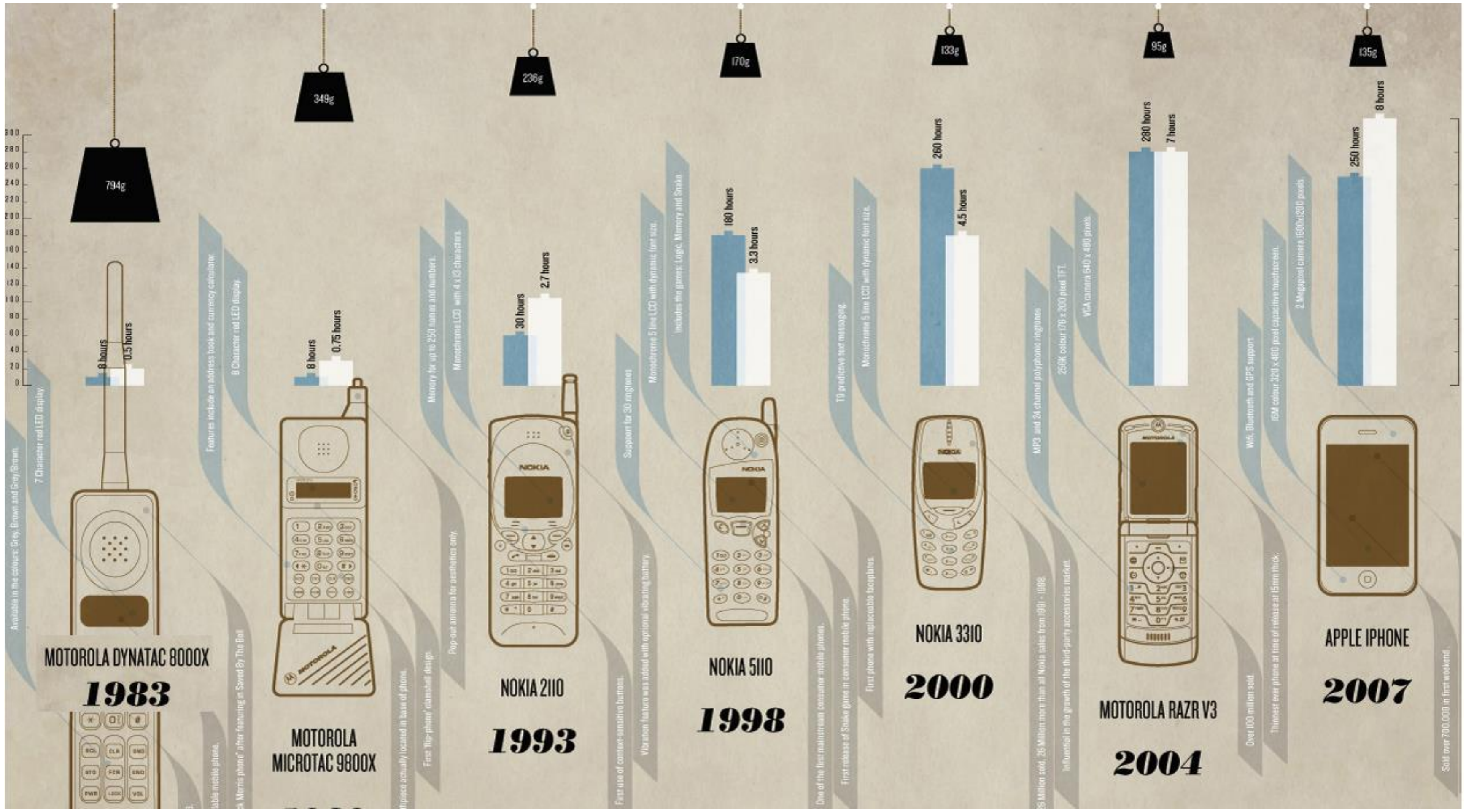
Mobile Web Application

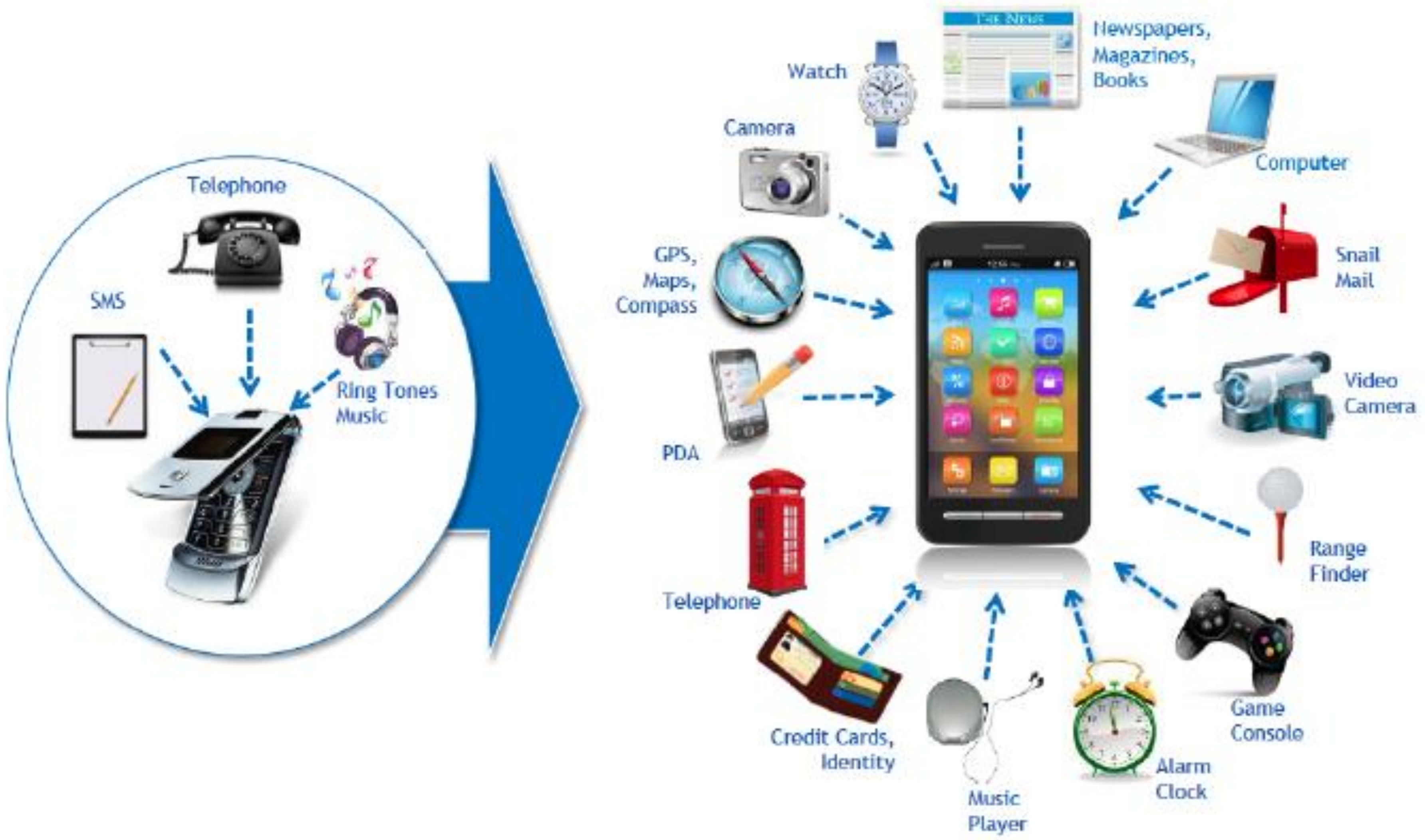
- Mobile Browsers,
- Architecture and Design for mobile Web application,
- Application Environment for development and production,
- Client side scripting for mobile web application,
- Server side scripting for mobile web application-mobile detection,
- content delivery,
- Multimedia and streaming,
- Content adaption,
- location techniques,
- detection of location on map,
- performance optimization

Evolution of Mobile Hardware



From “Brick” to “Slick”

Evolution of Mobile Functionality/Software



Mobile device

a mobile device has the following features:

- It’s portable.
- It’s personal.
- It’s with you almost all the time.
- It’s easy and fast to use.
- It has some kind of network connection.

Mobile web

- Isn’t the mobile web the same web as the desktop one?

- Constrains are
- device screens
- Bandwidth
- Processing Resources

Some of the main difference from the desktop web

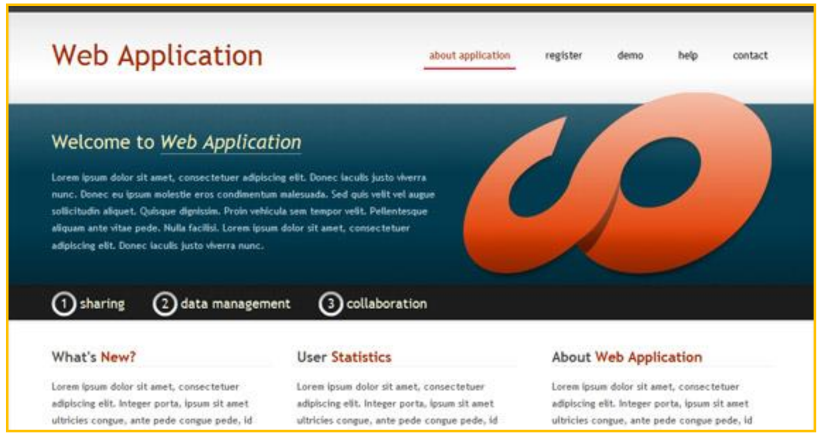
- Slower networks with higher latency
- Slower hardware and less available memory
- Different browsing experience
- Different user contexts
- Different browser behavior (for example, do you know that usually only the current tab on a mobile browser is active and running effectively?)
- Some browsers are too limited, some browsers are too innovative

Browsers and Web Platforms

- A **mobile browser** is a web browser designed for use on a mobile device such as a mobile phone or PDA.
- Mobile browsers are optimized so as to display Web content most effectively for small screens on portable devices.
- Mobile browser software must be small and efficient to accommodate the low memory capacity and low-bandwidth of wireless handheld devices.
- some more modern mobile browsers can handle more recent technologies like CSS 2.1, JavaScript, and Ajax.

- When browsing the Web on our mobile devices, we can use the preinstalled browser available by default on every device or we can install new browsers through the application stores.
- Preinstalled Browsers
- Practically every mobile device on the market today has a preinstalled browser. One of the big features of these browsers is that the average user typically doesn’t install a new web browser; therefore, on each device the preinstalled browser is the most-used one.
- One main disadvantage of preinstalled browsers is that usually there is no way to update the browser independently from the operating system.
- If your device doesn’t get operating system updates, usually you will not get browser updates.
- Ex: safari, firefox, dolphin, windows, android browser, NetFront

Reaching Mobile Users



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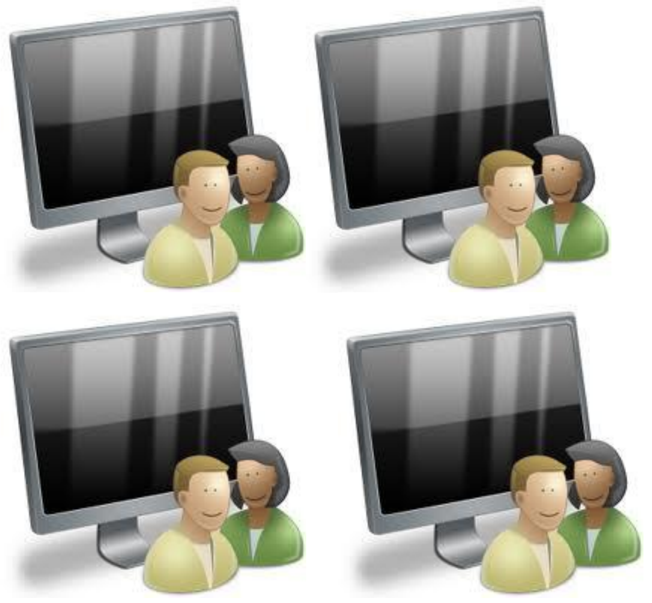

1. Mobile Features

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Mostly Feature Sub Set

Complete Feature Set

2. Tablet Features

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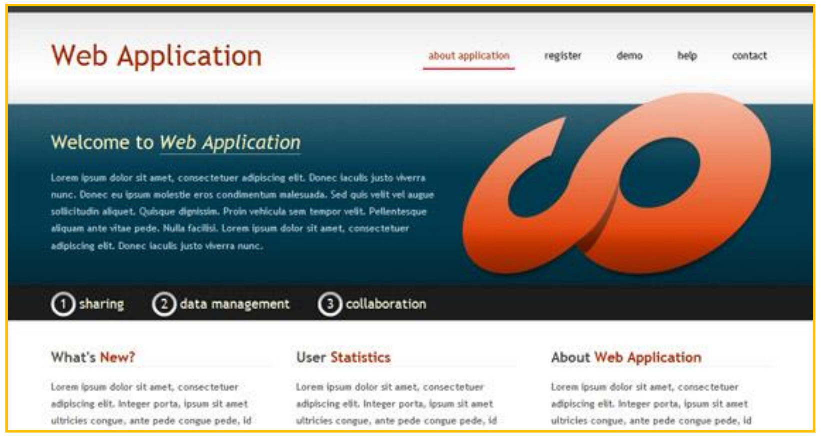
Almost Complete Feature Set

Complete Feature Set

3. User Interaction



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1 sharing 2 data management 3 collaboration

