

Mobile GIS: Case Study for Lincoln Heritage Gateway

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exeGesIS Spatial Data Management

Context: Lincolnshire Heritage

- exeGesIS working on “HER21” project for:
 - Lincolnshire County Council
Historic Environment Record
 - 7 District Councils
 - English Heritage
 - Institute of Historic Building Conservation
- Aim: to improve the management and use of the historic environment of Lincolnshire, in line with PPS5 and HPR



Lincolnshire HER21 - Aims

- Problems:
 - Disjointed service delivery
 - New information being lost
 - No shared information base: “Historic Environment Record” at LCC; local datasets for Listed Buildings etc at the Districts
- HER21 deliverable = map-based web site for Conservation and Planning Staff, giving full access and feedback

HBSMR sample screens

- Roman sites in Chester on OSM (2 clicks)

Cheshire Historic Environment Record HBSMR

Monument Index

Data Source: Mon Report: BARS Full Report

General Classes/Type Location Include/Exclude Monitoring MORPH MORPH Units Status & Scores BARS/MARS MetaD

Monument Type and Date: Any (43 AD to 409 AD Exc)

Component Type and Date:

Materials/Evidence:

Find Type and Date:

Find Material:

+	Deva Roman Fortress - 48 Bridge Street (Owen Owen) (Monument 3000/2/102)
+	Deva Roman Fortress - No.52 Bridge Street (Monument 3000/2/103)
+	Deva Roman Fortress - Bolland's Court (Monument 3000/2/104)
+	Deva Roman Fortress - White Friars Cottage (12 White Friars) (Building 3000/2/105)
+	Deva Roman Fortress - No.12 White Friars (Monument 3000/2/106)
+	Deva Roman Fortress - No.14 White Friars (Monument 3000/2/107)
+	Deva Roman Fortress - Eastgate (Monument 3000/2/108)
+	Deva - Mansio - 11-15 Castle Street (Monument 3000/3/1)
+	Deva - Mansio - St Mary's Rectory (Monument 3000/3/2)
+	Deva - Mansio - 25 Castle Street (Monument 3000/3/4)
+	Deva - Mansio - Gamul House (Monument 3000/3/5)
+	Deva - Harbour - Roodoe (Monument 3000/5/1)
+	Deva - Harbour - Dee Sands (Monument 3000/5/3)
+	Deva - Harbour - West of the Watergate (Monument 3000/5/4)
+	Deva - Parade Ground - West of Frodsham Street (Monument 3000/6/0)
+	Deva Aqueduct - Roman Altar, Boughton (Monument 3000/7/2)
+	Deva Aqueduct - Dee Hills, Boughton (Monument 3000/7/3)
+	Deva Aqueduct - Grosvenor Park (Monument 3000/7/4)
+	Deva Aqueduct - Foregate Street (Monument 3000/7/5)

Sort By: MonUID Count: 391 Use space bar to display selected record, or right-click for options Map:

HBSMR.mxd - ArcMap - ArcView

File Edit View Bookmarks Insert Selection Tools Window XGApps Help

1:16.558

Editor Task: Create New Feature Target:

Cheshire HER Map Data

- AAI
- Monument
 - Monument (point)
 - <all other values>
 - NGRQualifier
 - 4 Figure Ref
 - 6 Figure Ref
 - 8 Figure Ref
 - Approximate Position
 - Central Point
 - Linear
 - Possible Position
 - Monument (line)
 - CHER Site (Polyline)
 - Monument (poly)
 - CHER Site (Polygon)
- Consultation
- SHINE
- ScheduledMonuments
- ListedBuildings
- ConservationAreas
- Event
- LocallyListedBuildings

