
Lessons Learned: Using Tablets in the Field and the Future of Mobile Data Collection

3-20-2013

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**MATHEMATICA
Policy Research**

Background

- **A large project had planned for CATI and traditional field follow-up with paper contact sheets**
- **Due to large printing costs and security concerns (losing paper with PII) we explored using tablets in the field to facilitate data collection**
- **Plan was to use tablets to facilitate data collection only and not use them for actual survey administration**

Background – cont.

- **Never used tablets before**
- **Paper contact sheets were part of original budget**
- **Cost benefit analysis indicated that switching from paper contact sheet to tablets would result in slightly overall savings to the project**
- **Savings resulted from eliminating paper printing, eliminating staff time to sort and handle paper, and mailing costs**
- **Costs were mainly due to the tablet rentals**

Solution

- **Selected iPads (version 2)**
- **iPads had 3G for internet access**
- **Considered developing a custom app but due to time constraints we developed a website instead**
- **iPads were used to facilitate data collection only and not used for actual survey administration**

Field Interview website

- **Field Interviewers (FIs) logged into the secure website**
- **FIs used the website to see/manage their case assignments**
- **FIs used the website to update case contact info and log field attempts via a virtual contact sheet**
- **Used Google Map to plan out their daily travel**

Case Assignment Screen

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Welcome FS3 Interviewer

[Case Assignments](#) [Virtual Contact Sheet](#) [Management Dashboard](#) [Exit](#)

Currently Displaying: Open Cases For: FS3 Interviewer Google Map Selected Case

MPRID	Status Code	Best Address	Zip	Child Name	Last Attempt	Total Attempts	Schedule	Map in Google
10024212		2610 Highland Ave Birmingham AL	08543-7324			0	<input type="text"/>	<input type="checkbox"/>
10024238		2610 Highland Ave Birmingham AL	08543-7324			0	<input type="text"/>	<input type="checkbox"/>
10024254		2610 Highland Ave Birmingham AL	08543-7324			0	<input type="text"/>	<input type="checkbox"/>
10024270		2610 Highland Ave Birmingham AL	08543-7324			0	<input type="text"/>	<input type="checkbox"/>
10024296		2610 Highland Ave Birmingham AL	08543-7324			0	<input type="text"/>	<input type="checkbox"/>
10024319		2610 Highland Ave Birmingham AL	08543-7324			0	<input type="text"/>	<input type="checkbox"/>
10024335		2610 Highland Ave Birmingham AL	08543-7324			0	<input type="text"/>	<input type="checkbox"/>

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Virtual Contact Sheet – Case Summary

[Case Assignments](#) [Virtual Contact Sheet](#) [Management Dashboard](#) [Exit](#)

Virtual Contact Sheet for: **Smith**

Add New Attempt

[Case Summary](#) [Contact Info](#) [Attempt History](#) [Notes](#) [CATI Notes](#)

Case Info

Respondent Name:
Child Name: **Smith**
MPRID: **10024212**
Ever Refused?:
Project Variable A:
Project Variable B:

Case Dashboard

Current Status:
Days Since Last Attempt:
Total Attempts:
Weekday Attempts:
Weekend Attempts::
Morning Attempts:
Afternoon:
Evening Attempts:

Virtual Contact Sheet – Contact Info

Case Assignments Virtual Contact Sheet Management Dashboard Exit

Virtual Contact Sheet for: **Smith**

Add New Attempt

Case Summary Contact Info Attempt History Notes CATI Notes

Address Info

	Address	Best Address?	Bad?
<input type="button" value="Edit"/>	2610 Highland Ave 2610 Highland Ave Brimingham AL 08543-7324	<input type="checkbox"/>	<input type="checkbox"/>

Phone Info

	Phone Number	Best Time To Call	Contact	Best Phone?	Bad?
<input type="button" value="Edit"/>	(609) 555-4852			<input type="checkbox"/>	<input type="checkbox"/>

Initial Concerns

- **FI learning curve and training**
- **Theft**
- **Connectivity**
- **Security**

Reality

- **Approximately 60% FIs already owned a tablet**
- **No iPads were lost or stolen**
- **No major connectivity issues**
- **iPads were locked down from a security standpoint (strong password, no YouTube, no camera, etc.) using the iPhone Configuration Utility**

iPad settings

Passcode

Allow simple value
Permit the use of repeating, ascending, and descending character sequences