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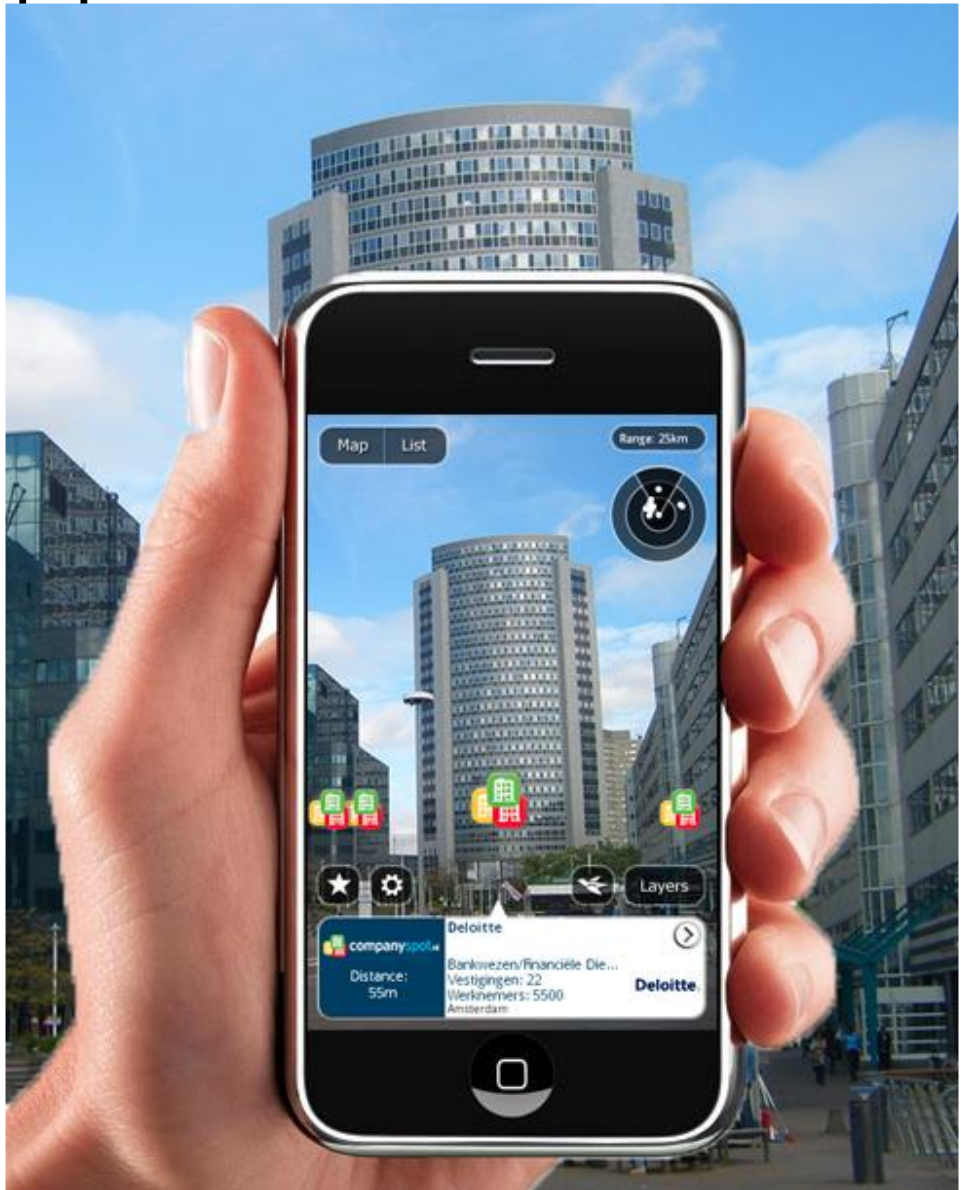
Touch based

Accelerometer

Compass

Traditional

e.g Layar Application



4. Location aware

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1 sharing · 2 data management · 3 collaboration

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Can be Location Aware but approximate

Location Aware and highly accurate

5. Sensors

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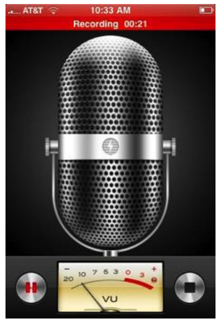
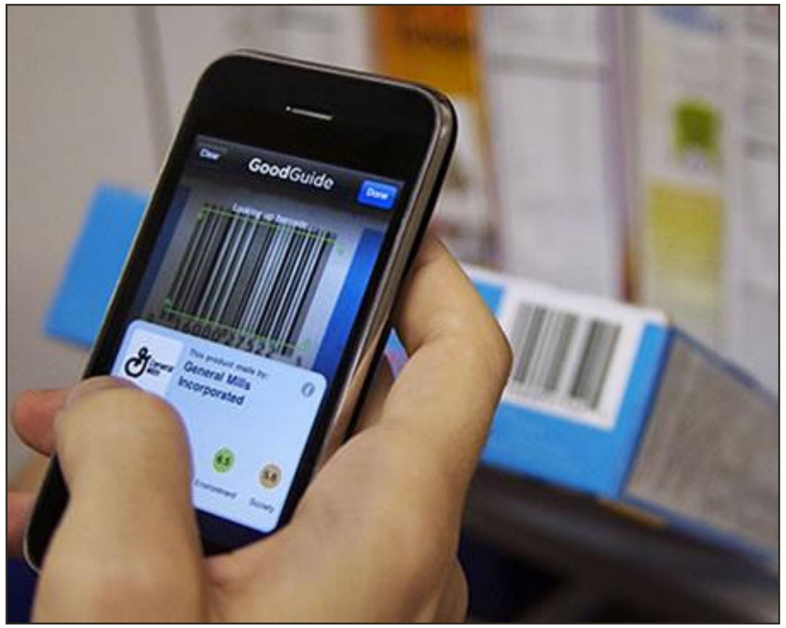


Handy Camera and Voice Recording

Upcoming NFC (Near Field Communication) turning phone into Credit Card, Access Card, Business Card Exchanger

e.g Shopping Applications



Scan a product's barcode to know if it has the lowest price.

If not, then navigate to a store which has the lowest price

6. Push Notifications

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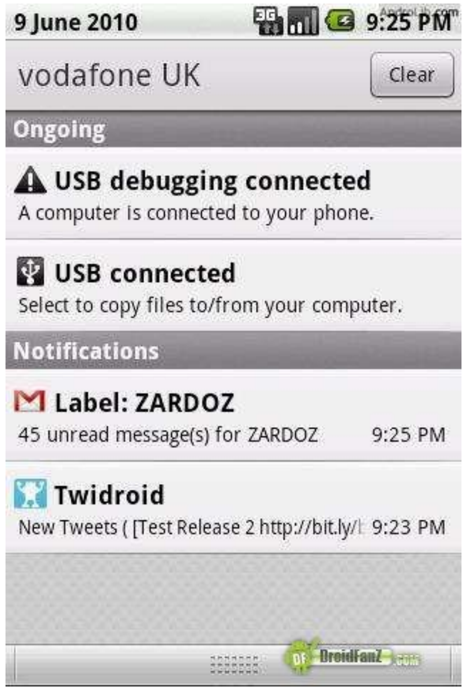


9 June 2010 9:25 PM

vodafone UK Clear

Ongoing

USB debugging connected
A computer is connected to your phone.

USB connected
Select to copy files to/from your computer.

Notifications

Label: ZARDOZ
45 unread message(s) for ZARDOZ 9:25 PM

Twidroid
New Tweets ([Test Release 2 http://bit.ly/ 9:23 PM

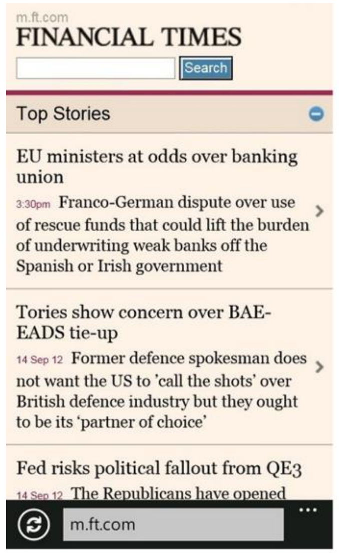
Push Notification
Notifying the User proactively

Tools for Mobile Web Development

- For coding markup, JavaScript, and CSS, we can use almost any web tool available on the market, including Adobe Dreamweaver, Microsoft Visual Studio, Eclipse, Aptana Studio.
- and of course any good text editor, such as Sublime Text, Textmate, WebStorm, or Notepad++.

Architecture and Design

- Mobile Strategy
- When creating mobile web applications, we need to remember that we can create web apps, native apps or hybrid.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Fed risks political fallout from QE3
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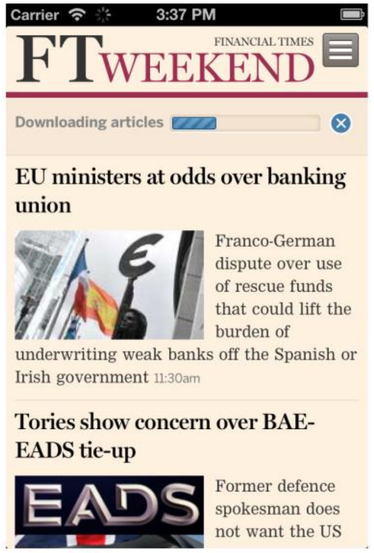
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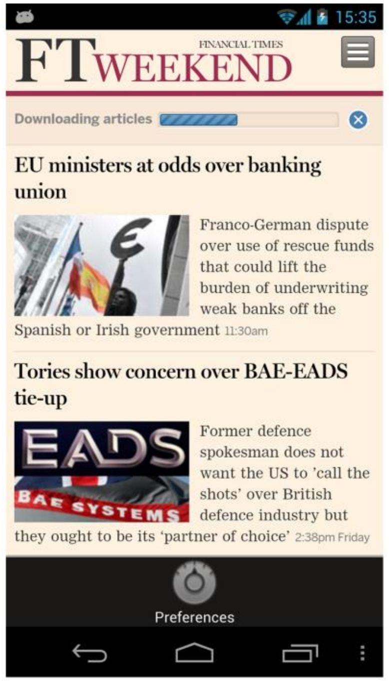
Former defence spokesman does not want the US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Franco-German dispute over use of rescue funds that could lift the burden of underwriting weak banks off the Spanish or Irish government 11:30am
Tories show concern over BAE-EADS tie-up
Former defence spokesman does not want the US to 'call the shots' over British defence industry but they ought to be its 'partner of choice' 2:38pm Friday
Preferences

