

Ajax & Mobile Devices

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Open Source On Mobiles Is In Trouble

Open Content Is Much
More Likely To Flourish

Can We?

Should We?

Will We?

Easy Rules for Predicting the Future

- Be vague!
- Preface predictions with “in 5 years...”
- Follow the related rates

How To Analyze?

- Current smartphones predict feature set
- Examine costly components
 - Of phone
 - Of infrastructure
- How do they get paid?
 - Current business models
 - Regulatory environment

Where Are We Now?

Market Size

- 2.4 billion mobile phones
 - 800 million sold in 2005
 - 200 million PC's sold in 2005
- 123 million smartphones sold this year
 - 70% more sold in 2005 than in 2004

Handset Turnover

USA	Europe	Japan
24 months	18 months	< 12 months

Smartphone Features

- Cameras ubiquitous
- \geq 16K color screens
- Optional data connections
 - Fixed-price bandwidth rare
 - WiFi rare
- Thumbpads on PDA replacements
- Entirely closed systems

Related Rates

- Moore's Law: double performance or halve power every 18 months
- Power density: 9-15% increase/yr
- Display density (PPI)
- Radio power consumption
- Camera power consumption
- Color density improvements

Mobile Content

- WAP/WML cycling out of service
- Walled gardens the norm
 - Pay-to-play
 - Huge maintenance burden for OpCo's
 - Content providers loathe it
- XHTML compact, tag-soup making inroads
- Content industry enthralled by audio/video

Traditional Content

- Search indexes with $>$ 20 billion documents
- Webs of data via API's
 - Tom Coates' "Dirty Semantics"
 - RSS/Atom
- Online services challenging desktop applications
 - In part thanks to Ajax

OpCo Networks

- GRPS and IxRTT are ubiquitous
- “3G” nearly deployed
- MVNOs
- Nearing density limits
- Latency sucks

Bandwidth Evolution

GSM		CDMA	
GRPS	117 kb/s	CMDA One	75kb/s
EDGE	384 kb/s	1xRTT	307 kb/s
E-EDGE	2 mb/s	1xEV-DO	2.4 mb/s
HSDPA	10 mb/s	EV-DO ph2	4.8 mb/s

**Latency Is Not
Improving With
Increased Bandwidth**

The Latency Problem

- TCP init on GRPS: 5-7 seconds
- TCP init on 3G: 12-15 seconds
- Individual request latency measured in seconds
- OpcCo's running exotic optimizing proxies for their walled-garden content

Why The OpCo's Will Lose Control

- MVNO's + manufacturers will route around
- 3G costs require selling assets
 - 129 BILLION DOLLARS
 - Vodafone makes 4% of revenue from 3G
- Inept at creating network effects
- IP will replace internal protocols (UTMS 7/8)
 - Packet switched wins!

**Phones Are
Participatory!**

**Ajax Is About Reducing
Latency For
Applications**

Mobile App Platforms

- Custom code
- Brew
- J2ME
- .NET CF
- S60 Python
- Mobile web apps

Browser Alternatives

- Purpose-built services consumers/producers
- RSS clients
- Smarter proxies
- Compelling native applications/services

**Web Devs Make
Suggestions,
Not Edicts**

Mobile Browsers

- S60 WebKit
“Reindeer”
- ACCESS/Palm
NetFront
- Pocket IE
- Opera Mobile
- OpenWave
- Blackberry
- Obigo
- SEMC Browser
- MiniMo
- Motorola E* browser
- Opera Mini (proxied)

**Mobile Browsers Are
Generally Sold As
“Modules”**

Reindeer

- Derived from WebKit/Safari
 - Open Source!
- Full JavaScript engine
- Good DOM support
- XMLHttpRequest implementation
- Async only
- `<script>` includes broken