Require alphanumeric value
Require passcodes to contain at least one letter

10 ▾ **Minimum passcode length**
Smallest number of passcode characters allowed

1 ▾ **Minimum number of complex characters**
Smallest number of non-alphanumeric characters allowed

180 **Maximum passcode age (1-730 days, or none)**
Days after which passcode must be changed

5 ▾ **Auto-Lock (1-5 minutes, or none)**
Device automatically locks when time period elapses

50 **Passcode history (1-50 passcodes, or none)**
The number of unique passcodes required before reuse

Immediately ▾ **Grace period for device lock**
Amount of time device can be locked without prompting for passcode on unlock

7 ▾ **Maximum number of failed attempts**
Number of passcode entry attempts allowed before all data on device will be erased

iPad settings – cont.

Restrictions

Device Functionality

Enable use of device features

- Allow installing apps
- Allow use of camera
 - Allow FaceTime
- Allow screen capture
- Allow automatic sync while roaming
- Allow Siri
- Allow voice dialing
- Allow In-App Purchase
- Force user to enter iTunes Store password for all purchases
- Allow multiplayer gaming
- Allow adding Game Center friends

Applications

Enable access to applications on the device

- Allow use of YouTube
- Allow use of iTunes Store
- Allow use of Safari
 - Enable autofill
 - Force fraud warning
 - Enable JavaScript
 - Block pop-ups

Accept cookies

Controls when Safari accepts cookies

From visited sites ▾

iCloud

Enable access to iCloud services

- Allow backup
- Allow document sync
- Allow Photo Stream (disallowing can cause data loss)

Security and Privacy

Enforce security and privacy policies

- Allow diagnostic data to be sent to Apple
- Allow user to accept untrusted TLS certificates
- Force encrypted backups

Content Ratings

Control access to apps and media

- Allow explicit music & podcasts

Ratings region

Sets the region for the ratings

United States ▾

Allowed content ratings

Sets the maximum allowed ratings

Movies: Don't Allow Movies ▾

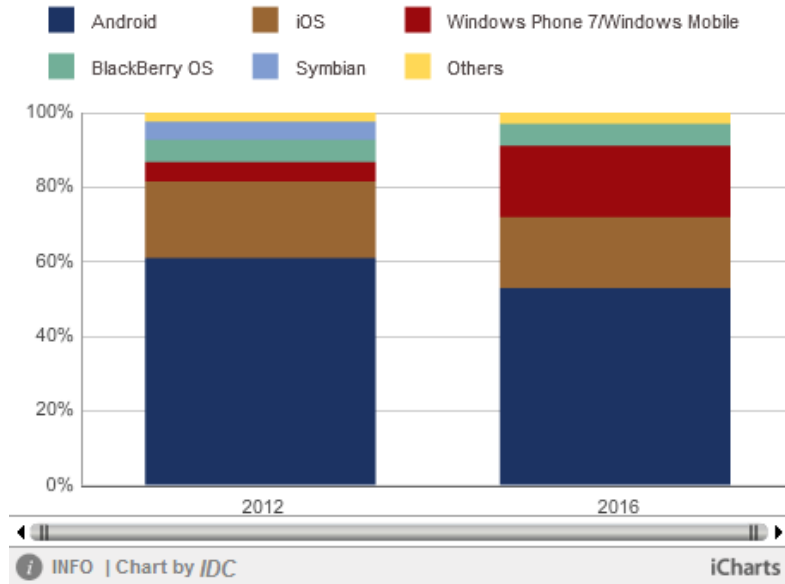
TV Shows: Don't Allow TV Shows ▾

Apps: Don't Allow Apps ▾

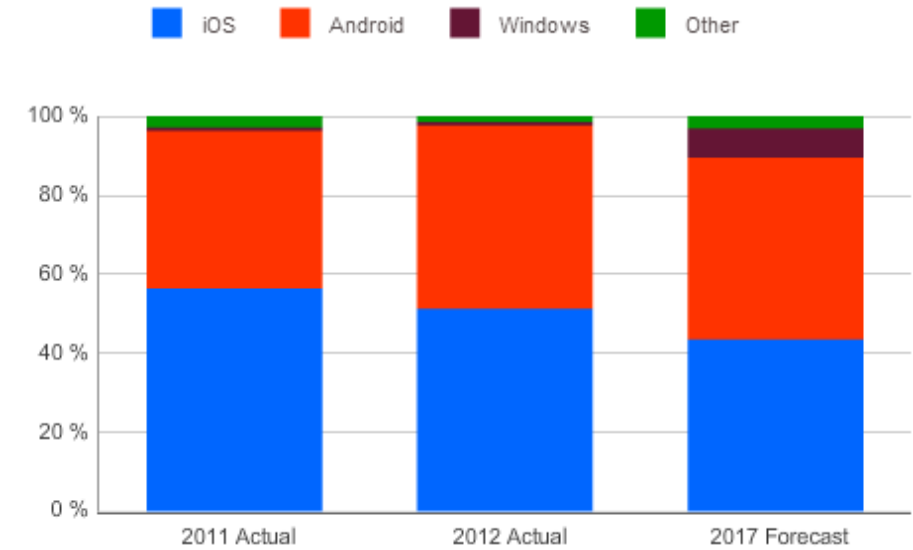
And now on to the future of mobile data collection