Challenges in building Mobile Applications

1. OS Fragmentation

iOS Android Blackberry webOS Windows 7 Symbian WRT

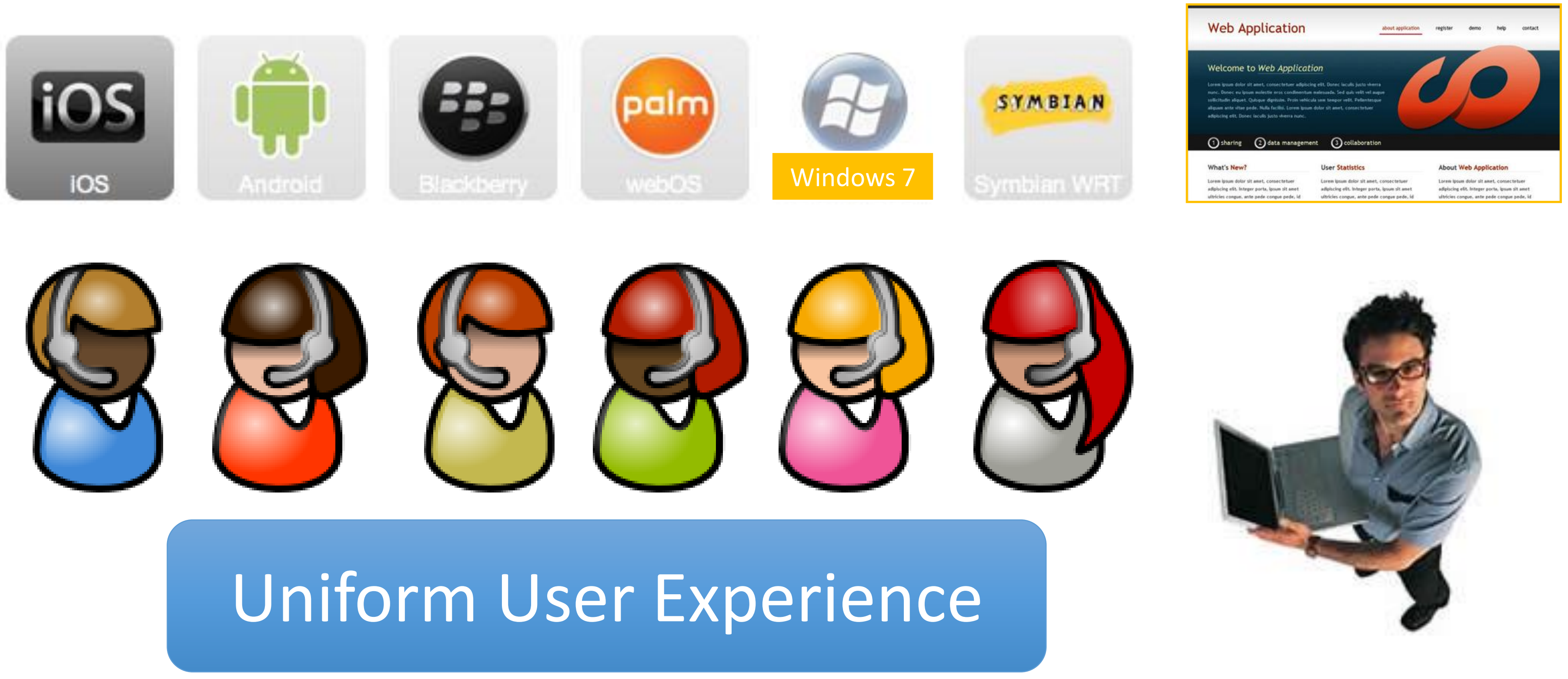
Fragmentation

2. Multiple Teams/Product

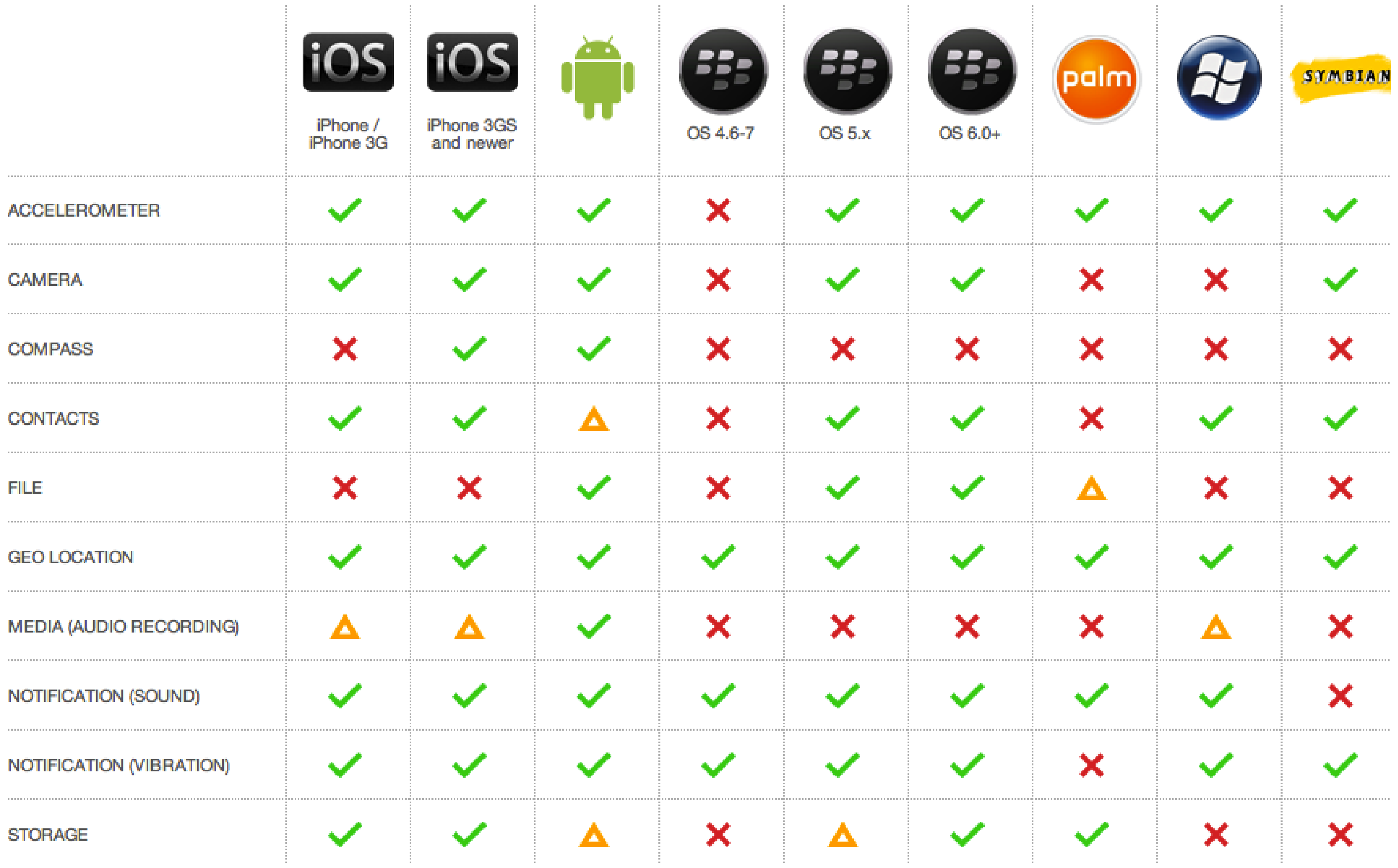
iOS
iOS
Android
Blackberry
palm
webOS
Windows 7
SYMBIAN
Symbian WRT

Multiple Teams/Products

3. Uniform User Experience



4. Feature Fragmentation



	iOS iPhone / iPhone 3G	iOS iPhone 3GS and newer		OS 4.6-7	OS 5.x	OS 6.0+	palm		SYMBIAN
ACCELEROMETER	✓	✓	✓	✗	✓	✓	✓	✓	✓
CAMERA	✓	✓	✓	✗	✓	✓	✗	✗	✓
COMPASS	✗	✓	✓	✗	✗	✗	✗	✗	✗
CONTACTS	✓	✓	△	✗	✓	✓	✗	✓	✓
FILE	✗	✗	✓	✗	✓	✓	△	✗	✗
GEO LOCATION	✓	✓	✓	✓	✓	✓	✓	✓	✓
MEDIA (AUDIO RECORDING)	△	△	✓	✗	✗	✗	✗	△	✗
NOTIFICATION (SOUND)	✓	✓	✓	✓	✓	✓	✓	✓	✗
NOTIFICATION (VIBRATION)	✓	✓	✓	✓	✓	✓	✗	✓	✓
STORAGE	✓	✓	△	✗	△	✓	✓	✗	✗

Feature Fragmentation

- **Native apps** are built for a specific operating system. A native app developed for iOS won't work on Android devices, and vis-versa. If an app is developed on iOS, it will remain exclusive to that operating system unless an Android version is created.
- each mobile platform offers developers their own development tools, interface elements and standardised SDK. This should enable any professional developer to develop a native app relatively easily.
- **Advantages** to writing apps in this way:
- They offer the **fastest, most reliable and most responsive experience to users**.
- They can tap into the wider functionality of the device; including the camera, microphone, compass, accelerometer and swipe gestures.
- Publishers can make use of push-notifications, alerting users every time a new piece of content is published or when their attention is required. This is a key method of engagement. You get the opportunity to continually bring your audience back for more.
- Users spend time on apps. The popularity of apps has increased enormously and is continuing to rise. **Examples of native apps:** Angry Birds, Shazam , Facebook, Instagram.

- **Mobile web apps:**
- **If you’ve ever seen the ‘mobile version’ of a site, that’s what we’re talking about**. An “app” like this loads within a mobile browser, like Safari or Chrome, like every other website.
- Web apps use JavaScript, CSS, HTML5 or other languages. A developer won’t have access to a standardised SDK.
- **Web apps are limited in what they can do effectively in terms of features and they will generally always require an Internet connection to work**.
- **Don’t get notification.**

- **Hybrid apps**
- Somewhere between native and web apps you’ll find hybrid apps. They are usually quicker to build (and thus cheaper) than native apps, but a step-up from what you can expect out of browser-based web apps.
- **the app is built using cross-compatible web technologies**, such as HTML5, CSS and Javascript,the same languages used to write web apps.
- Some native code is used however to allow the app to access the wider functionality of the device and produce a more refined user experience.
- two main players in the world of hybrid apps: Phonegap/Cordova and Appcelerator Titanium. With these tools you create HTML/CSS/Javascript local files, design and build the app as if it was a website, then use Cordova to wrap them into a mobile app.

Context

- mobile user has a different context than a desktop user.
- You should think about and define your users’ possible contexts:
- Where is the user?
- Why is the user accessing your mobile website?
- What is the user looking for?
- What can you offer from a mobile perspective to help solve the user’s problem?

- Server-Side Adaptation
- A different approach is to create *n* different versions of your site and redirect the user to the appropriate one depending on the device detected.
- The main problem with this approach is that you need to maintain *n* different versions of the same documents.
- If this will be your strategy, expect to need a minimum of four versions for a successful mobile website, with an optional fifth.
- If you create fewer versions, some users will probably have a bad experience with your site.

- Using a server-side adaptation mechanism, you can reduce the number of required versions to two: one for low-end and mid-range devices and one for high-end devices and smartphones.
- *Low-end devices*
- Basic XHTML markup, maximum screen width of 176 pixels, basic CSS support (text color, background color, font size), no JavaScript
- *Mid-range devices*
- Basic XHTML markup, average screen width of 320 pixels, medium CSS support (box model, images), basic JavaScript support (validation, redirection, dialog windows)

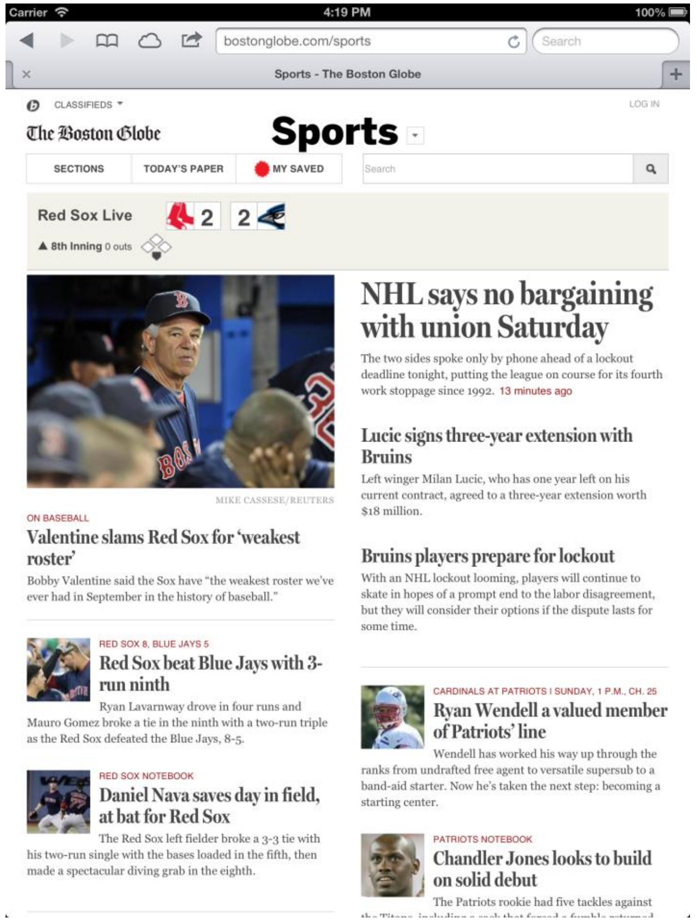
- *High-end devices*
- XHTML or HTML 4 markup, average screen width of 240 pixels, advanced CSS support (similar to desktops), Ajax and DOM support, optional touch support, optional orientation change support (for an average screen width of 320 pixels)
- *Smartphones*
- HTML5, large screen size and high resolution, touch support, support for CSS3 (animations, effects) and Ajax, local storage, geolocation

RWD

- It’s a simple and powerful idea to provide one HTML document that will automatically adapt (respond) on the client side to different scenarios, usually meaning available screen size or current orientation (landscape versus portrait).
- RWD is implemented using CSS3 media queries ,which allow the same HTML to automatically change the layout and design in different conditions, so it can be used to separate between:

Feature phones

- Smartphones
- Tablets
- Desktop browsers
- Smart TVs



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Red Sox Live 2 2

▲ 8th Inning 0 outs

MIKE CASSESE/REUTERS

ON BASEBALL

Valentine slams Red Sox for 'weakest roster'

Bobby Valentine said the Sox have "the weakest roster we've ever had in September in the history of baseball."

RED SOX 8, BLUE JAYS 5

Red Sox beat Blue Jays with 3-run ninth

Ryan Lavarnway drove in four runs and Mauro Gomez broke a tie in the ninth with a two-run triple as the Red Sox defeated the Blue Jays, 8-5.

RED SOX NOTEBOOK

Daniel Nava saves day in field, at bat for Red Sox

The Red Sox left fielder broke a 3-3 tie with his two-run single with the bases loaded in the fifth, then made a spectacular diving grab in the eighth.

NHL says no bargaining with union Saturday

The two sides spoke only by phone ahead of a lockout deadline tonight, putting the league on course for its fourth work stoppage since 1992. 13 minutes ago

Lucic signs three-year extension with Bruins

Left winger Milan Lucic, who has one year left on his current contract, agreed to a three-year extension worth $18 million.

Bruins players prepare for lockout

With an NHL lockout looming, players will continue to skate in hopes of a prompt end to the labor disagreement, but they will consider their options if the dispute lasts for some time.

CARDINALS AT PATRIOTS | SUNDAY, 1 P.M., CH. 25

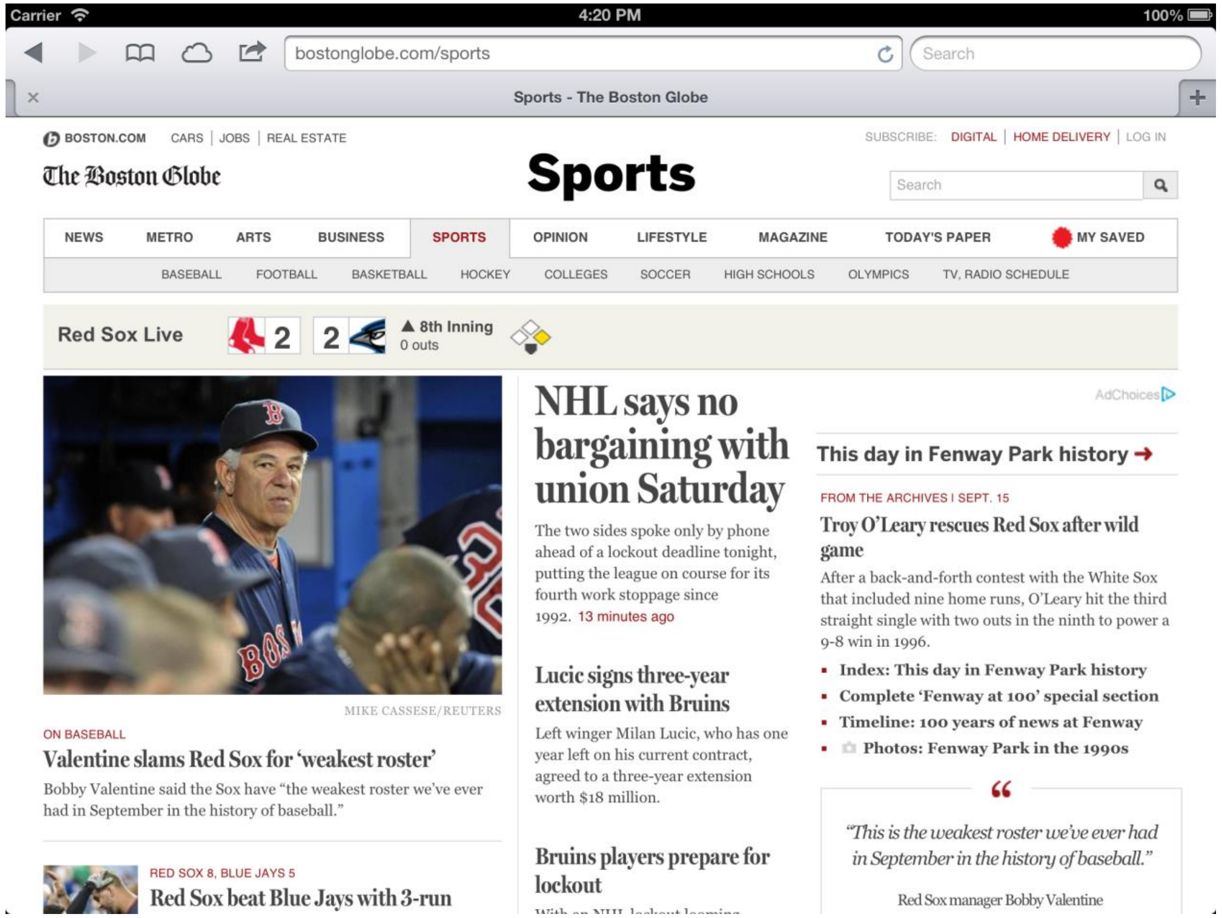
Ryan Wendell a valued member of Patriots' line

Wendell has worked his way up through the ranks from undrafted free agent to versatile supersub to a band-aid starter. Now he's taken the next step: becoming a starting center.