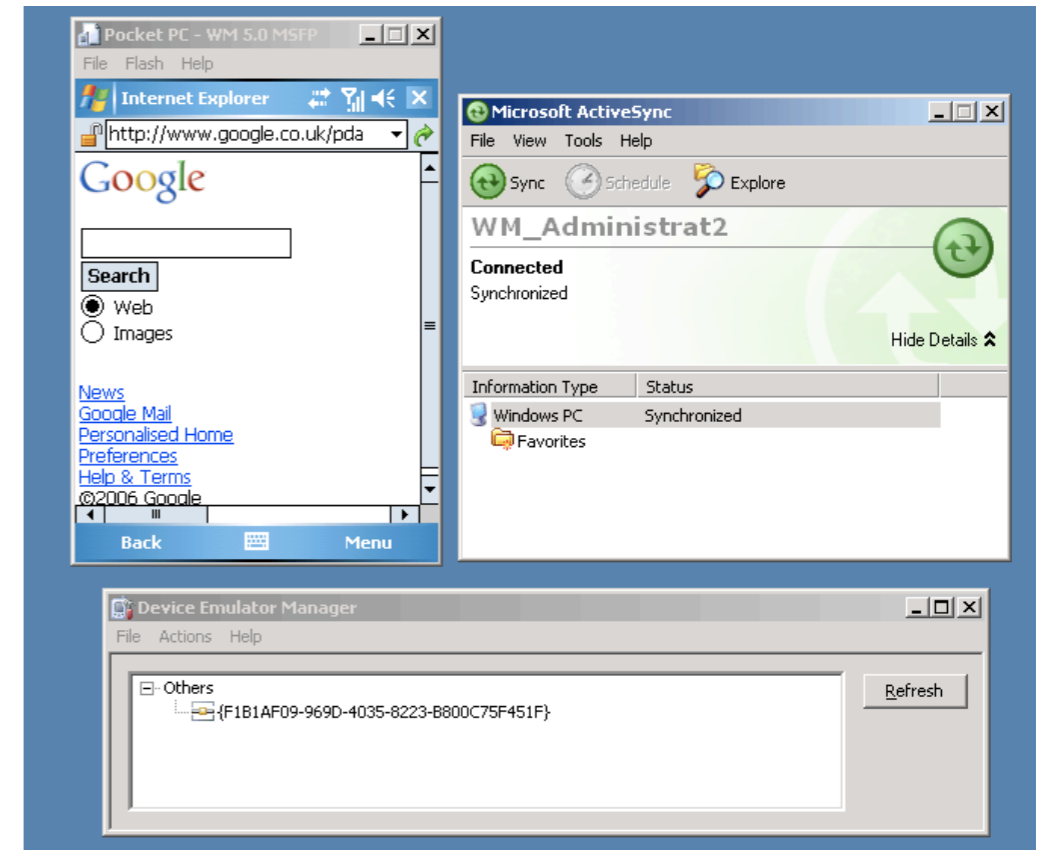
ACCESS NetFront

- Good JavaScript/HTML/CSS support
- Multi-OS, Multi-device
- Claim Ajax support in v3.4
 - No emulator for 3.4 available
 - 3.2/3.3 have no XMLHttpRequest object
- Documentation spotty



Pocket IE (PIE)

- Good HTML
- Acceptable CSS
- JScript 5.6
- XHR implementation
- Still relies on ActiveX
- Strange COM/JS boundary issues



Opera Mobile

- Good HTML, great CSS
- JavaScript and Ajax support
- Not free, sometimes bundled
- Multi-OS, Multi-Platform
- Documentation getting better