Mobile Market At A Glance

Worldwide Top 5 Smartphone OS Market Share Forecast, 1Q 2012



Worldwide Tablet Market Forecast by OS, Unit Shipments, 4Q 2012

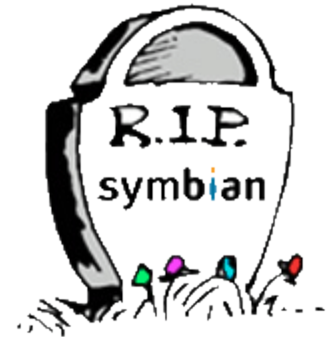


Source: IDC

- 2 leading platforms in 2012 (Android & iOS)
- Potentially 3 platforms in 2016 (Windows, Android, and iOS)
- Phone Screen sizes are increasing, many new models are 4+ inches

Mobile Market Summary

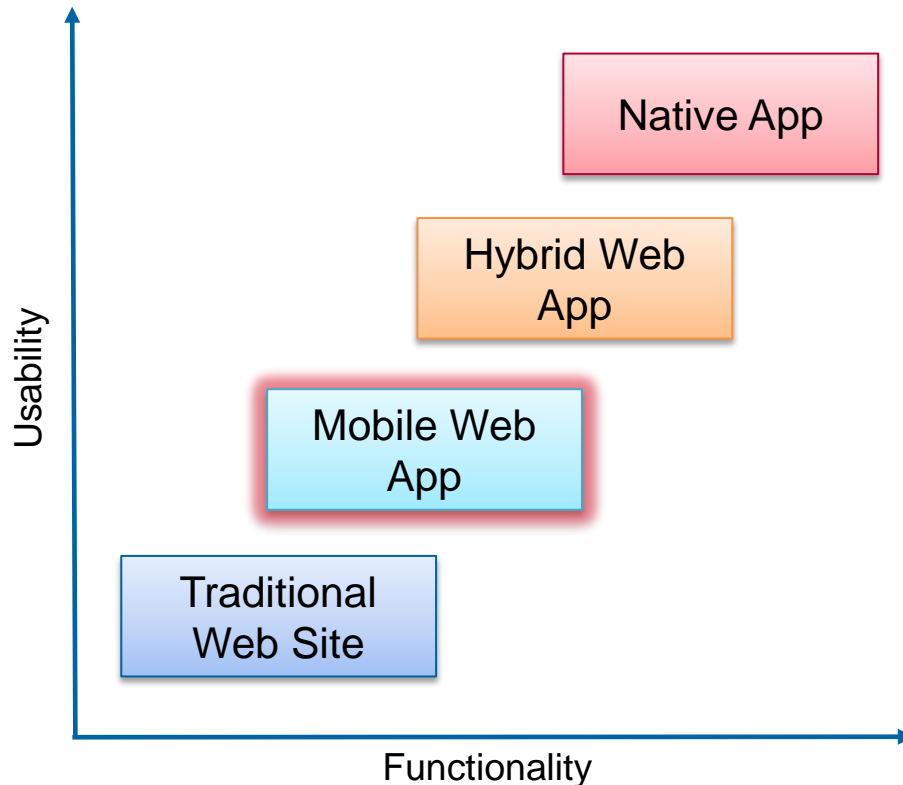
Today



Tomorrow



Mobile Dilemma: Web VS. App



By using **HTML5** framework such as [jQuery Mobile](#), we developed a mobile web application that looks and feels like a native app while still residing in a browser

Functionality: Can work in offline mode; Has access to some device features such as Geolocation

Security: Secure login to a website; User authentication on a device; Can cache significant amount of data, so data encryption is necessary

Usability: In some cases can be designed to look and feel as a native application