PATRIOTS NOTEBOOK

Chandler Jones looks to build on solid debut

The Patriots rookie had five tackles against



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Red Sox Live 2 2 ▲ 8th Inning 0 outs

MIKE CASSESE/REUTERS

ON BASEBALL

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Red Sox beat Blue Jays with 3-run

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Bruins players prepare for lockout

AdChoices

This day in Fenway Park history →

FROM THE ARCHIVES | SEPT. 15

Troy O'Leary rescues Red Sox after wild game

After a back-and-forth contest with the White Sox that included nine home runs, O'Leary hit the third straight single with two outs in the ninth to power a 9-8 win in 1996.

- Index: This day in Fenway Park history
- Complete 'Fenway at 100' special section
- Timeline: 100 years of news at Fenway
- Photos: Fenway Park in the 1990s

"This is the weakest roster we've ever had in September in the history of baseball."

Red Sox manager Bobby Valentine

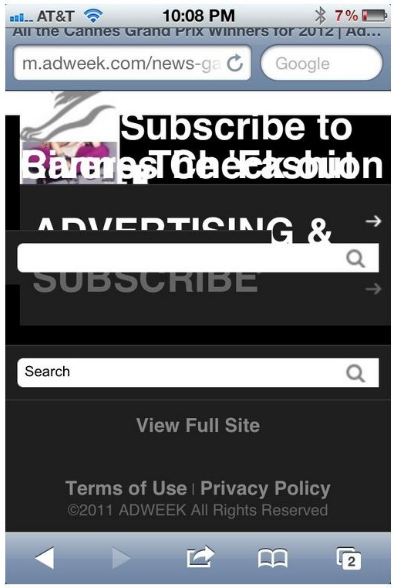
- Touch Design Patterns:

- Navigation:
- 80% of your desktop site will not be useful to mobile users. Therefore, you need to research the 20% you should be focusing on.
- Here are some tips you will need to follow:
- Determine whether locating the user is useful for your services.
- Always offer a link to the desktop website, sometimes called the “classic version.”
- Avoid startup or welcome screens in browser-based apps.
- Do your best to predict users’ input based on the context and their browsing history, to reduce the number of page selections and clicks required.

- Design and User Experience:
- Every mobile web document has a few identified zones:
- Header
- Main navigation
- Content modules
- Second-level navigation
- Footer

mobilizing the website, not *minimizing* it

What Not to Do..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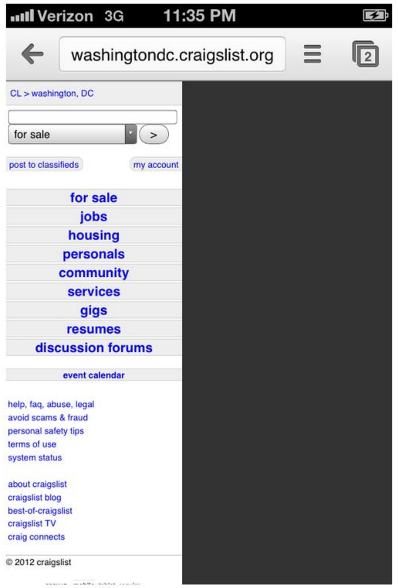
Verizon 3G 11:35 PM

washingtondc.craigslist.org

CL > washington, DC

for sale >

post to classifieds

my account

for sale
jobs
housing
personals
community
services
gigs
resumes
discussion forums

event calendar

help, faq, abuse, legal
avoid scams & fraud
personal safety tips
terms of use
system status

about craigslist
craigslist blog
best-of-craigslist
craigslist TV
craig connects

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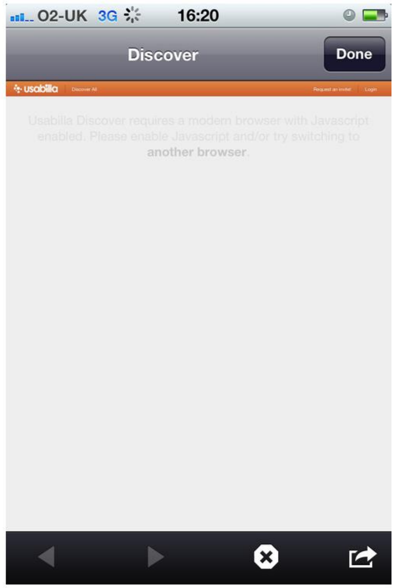
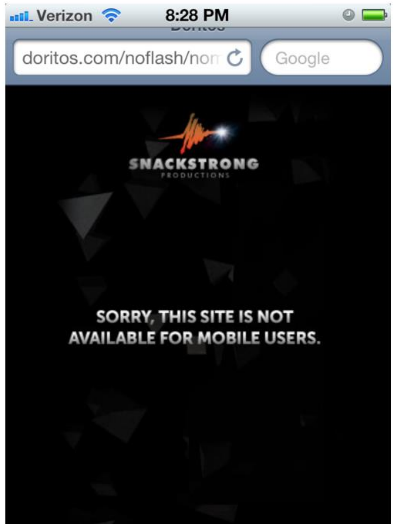

O2-UK 3G 16:20

Discover

Done

usabilla Discover All Request an invite Login

Usabilla Discover requires a modern browser with Javascript enabled. Please enable Javascript and/or try switching to **another browser**.

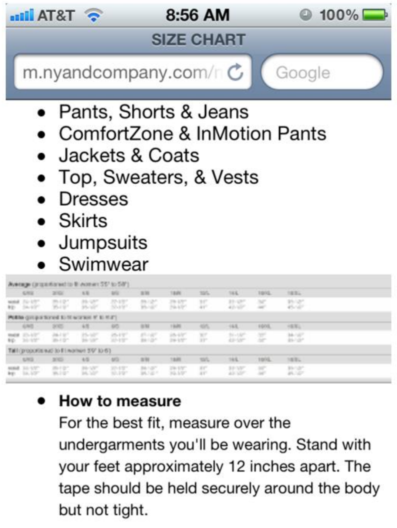

Verizon 8:28 PM

doritos.com/noflash/non

Google

SNACKSTRONG PRODUCTIONS

SORRY, THIS SITE IS NOT AVAILABLE FOR MOBILE USERS.


AT&T 8:56 AM 100%

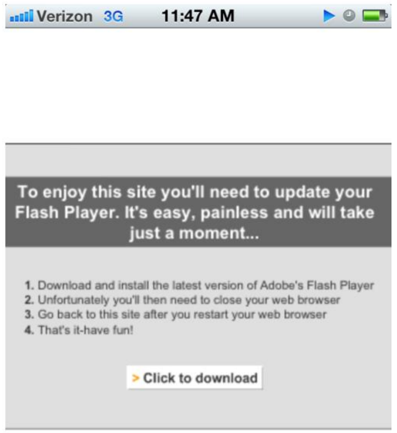
SIZE CHART

m.nyandcompany.com/

Google

- Pants, Shorts & Jeans
- ComfortZone & InMotion Pants
- Jackets & Coats
- Top, Sweaters, & Vests
- Dresses
- Skirts
- Jumpsuits
- Swimwear

- **How to measure**
  For the best fit, measure over the undergarments you'll be wearing. Stand with your feet approximately 12 inches apart. The tape should be held securely around the body but not tight.


Verizon 3G 11:47 AM

To enjoy this site you'll need to update your Flash Player. It's easy, painless and will take just a moment...

1. Download and install the latest version of Adobe's Flash Player
2. Unfortunately you'll then need to close your web browser
3. Go back to this site after you restart your web browser
4. That's it-have fun!

> Click to download

Open Source

BSD License

MIT License

PhoneGap

PhoneGap is a software development framework by Adobe System, which is used to develop mobile **applications**. To develop **apps** using **PhoneGap**, the developer does not require to have knowledge of mobile programming language but only web-development languages like, HTML, CSS, and JScript.

- Write a **PhoneGap** app once with HTML and JavaScript and deploy it to any mobile device without losing features of a native app. Adobe **PhoneGap** is a standards-based, open-source development framework for building cross-platform mobile apps with HTML, CSS and JavaScript for iOS, Android™ and Windows® Phone 8.

PhoneGap

- Only platform to support 6 Platforms

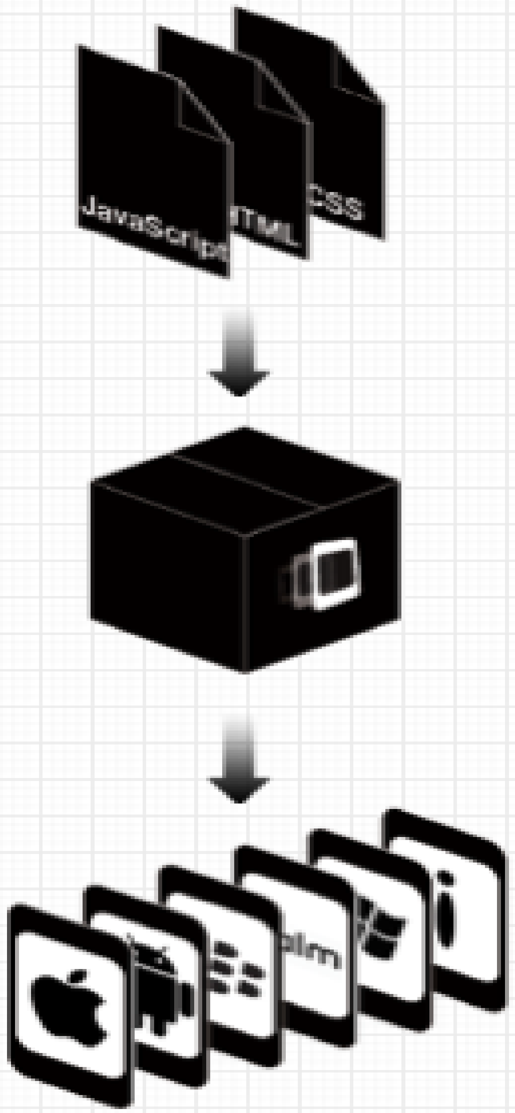
iOS
iOS
Android
Blackberry
palm
webOS
Coming soon
SYMBIAN
Symbian WRT

PhoneGap

- Standards based and extended

5
JS
HTML5
CSS3
JavaScript

How **PhoneGap** Works



Build your app once with **web-standards**

Based on HTML5, PhoneGap leverages web technologies developers already know best... HTML and JavaScript.

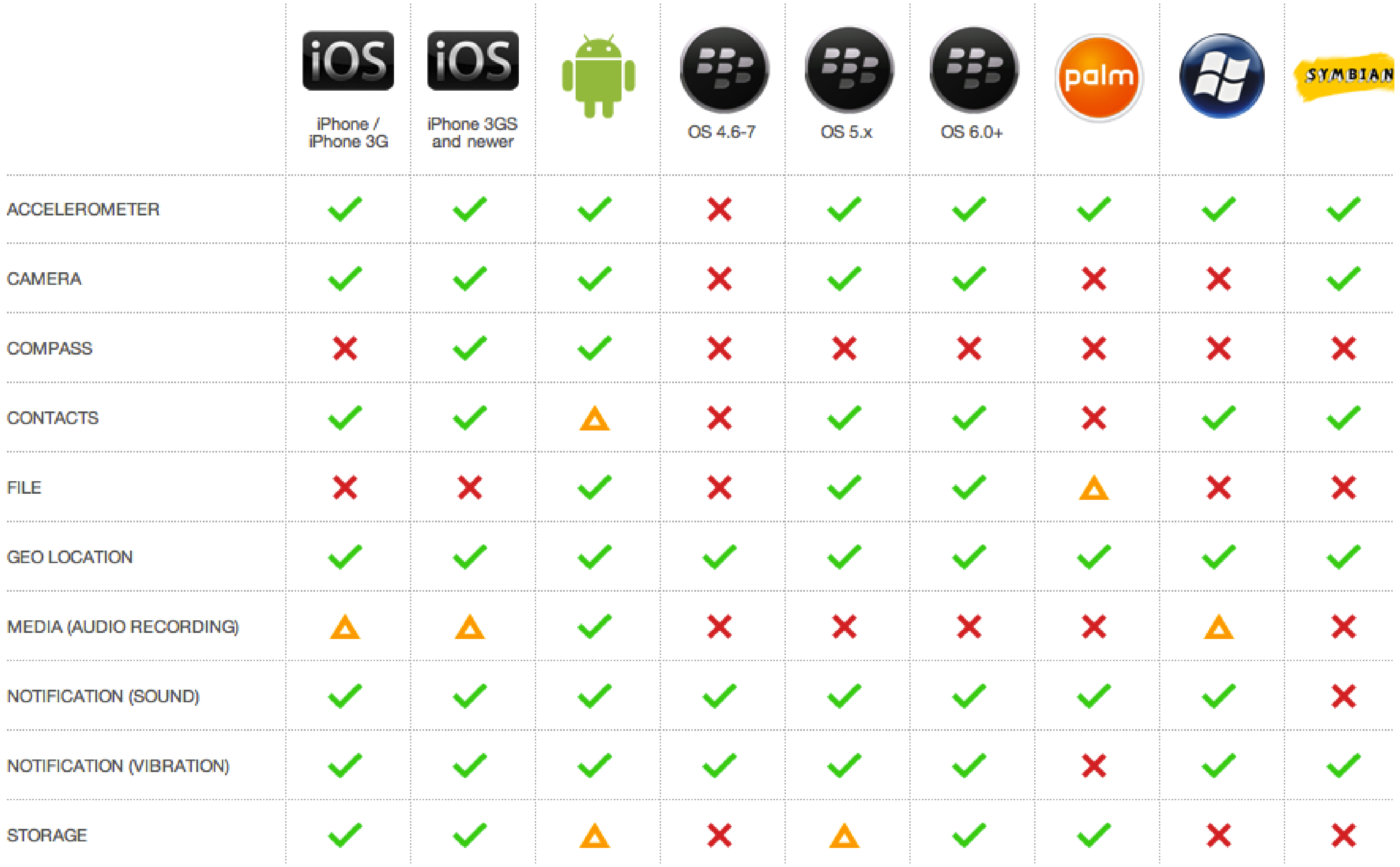
Wrap it with **PhoneGap**

Using the free open source framework or PhoneGap build you can get access to native APIs.