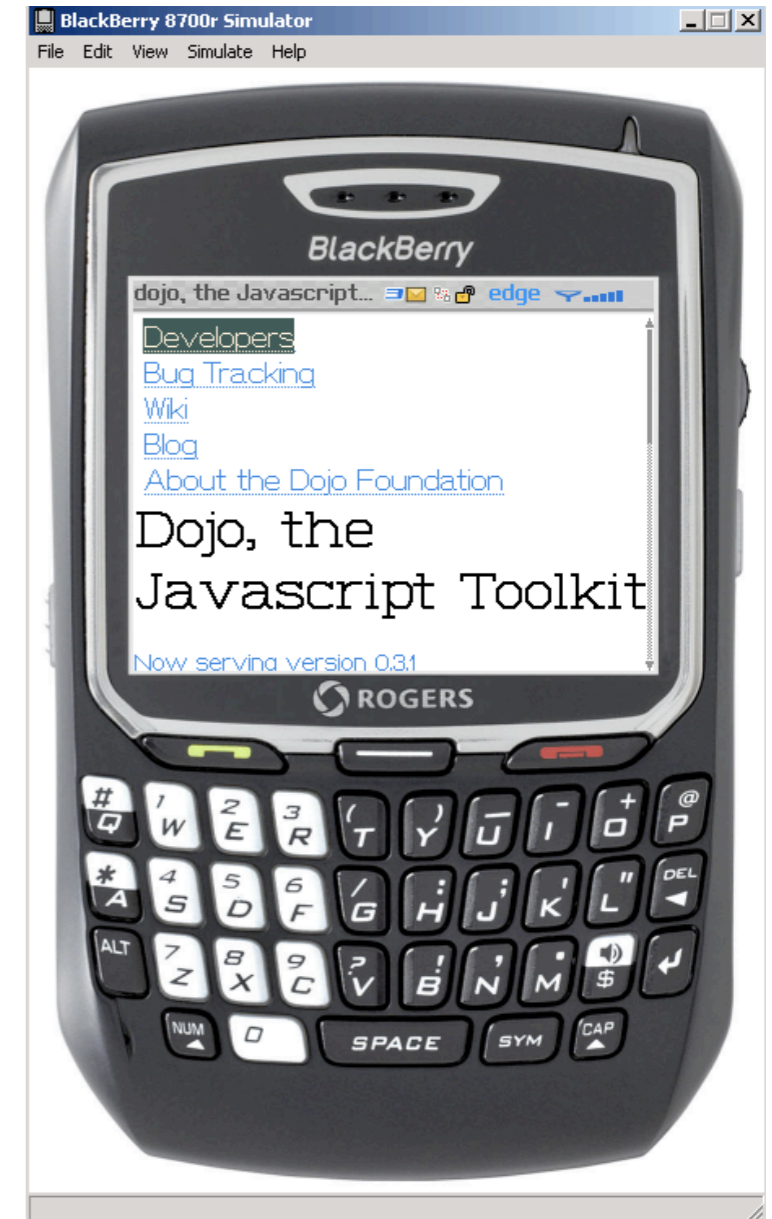
OpenWave

- OpenWave WAP was de-facto standard for older phones
- Reasonable HTML, CSS iffy
- Promising JavaScript support RSN
- Total loss for Ajax right now



Blackberry

- HTML pretty good
- CSS turned off by default
- JavaScript turned off by default
- No XHR object



Obigo

- Specs look good
 - Passes Acid 2
- Multi-OS, Multi-platform
- No way to easily get emulator
 - Will be poorly supported

Mobile Web Development

- Emulation everywhere
- Documentation nowhere
- Toolchains are Windows-based
- Debugging info non-existent
- OpCo's don't care about you

**Mobile Ajax Will
“Work” In 3-5 Years**

Will Anyone Care?

Baby Steps

- “Progressive enhancement” is critical
- JS/DOM for remixing “normal” pages
 - Browsers may make irrelevant
 - JS as a stopgap
- Watch for emerging “winners” in browsers
- Toolkits should start to adapt soon

Smartphone Browsers Handle “Tag Soup”

**Mobile Browsers Need
To Extend HTML, Not
Castrate It**

Desktop I/O

- Keyboard
- Mouse
- Printer
- Less common:
 - Speaker
 - Microphone
 - Video

Mobile I/O

- Speaker
- Microphone
- Numerical keypad/4-direction pointer
- Camera
- Less common:
 - Thumb-board
 - Flexible pointer

Meeting Text Halfway

- Thumbboards
- Chording
- Voice recognition
 - Power budget
- Predictive UI

Recommendations

- Wait a couple of years
- Don't wait any longer than that
- Support MVNO regulation
- Buy phones from open-platform manufacturers
- Start thinking about how to reduce steps to action in your apps

Thank You