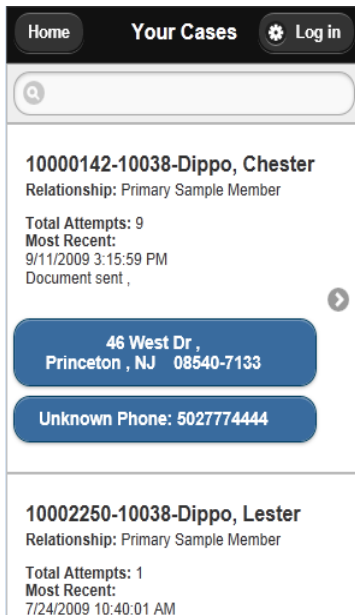
HTML 5 – What's New?

- **Geolocation:** The HTML5 Geolocation API is used to get the geographical position of a user
- **Web Storage:** With HTML5, web pages can store data locally within the user's browser. HTML5 web storage, a better local storage than cookies.
 - localStorage - stores data with no expiration date
 - sessionStorage - stores data for one session
- **Application Cache:** HTML5 introduces application cache, which means that a web application is cached, and accessible without an internet connection.
- **HTML Media Capture:** The HTML Media Capture specification defines HTML form extensions that facilitate users' access to media capture capabilities of the hosting device

Introducing SmartField

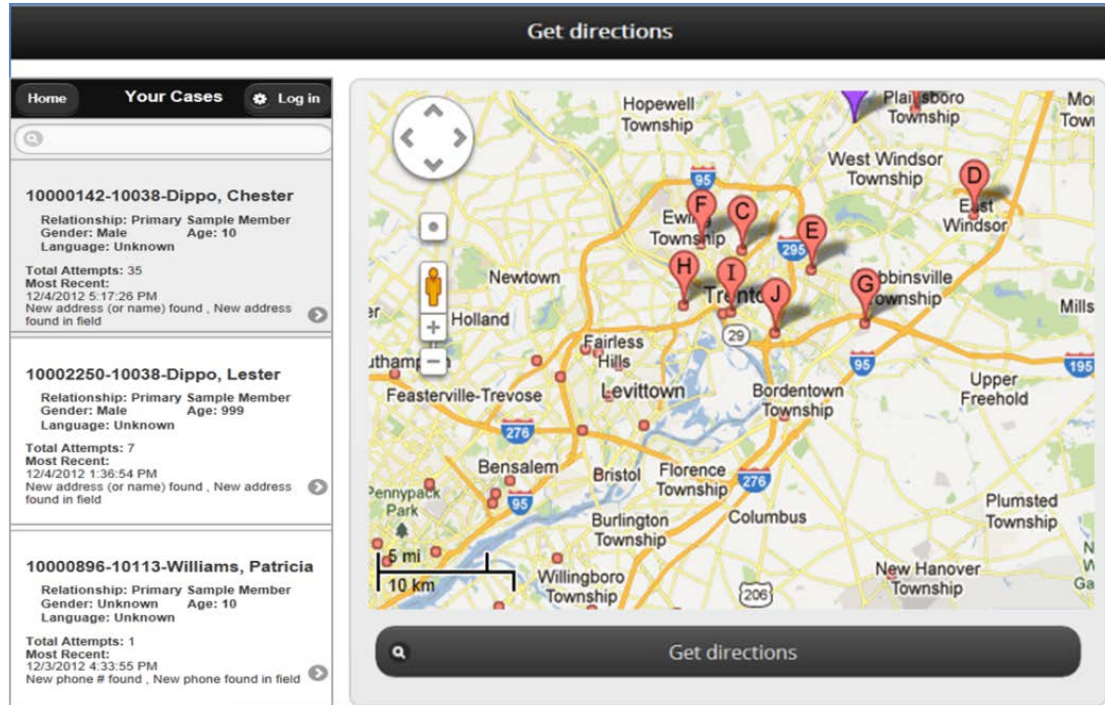
- SmartField is a **web-based**, case management application (using ASP.NET, JQuery Mobile and HTML5 technologies)
- It will offer support for **tablet** devices as well as **Smartphones** and will automatically adjust to the appropriate screen size
- The web interface will be connected to the **SMS** and our **Field Management** products, enabling field managers to monitor field staff activities in real time
- The use of **web surveys** will allow interviewers the ability to complete interviews via the web on the tablet or laptop using products like **Blaise IS** or **WebSurv**