Deploy to **multiple** platforms!

PhoneGap uses standards-based web technologies to bridge web applications and mobile devices.

PhoneGap Features

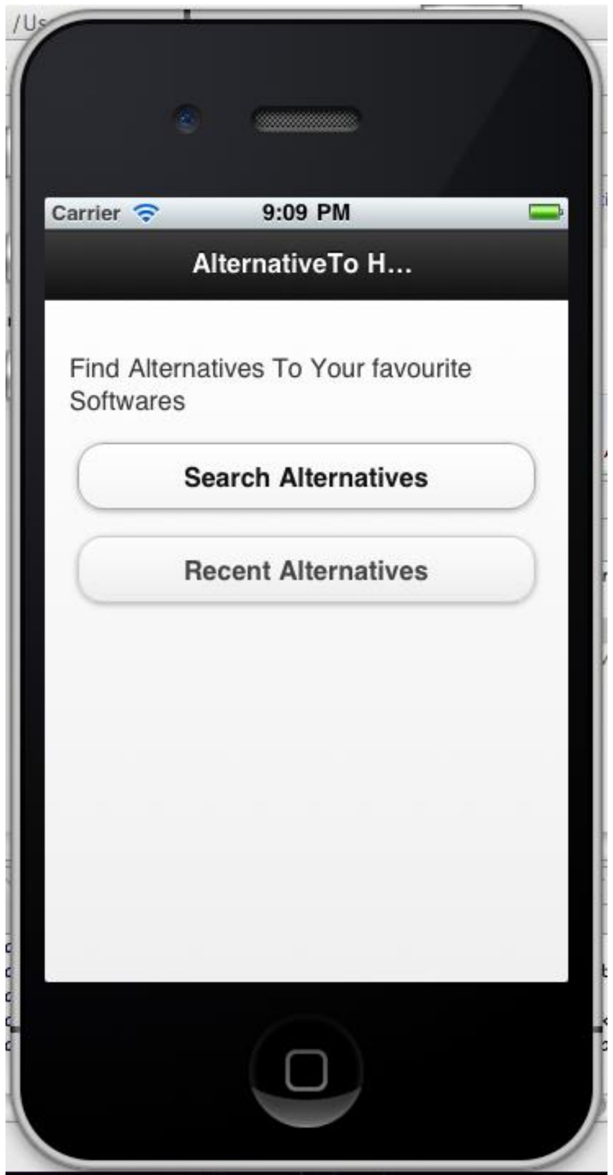


	iOS iPhone / iPhone 3G	iOS iPhone 3GS and newer		OS 4.6-7	OS 5.x	OS 6.0+	palm		SYMBIAN
ACCELEROMETER	✓	✓	✓	✗	✓	✓	✓	✓	✓
CAMERA	✓	✓	✓	✗	✓	✓	✗	✗	✓
COMPASS	✗	✓	✓	✗	✗	✗	✗	✗	✗
CONTACTS	✓	✓	△	✗	✓	✓	✗	✓	✓
FILE	✗	✗	✓	✗	✓	✓	△	✗	✗
GEO LOCATION	✓	✓	✓	✓	✓	✓	✓	✓	✓
MEDIA (AUDIO RECORDING)	△	△	✓	✗	✗	✗	✗	△	✗
NOTIFICATION (SOUND)	✓	✓	✓	✓	✓	✓	✓	✓	✗
NOTIFICATION (VIBRATION)	✓	✓	✓	✓	✓	✓	✗	✓	✓
STORAGE	✓	✓	△	✗	△	✓	✓	✗	✗

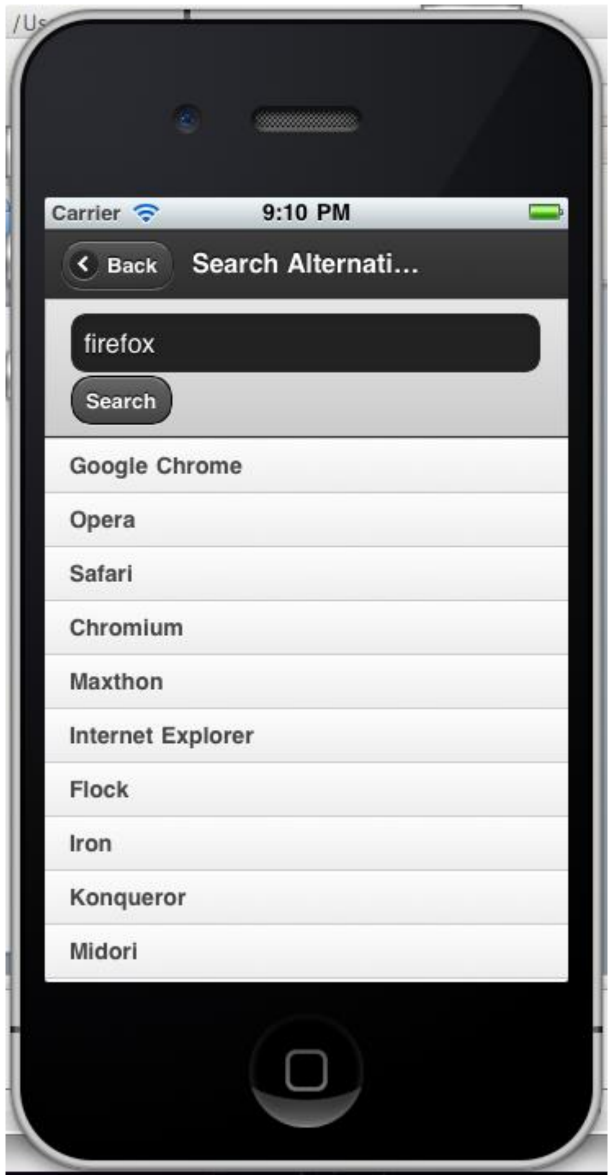
PhoneGap Prerequistes

- Need to be acquainted with Android, IOS, BlackBerry, WebOS
- Need to be expert at HTML/Javascript or framework like GWT
- Need to be acquainted with JavaScript libraries like
  - Jquery
  - script.aculo.us
  - Prototype
  - Etc
- Or Ajax framework like GWT
- Need different project for each platform, inject PhoneGap code in each project
- PhoneGap has no IDE, use Eclipse for Android and Xcode for IPhone

Demo Screens - IPhone

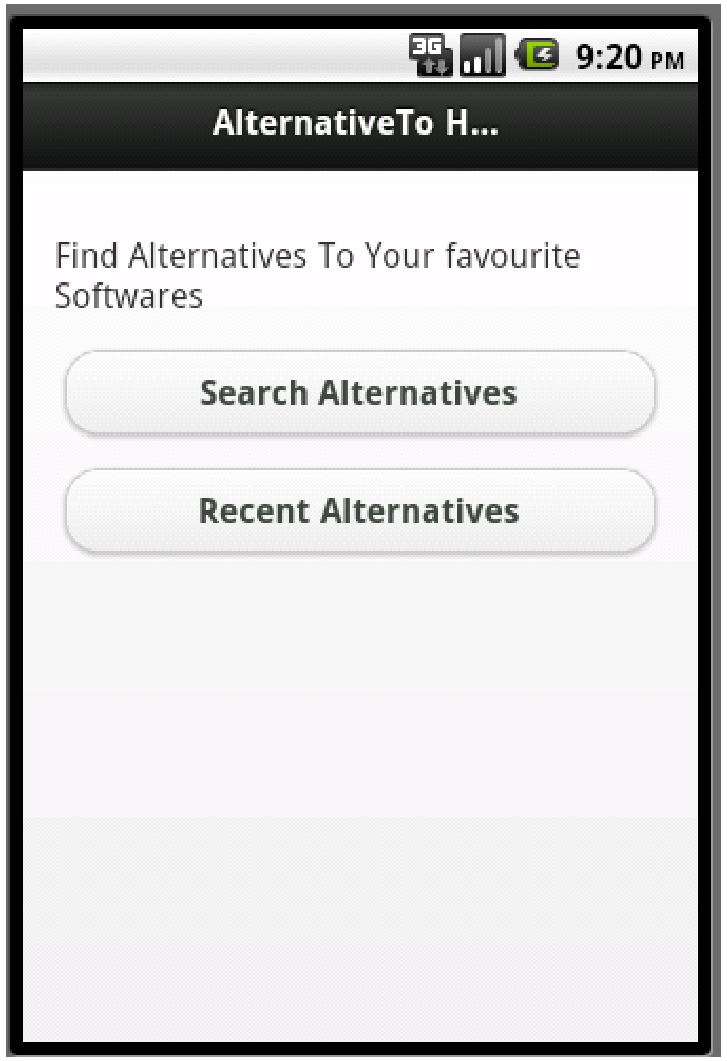


Find Alternatives To Your favourite Softwares



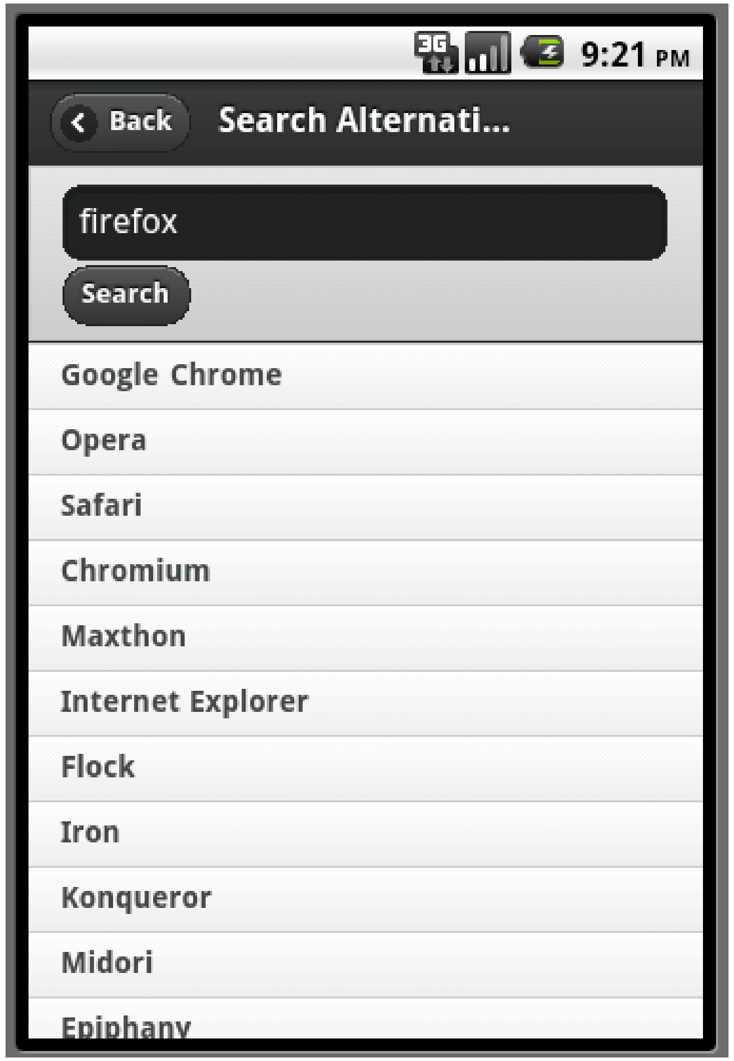
Google Chrome
Opera
Safari
Chromium
Maxthon
Internet Explorer
Flock
Iron
Konqueror
Midori

Demo Screens - Android


9:20 PM

AlternativeTo H...

Find Alternatives To Your favourite Softwares


9:21 PM

firefox

Google Chrome
Opera
Safari
Chromium
Maxthon
Internet Explorer
Flock
Iron
Konqueror
Midori
Epiphany

Challenges and Advantages

- HTML based UI is the biggest Challenge as well as Advantage

- Same UI can be used for Web and Mobile and even Desktop

- Promising Framework
  - GWT – Used by Spring Roo for Enterprise Application Development
  - jQueryMobile – Based on legendary Jquery and now features
    - Multipage Template
    - Page Slide Transitions
    - Dialogs
    - Toolbars
    - Forms
    - Lists

appcelerator

titanium

- Titanium is a cross-platform development environment
- where you can build iOS, Android, BlackBerry and Hybrid/HTML5 apps
- Titanium apps are written in JavaScript
- Your JavaScript interfaces with native controls through
- an abstraction layer (you're not building a webpage)
- Titanium features an Eclipse-based IDE called **Titanium Stdio.**
- Titanium has a MVC framework called Alloy , and
- Appcelerator offers cloud service to help bootstrap your app
- Titanium is free and open-source

- **Appcelerator Titanium** is an open-source framework that allows the creation of mobile apps on platforms including iOS, Android and Windows Phone from a single JavaScript codebase, developed by Appcelerator.