Open Street Map: Data CC-BY-SA License provided by Where Group

Chester

Dee

Handbridge

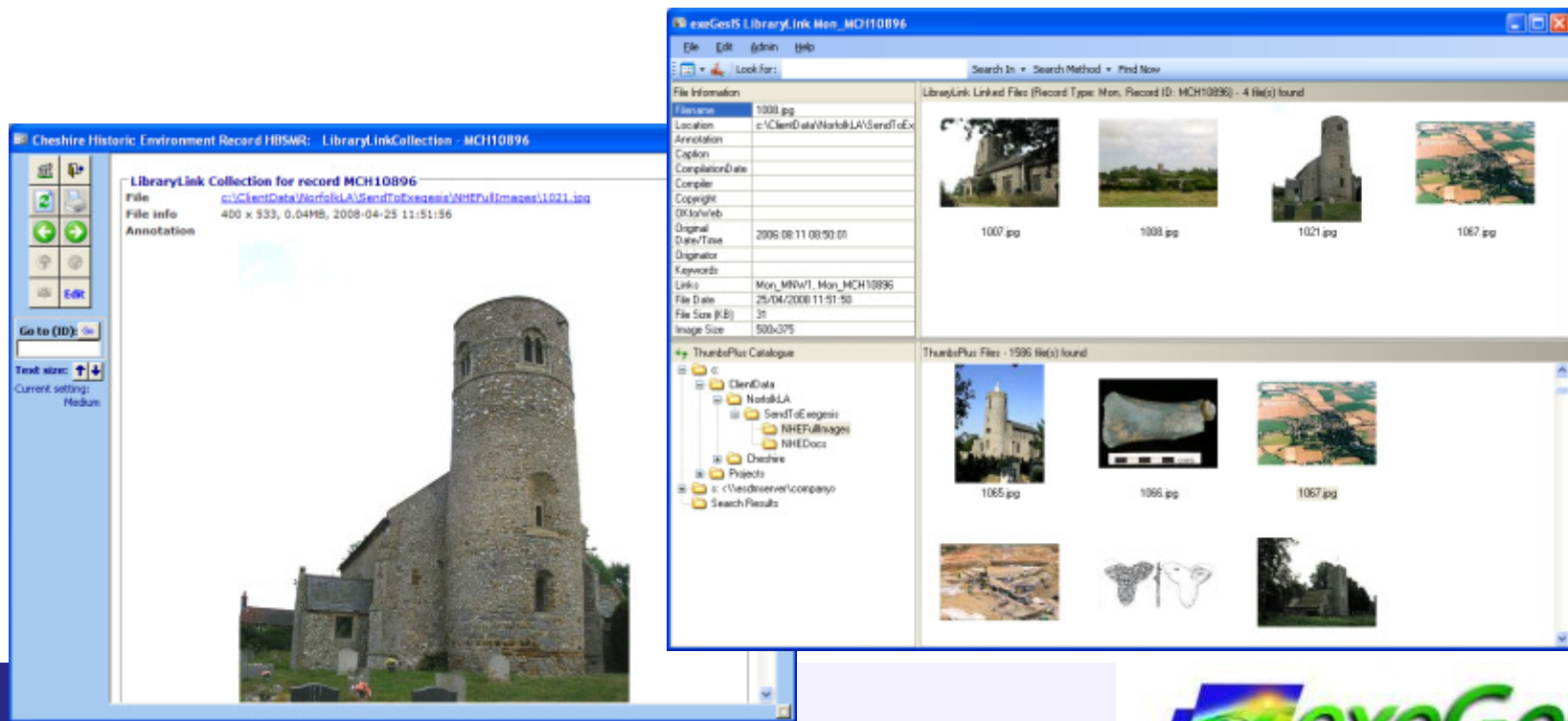
Queer Park

Display Source Selection

Drawing Arial 10 OK 341096.873 366758.177 Meters

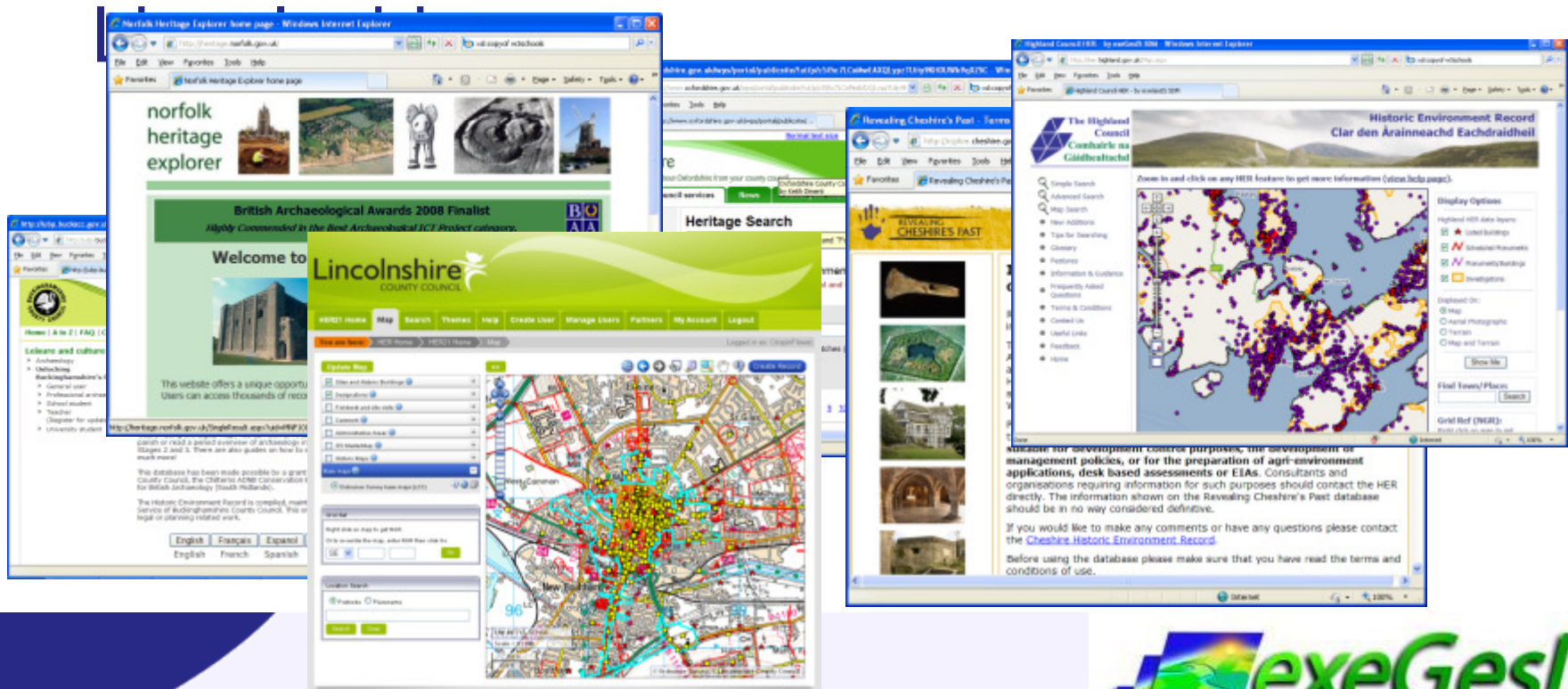
HBSMR sample screens - LibraryLink

- LibraryLink for documents and multi-media



HBSMR web interfaces

- Simple web publication, e.g. Kent, Cheshire, Highland, Buckinghamshire,



Lincolnshire HER21 - Feedback

Images and documents (2)

Thumbnail **Details**

Resource ID:
Caption:
Originator:
Date/time:
Copyright:

Resource ID:
Caption:
Originator:
Date/time:
Copyright:

Site type and period

- BURIAL (Medieval - 1066 AD to 1539 AD)
- CATHEDRAL (Medieval - 1066 AD to 1539 AD)

Designation(s)

DL10557 Conservation Area 38: Lincoln No 1 Conservation Area - Cathedral and City Centre

DL15431 Listed Building (I) 486141: CATHEDRAL CHURCH OF ST MARY AND CLOISTERS AND CHAPTER HOUSE AND LIBRARIES

Full description

PRN 70012

The cathedral is essentially of three periods, two of them divided into two phases each. The first is the Norman west front. The original cathedral was built by Bishop Remigius starting sometime between 1072 and 1075, and consecrated in 1092. It was enlarged by Bishop Alexander. The second phase is Early English from 1192 to 1250, and 1256 and about 1300, by Bishop St Hugh and his successors. The final medieval building phase was carried out in the 14th and 15th centuries. [1]

Archaeological investigations were carried out during installation of electricity cables. Inside the cathedral trenches were dug in the north transept, the nave, St Anne's chapel and the cloister. Structural remains associated with the Romanesque church were identified, including a stone slab floor. There was also

Date of site visit: No date specified **Clear Date**

Feedback:

Attach files (maximum upload files larger then 6MB)

To add one or more files (e.g. description of the file and tick upload files larger then 6MB), please click the "Browse" button to locate the file on your computer. Enter a description of the file and tick the "Add File" button to upload the file.