Phone or Tablet? Why not Both



SmartFiled on a Phone

Note: This is an actual screenshot



SmartField on a Tablet

Note: This is UI mockup for illustration purposes only

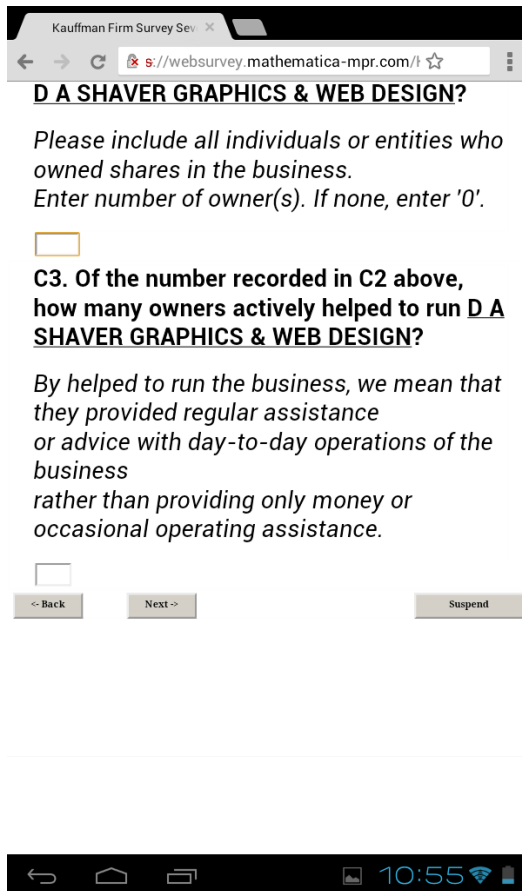
What's cool?

- **Adaptive Web Design** allows us to detect different device types and render appropriate content while having a single code base
 - Single scrollable user interface for phones
 - Split screen for tablets
- Present caseload in **geographically intelligent** way, filtering by proximity
- Use **phones** for locating and field telephone interviews
- Use **tablets** for locating and conducting in person interviews

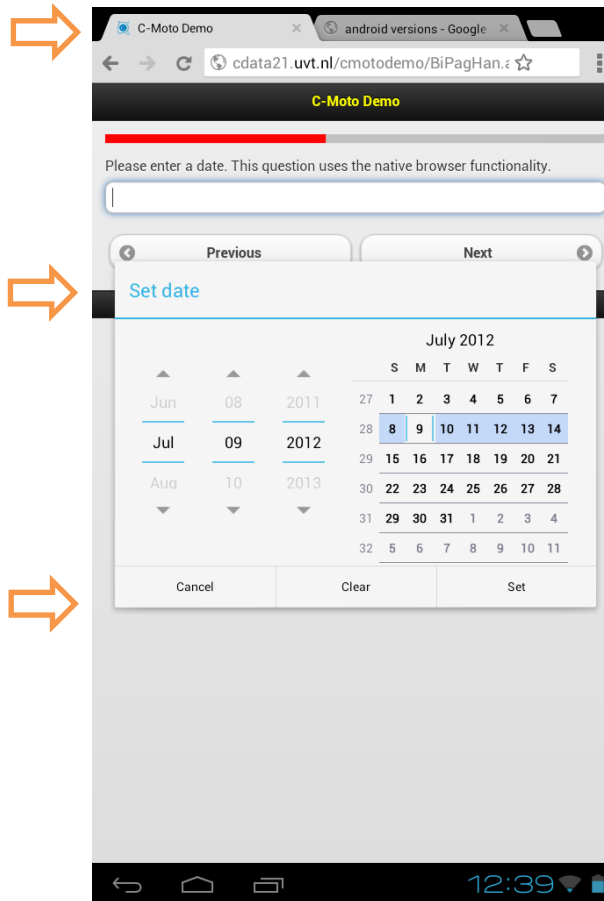
Key features

- **Access training materials and reports**
- **Project Notifications**
- **View / work cases**
 - Sort geographically
 - Log attempts
 - Schedule appointments
- **Conduct interviews**

Survey: Blaise IS Roadmap



Blaise IS Survey on 7inch
Android tablet running
Chrome



... with C-Moto CSS Style
sheet

- **CentERData developed a mobile friendly CSS called C-Moto for Blaise IS Surveys**
- **Moving forward we should use this style sheet for mobile Blaise IS Surveys**
- **To Do:**
 - Investigate effort required to apply this CSS
 - Obtain this CSS

Questions?

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