IOS AND ANDROID DEVELOPMENT

- With Android, you write native apps in Java
- With iOS, you write native apps in Objective-C
- With Titanium, you write cross-platform apps in JavaScript, that run on Android, iOS and other platforms

titanium

Apache License

- Appcelerator Titanium SDK
- Titanium Module SDK

titanium

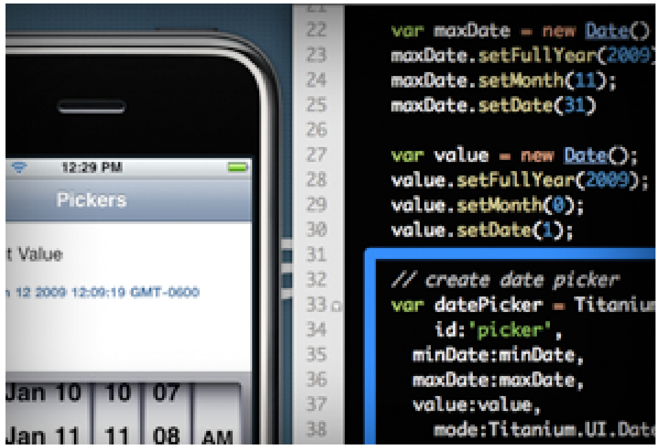
- Appcelerator Titanium SDK
- Titanium Module SDK

Paid Modules

- Commerce Modules
- Communication Modules
- Analytics Module
- Media Modules

Titanium Mobile

Native iPhone and Android Applications Rock



```
var maxDate = new Date()
maxDate.setFullYear(2009
maxDate.setMonth(11);
maxDate.setDate(31)

var value = new Date();
value.setFullYear(2009);
value.setMonth(0);
value.setDate(1);

// create date picker
var datePicker = Titaniu
    id:'picker',
  minDate:minDate,
  maxDate:maxDate,
  value:value,
    mode:Titanium.UI.Dat
```

You've got the ideas, now you've got the power. Titanium translates your hard won web skills into native applications that perform and look just like they were written in Objective-C [iPhone and iPad] or Java [Android]. With over 300 APIs, a thriving developer community, and the support you need, you can build applications that are more social, local, media rich, interactive, and extensible.

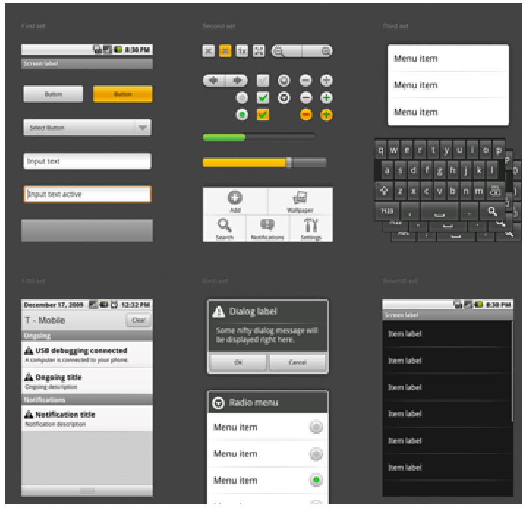
Titanium Mobile

Titanium JavaScript

Interpreted By

Wekit JavascriptCore

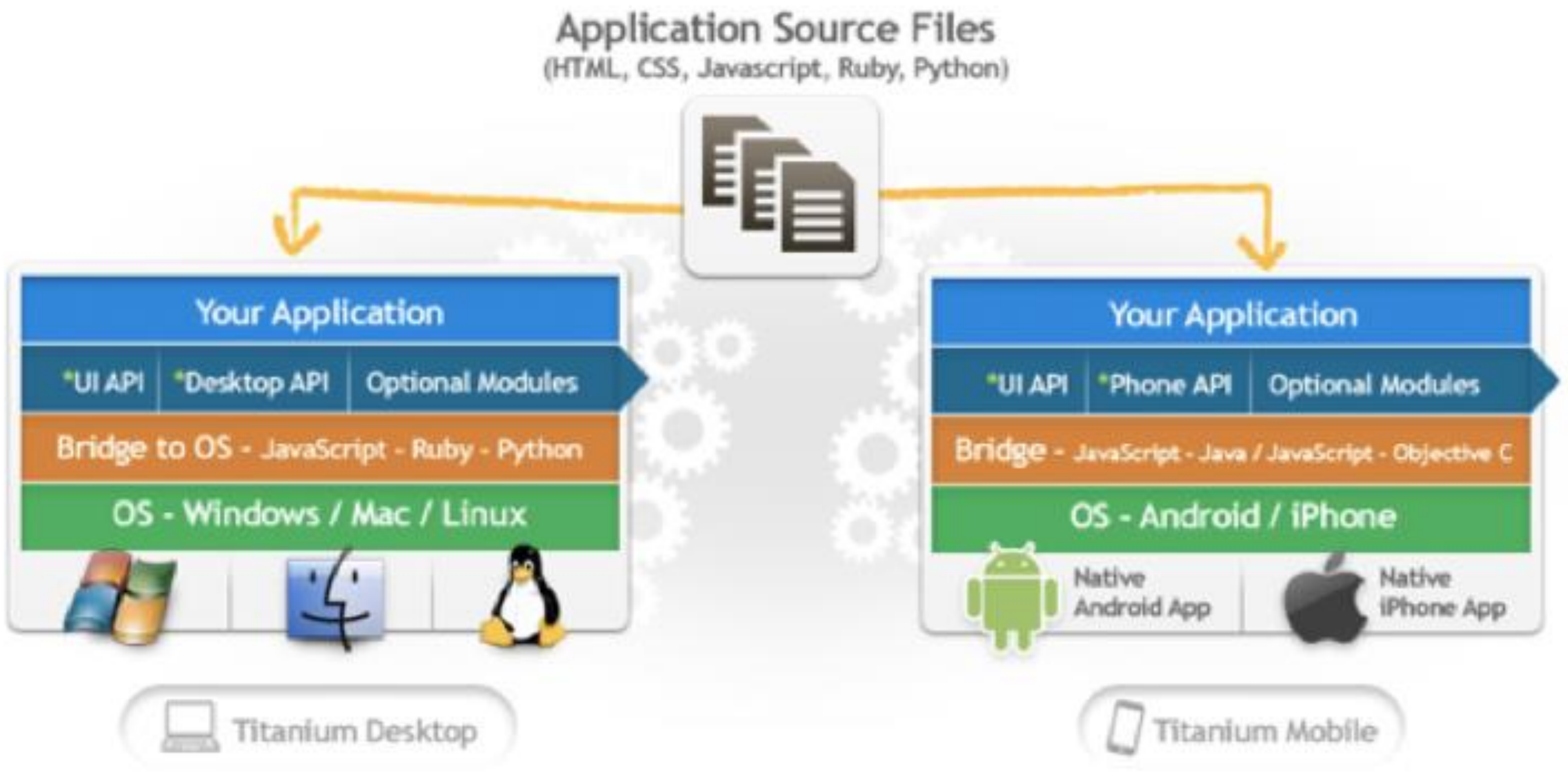
Mozilla Rhino



IPhone

Android

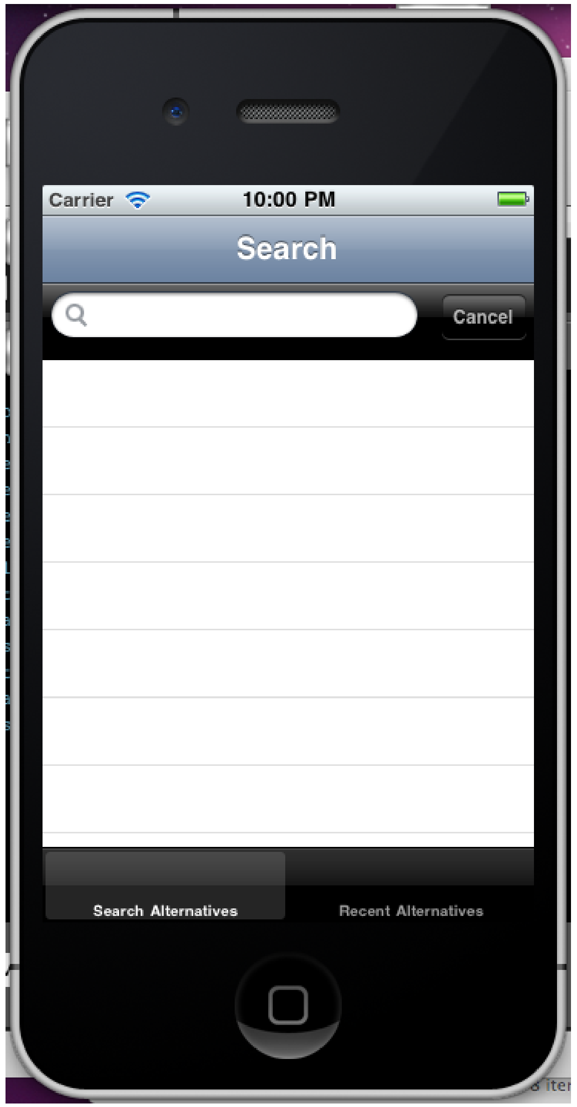
Titanium Architecture

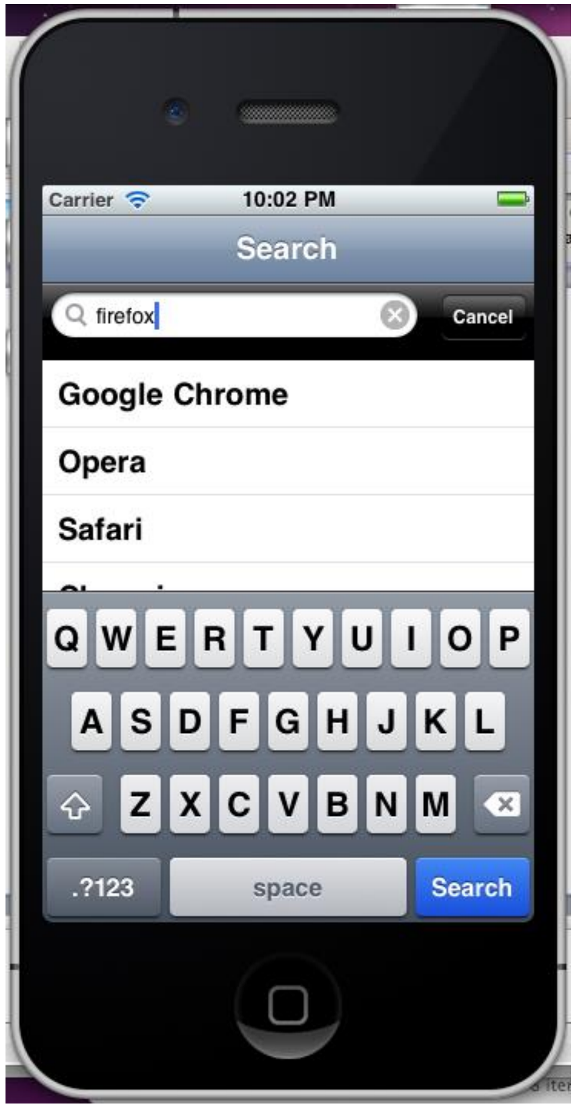


Titanium Prerequistes

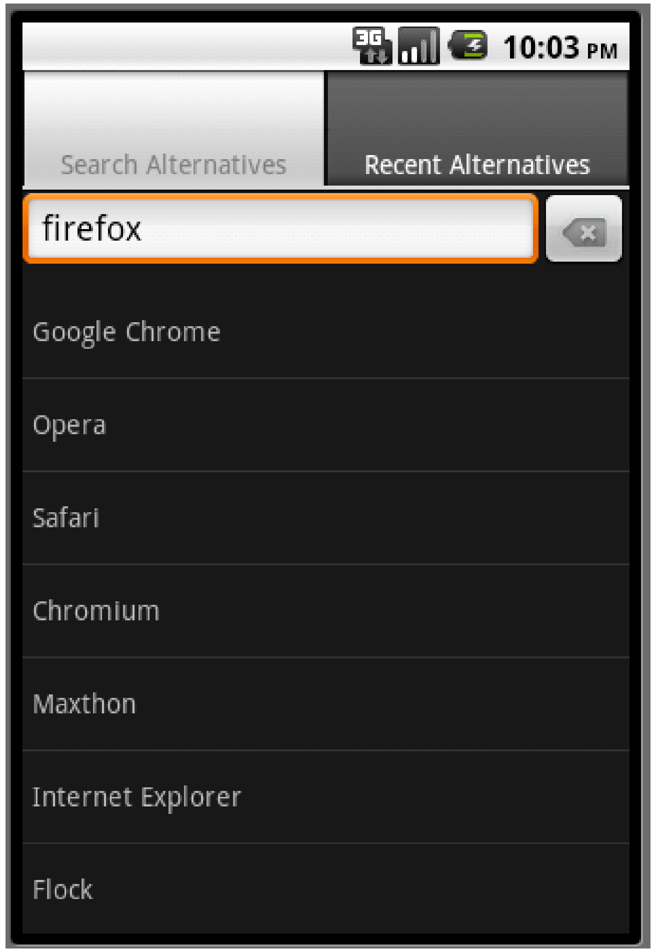
- Need to be acquainted with Android, IOS programming
- Need to know JavaScript
- Use Titanium Mobile IDE to configure projects and use Text IDE to edit the code (unlike PhoneGap, there is only one project for all platforms)

