURFL – a device description repository
  - User client-side capability detection if necessary
    - CSS media types/media queries, JavaScript
  - Classify devices for simplified adaption
    - E.g., basic XHTML -> full AJAX -> device APIs
  - Support a non-JavaScript variant if appropriate
  - Offer users a choice
    - Let the user change the UI if multiple exists

## And some more ...

- Consider use of canvas elements or SVG
- Inform the user about automatic network access (XMLHttpRequest)
- Provide sufficient means to control automatic network access (XMLHttpRequest)

# Conclusion

- A variety of **browsers** running on a variety of **devices** for a variety of **users**
- Requires a conscious and rigorous process for designing mobile web applications