Demo Screens - IPhone



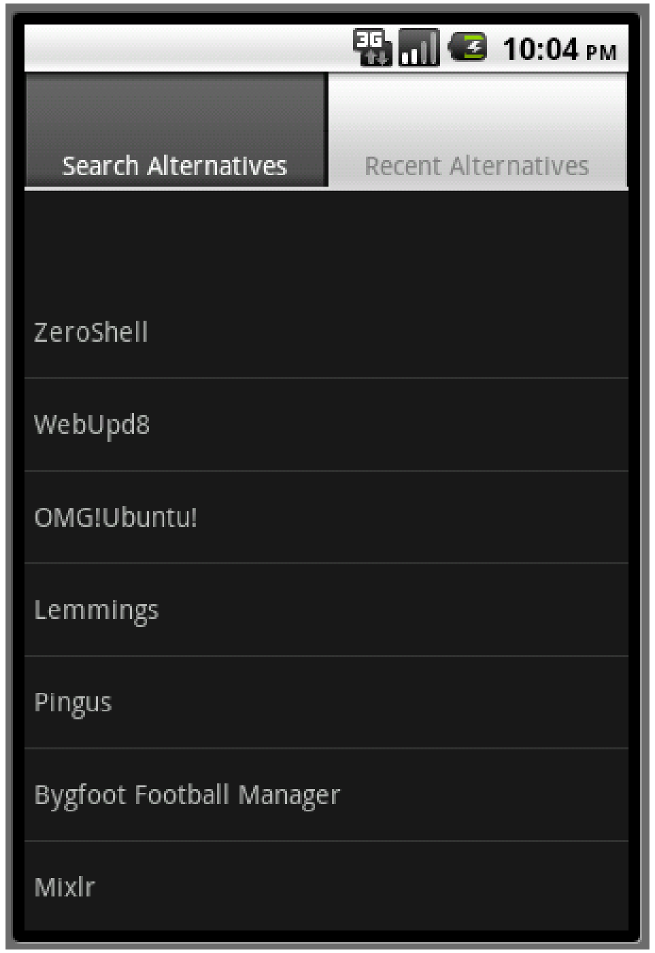


Demo Screens - Android



firefox

Google Chrome
Opera
Safari
Chromium
Maxthon
Internet Explorer
Flock



ZeroShell
WebUpd8
OMG!Ubuntu!
Lemmings
Pingus
Bygfoot Football Manager
Mixlr

Challenges and Advantages

- Being Native is the biggest strength
- Limited cross platform api is a weakness
- Platform specific api leads to fragmentation within code

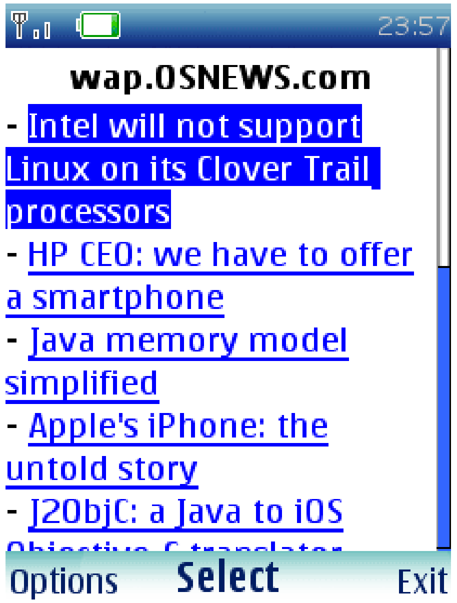
Comparison

Titanium Mobile	**PhoneGap**
Gives out native app	Gives out a mobile web app
API is more proprietary	API is less proprietary
UI has Limitations	UI possibilities are unlimited
UI will be fast	UI could be slow
Much better User Experience	User Experience will get better with enhancements
Portal Code can not be reused	Portal Code can be reused
Extensions are possible	Extensions are possible and easy to implement
Limited support for HTML/Javascript	

More will come out of discussion, comments are welcome

Markups and Standards

- Finally, we have arrived at the best part: coding! (:
- One of the first mobile web markup languages to be developed was *HDML* (Handheld Device Markup Language) by Unwired Planet.
- It was never released as a standard, but it helped in the creation of WML (Wireless Markup Language).
- WML
- WML was incorporated into the WAP 1.1 standard and was the first standard of the mobile web not b W3C but by WAP forum.
- WML is absolutely deprecated today.


wap.OSNEWS.com

- Intel will not support Linux on its Clover Trail processors
- HP CEO: we have to offer a smartphone
- Java memory model simplified
- Apple's iPhone: the untold story
- J2ObjC: a Java to iOS

- Wireless markup language is based on XML derived from xhtml, is a markup language intended for WAP devices such as mobile phones.
- It provides navigational support, data input, hyperlinks, text and image presentation, and forms, much like HTML.
- It is a part of WAP(Wireless Application Protocol).
- The role of WML in mobile Internet applications is the same as that of HTML in web applications. WAP sites are written in WML, while web sites are written in HTML.WAP sites can also be opened in pc just we have to install plugins for our browser.
- WML files have the extension ".wml".

ABOUT WAP………

WAP stands for Wireless Application Protocol

- ➢ WAP is an application communication protocol
- ➢ WAP is used to access services and information
- ➢ WAP is for handheld devices such as mobile phones
- ➢ WAP enables the creating of web applications for mobile devices.
- ➢ WAP uses the mark-up language WML (not HTML) WML is defined as an XML 1.0 application

Difference between WML and HTML

WML	HTML
Makes use of variables	Does not use variables
WML script stored in a separate file	Javascript is embedded in the same HTML file
Images stored as WBMP	Images are stored as GIF, JPEG or PNG
WBMP is a 2 bit image	Size of the images are much larger in HTML
Case sensitive	Not case sensitive
WML has fewer tags than HTML	HTML has more tags than WML
A set of 'WML Cards' make a 'DECK'	A set of 'HTML pages' make a 'SITE'

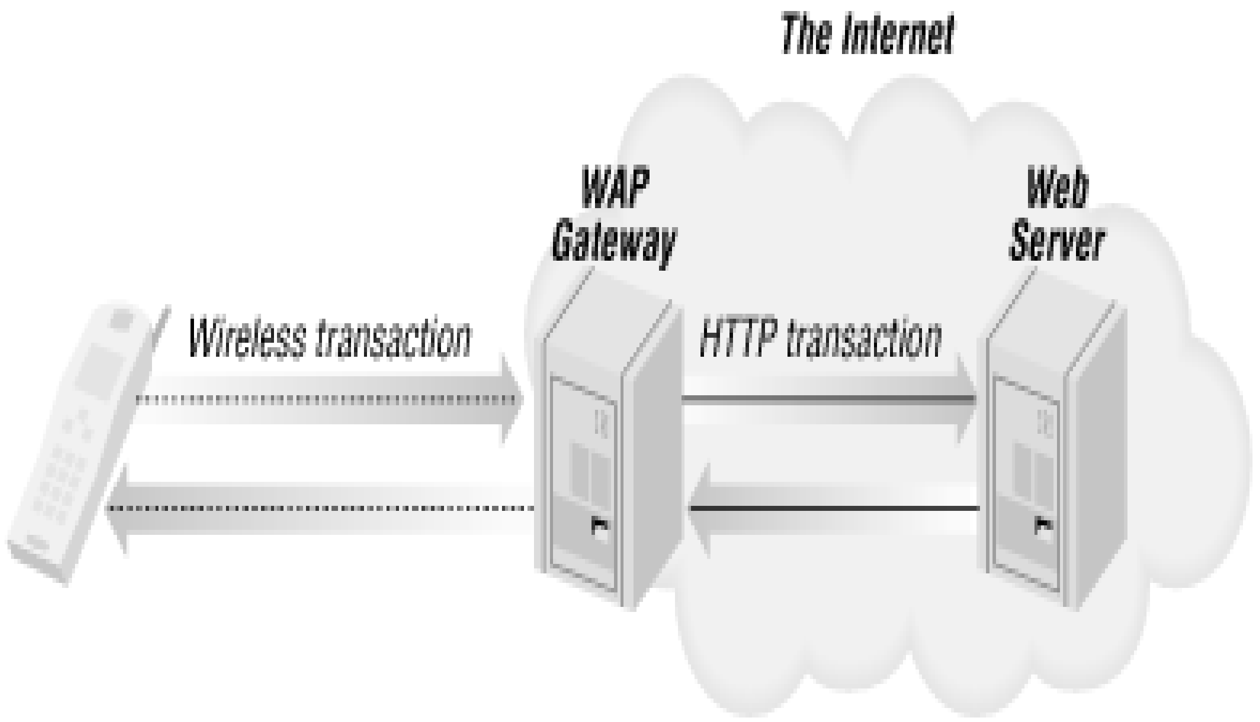
Wml advantages

- very easy to use and understand.
- Transmission of WML documents requires less bandwidth than HTML documents because WML documents are simpler and WML is compressed before it is sent to the WAP device.
- Compared to HTML documents, displaying WML documents requires less processing power and memory.
- WML provides support for limited graphics with a limited gray scale

WML limitations

- Like HTML, WML does specify how the content is to be displayed. Thus micro browsers on different WAP devices display the WML content differently.
- WAP devices such as WAP phones will not accept large decks.
- There are many variations between WAP phones, for example Screen sizes, keypads, and soft keys can be different .This variation is similar to the variation found with Web browsers and their platforms .The problem is harder in case of WML because there are many more WAP devices than Web browsers and their platforms.

How wap works?



Introduction to WML tags/elements

- 1)deck and card elements

WML elements	purpose
<!-->	Defines a WML comment
<wml>	Defines a WML deck (WML root)
<head>	Defines head information
<meta>	Defines meta information
<card>	Defines a card in a deck
<access>	Defines information about the access control of a deck
<template>	Defines a code template for all the cards in a deck

- 2)text elements

<br>	Defines a line break
<p>	Defines a paragraph
<table>	Defines a table
<tr>	Defines a table cell (table data)
<td>	Defines a table row
<pre>	Defines preformatted text

- 3)anchor elements

<a>	Defines an anchor
<anchor>	Defines an anchor

- 4)text formatting tags

<b>	**Defines bold text**
<big>	Defines big text
<em>	Defines emphasized text
<i>	Defines italic text
<small>	Defines small text
<strong>	Defines strong text
<u>	Defines underlined text

- 5)variable elements

<setvar>	**Defines and sets a variable**
<timer>	Defines a timer

- 6)event elements

<do>	Defines a do event handler
<onevent>	Defines an onevent event handler
<postfield>	Defines a postfield event handler
<ontimer>	Defines an ontimer event handler
<onenterforward>	Defines an onenterforward handler
<onenterbackword>	Defines an onenterbackward handler
<onpick>	Defines an onpick event handler

- 7)image elements

<img>	Defines an image

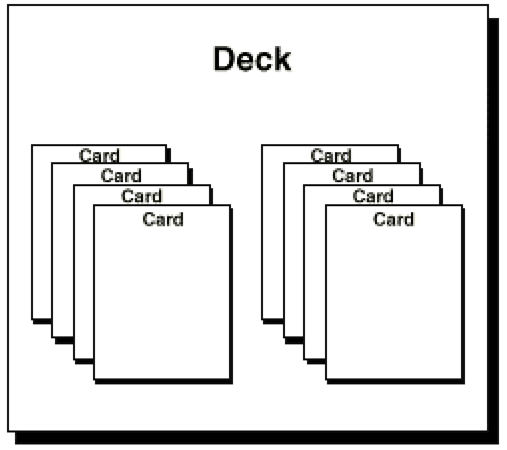
- 8)task elements

<go>	Represents the action of switching to a new card
<noop>	Says that nothing should be done
<prev>	Represents the action of going back to the previous card
<refresh>	Refreshes some specified card variables.

- 9)input elements

<input>	Defines an input field
<select>	Defines a select group
<option>	Defines an option in a selectable list
<fieldset>	Defines a set of input fields
<optgroup>	Defines an option group in a selectable list

WML decks and cards



- A WAP site is composed of WML files.
- Each WML file is also called as deck.
- Each deck is made up of cards.
- Each card contains content that you want to display on the screen.
- Only one card is displayed at time.
- First card is displayed first by default.

WML document structure

Prolog:

- Every WML document starts with the prolog.
- The first line is the XML declaration and the second line is the DOCTYPE declaration.
- The DOCTYPE declaration specifies the name of the DTD (Document Type Definition) and the URL to the DTD.
- The DTD contains information about the syntax of the markup language.
- It defines what elements and attributes can be used in the markup and the rules that they should be used.
- For example, the DTD of WML specifies that the <card> element should be enclosed in the <wml></wml> tag pair.
- If we do not follow this rule, your WML document is said to be invalid. WAP browsers will complain if you try to view an invalid WML document.

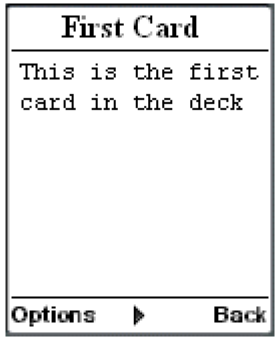
Basic WML deck structure

```
<?xml version="1.0"?>
<!DOCTYPE wml PUBLIC "-//WAPFORUM//DTD WML 1.3//EN"
"http://www.wapforum.org/DTD/wml13.dtd/wml_1.1.xml">


<wml>

<card id=”card1”>

….

</card>


<card id=”card2”>….

</card>

</wml>
```

Example

- <?xml version="1.0"?><!DOCTYPE wml PUBLIC "-//WAPFORUM//DTD WML 1.2//EN""http://www.wapforum.org/DTD/wml12.dt>
- <wml>
- <card id="one" title="First Card">
- <p>This is the first card in the deck </p></card>
- <card id="two" title="Second Card">
- <p>This is the second card in the deck</p>
- </card>
- </wml>

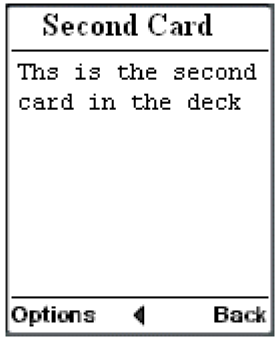
Output of above example



First Card

```
This is the first
card in the deck
```

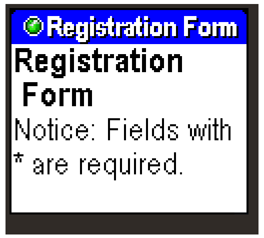
- When we press right button then second card will be visible as follows:

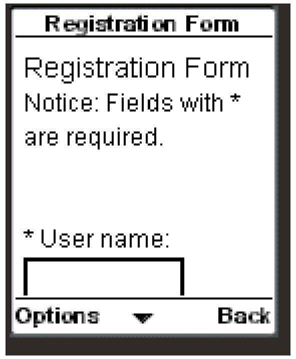


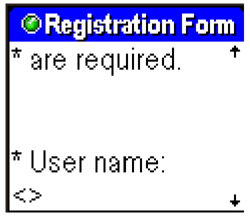
Second Card

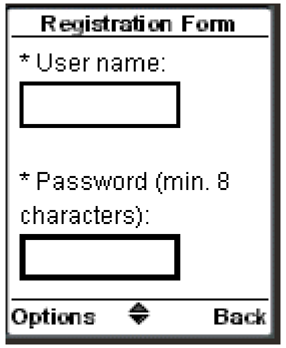
```
Ths is the second
card in the deck
```

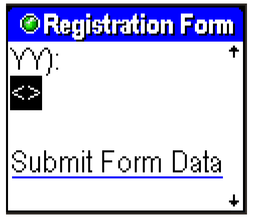
- A typical WML document used to contain just text, links, and maybe some small image;

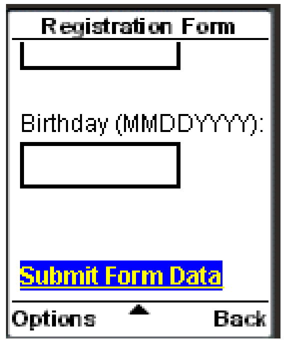

Registration Form
Registration Form
Notice: Fields with * are required.


Registration Form
Registration Form
Notice: Fields with * are required.
* User name:
Options Back


Registration Form
* are required.
* User name:
<>


Registration Form
* User name:
* Password (min. 8 characters):
Options Back





- WML does not generally support GIF, JPEG, or PNG images
- Images in WML files were typically in *WBMP* (Wireless Bitmap) format.

Current Standards !!!

- HTML5 and other sub-standards
- XHTML Mobile Profile 1.0, 1.1, and 1.2
- XHTML Basic 1.0 and 1.1
- HTML 4.01
- De facto standard mobile HTML extensions
- WAP CSS
- CSS Mobile Profile (CSS MP)
- CSS 2.1
- CSS 3.0 and other sub-standards, such as CSS3 transitions and CSS3 columns

- Feature phone vs Smart phones
- On today's mobile web, we will use HTML5 and CSS3 for smartphones and tablets
- XHTML MP with WAP CSS for feature phones.
- **ALL browsers also understand XHTML Basic and CSS MP, and most mid-range and highend devices understand full desktop web standards (HTML and CSS).**

- *how does the device know which standard we coded a website in?*

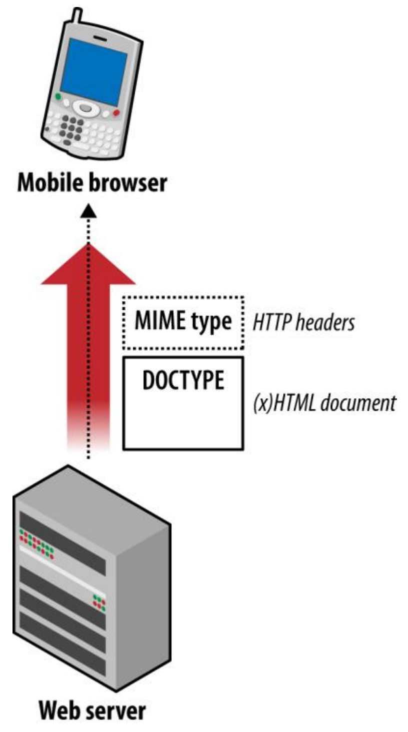
MIME type and the DOCTYPE

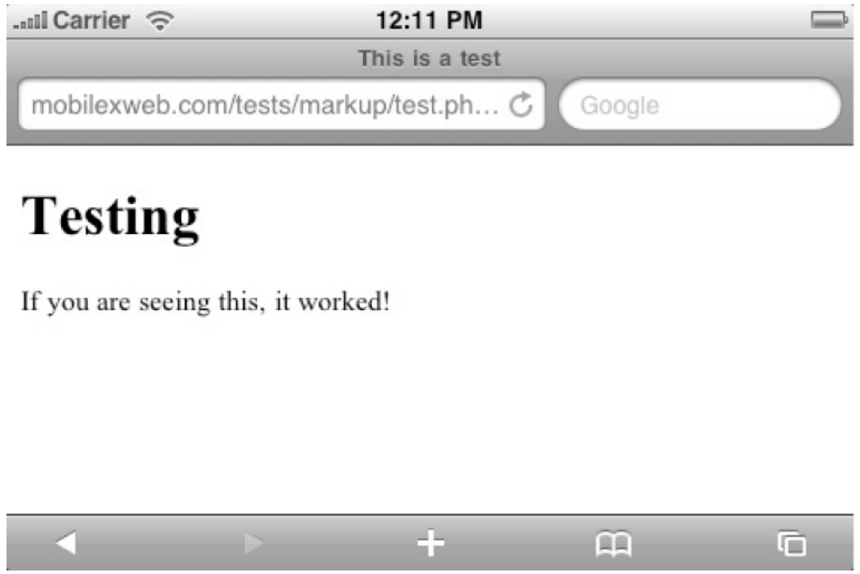
- The MIME type is a string sent by the server telling the browser the format of the document.

Cascading Style Sheets (CSS)	text/css
JavaScript	application/javascript
JavaScript Object Notation (JSON)	application/json

- Why specify a doctype? Because it defines which version of (X)HTML your document is actually using, also needed by some tools processing the document.
- For example, specifying the doctype of your document allows you to use tools such as the Markup Validator to check the syntax of your (X)HTML. Such tools won't be able to work if they do not know what kind of document you are using.

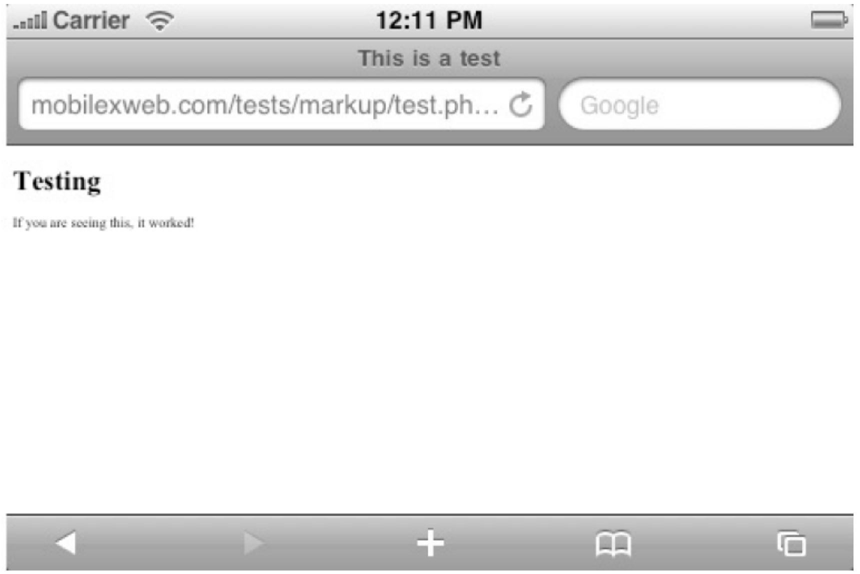
- <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
- The MIME type travels with the server's response headers and the DOCTYPE is defined inside the HTML document.
- Safari on iOS will render a file differently if the markup is using the HTML5 or the XHTML Mobile Profile DOCTYPE





Testing

If you are seeing this, it worked!



Testing

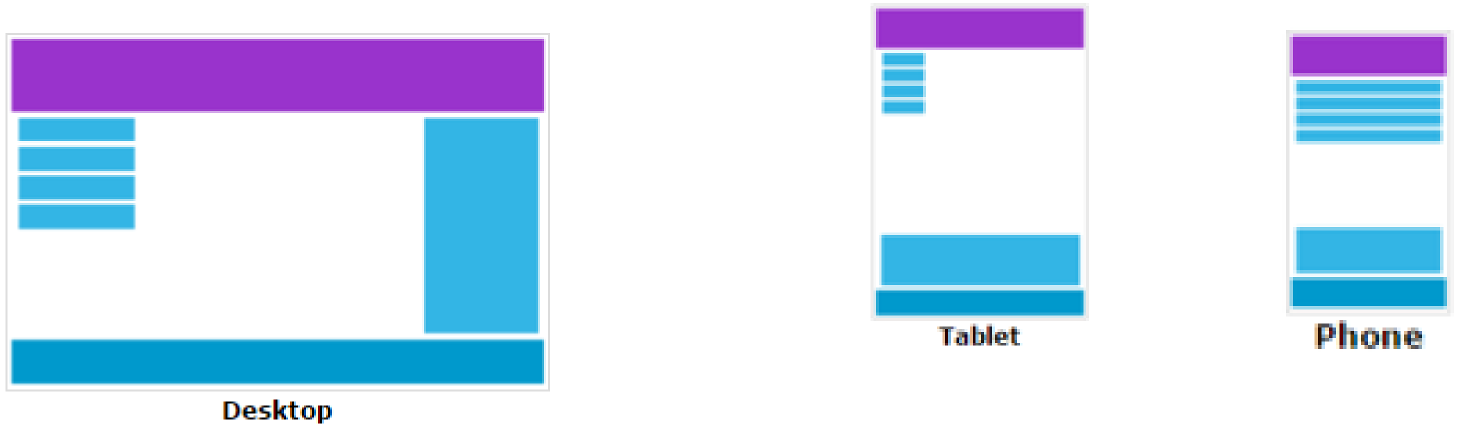
If you are seeing this, it worked!

- *The same document, with the same MIME type, rendered in Safari on iOS:*
- *the version on the left is using the XHTML Mobile Profile DOCTYPE and the version on the right a nonmobile XHTML one.*

- With XHTML (any version) include the meta tag for the content type of the file
- <meta http-equiv="Content-Type" content="text/html; charset=UTF-8" />
- In HTML5, this meta tag becomes:
- <meta charset="UTF-8">

RWD https://www.w3schools.com/css/css_rwd_intro.asp

- Responsive web design makes your web page look good on all devices.
- Responsive web design uses only HTML and CSS.
- Responsive web design is not a program or a JavaScript.
- Web pages can be viewed using many different devices: desktops, tablets, and phones. Your web page should look good, and be easy to use, regardless of the device.

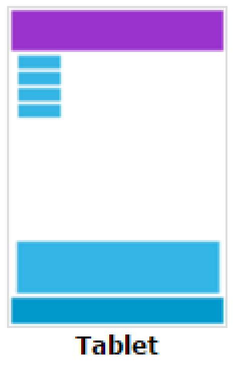


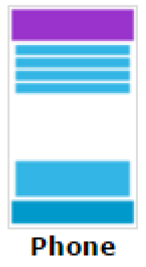
The Viewport

- The viewport is the user's visible area of a web page.
- The viewport varies with the device, and will be smaller on a mobile phone than on a computer screen.

To take control over viewport HTML 5 introduce <meta>

- <meta name="viewport" content="width=device-width, initial-scale=1.0">
- Example





Media Queries

- Media query is a CSS technique .
- It uses @media rule to include a block of CSS properties only if a certain condition is true.
- The @media rule is used to define different style rules for different media types/devices.
- In CSS2 this was called media types, while in CSS3 it is called media queries.
- Media queries look at the capability of the device, and can be used to check many things, such as:
- width and height of the viewport
- width and height of the device
- orientation (is the tablet/phone in landscape or portrait mode?)
- resolutionand much more

- Orientation: Portrait / Landscape
- Media queries can also be used to change layout of a page depending on the orientation of the browser.
- Example

- Responsive Web Design - Images
- Width property
- If the width property is set to 100%, the image will be responsive and scale up and down:

What is a Grid-View?

- Many web pages are based on a grid-view, which means that the page is divided into columns:
- Using a grid-view is very helpful when designing web pages. It makes it easier to place elements on the page.
- A responsive grid-view often has 12 columns, and has a total width of 100%, and will shrink and expand as you resize the browser window.

-
  ```
  * {
      box-sizing: border-box;
  }
  ```

HTML 5 forms

- Always use label to identify form elements
- Access key feature
- Data lists for suggestions
- Multiline text controls

MEDIA CAPTURING

- HTML Media Capture, which allows us to make use of the device’s camera and microphone from an <input type="file"> including the new capture Boolean attribute.
- The accept attribute defines how to capture the media.
- Image or Audio or Video
- Check this link:
- https://www.w3schools.com/cssref/css3_pr_mediaquery.asp

Video capturing and straming

- navigator.getUserMedia(constraints, successCallback, errorCallback);
- The Navigator.getUserMedia() method prompts the user for permission to use 0 or 1 video and 0 or 1 audio input device such as a camera, a shared screen, or a microphone.
- If the user provides permission, then the successCallback is invoked with the resulting MediaStream object as its argument.

- If the user provides permission, then the successCallback is invoked with the resulting MediaStream object as its argument.

- The constraints parameter is actually a MediaStreamConstraints object with two Boolean members: video and audio.
- These describe the media types supporting the LocalMediaStream object.
- Setting the constraints for both audio and video would like the following: { video: true, audio: true }
- STEP 2:
- When the call succeeds, the function specified in the successCallback is invoked with the MediaStream object that contains the media stream.

- STEP -3: The errorCallback will be invoked when an error arises.

GEO location

- The Navigator.geolocation read-only property returns a Geolocation object that gives Web content access to the location of the device. This allows a Web site or app to offer customized results based on the user's location.

- The getCurrentPosition() method is used to get the user's position.