Select file: **Browse...**

Description of image/document:

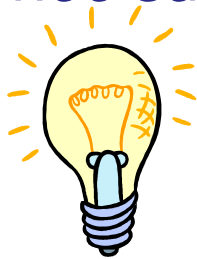
Is file confidential:

Add file **Submit Feedback** **Cancel** **Leave Feedback**

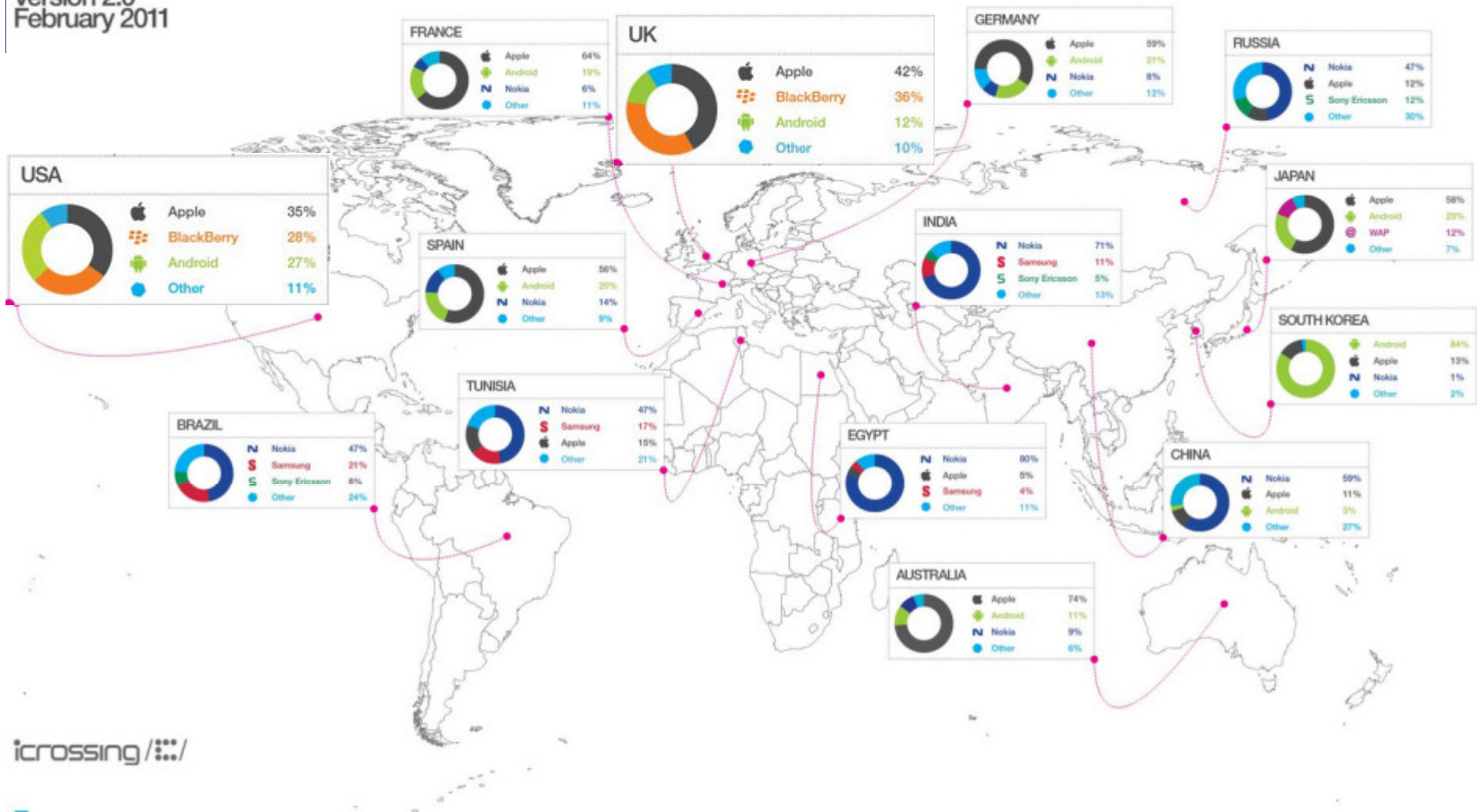
Lincolnshire HER21 – Mobile?

- Limitations?

- Conservation staff want information *with them in the field*
- Lots of *new information* is collected during site visits to Listed Buildings
- Lots of historic environment features remain unrecorded (e.g. milestones, K6 phone boxes, etc) = *ad hoc survey requirement*

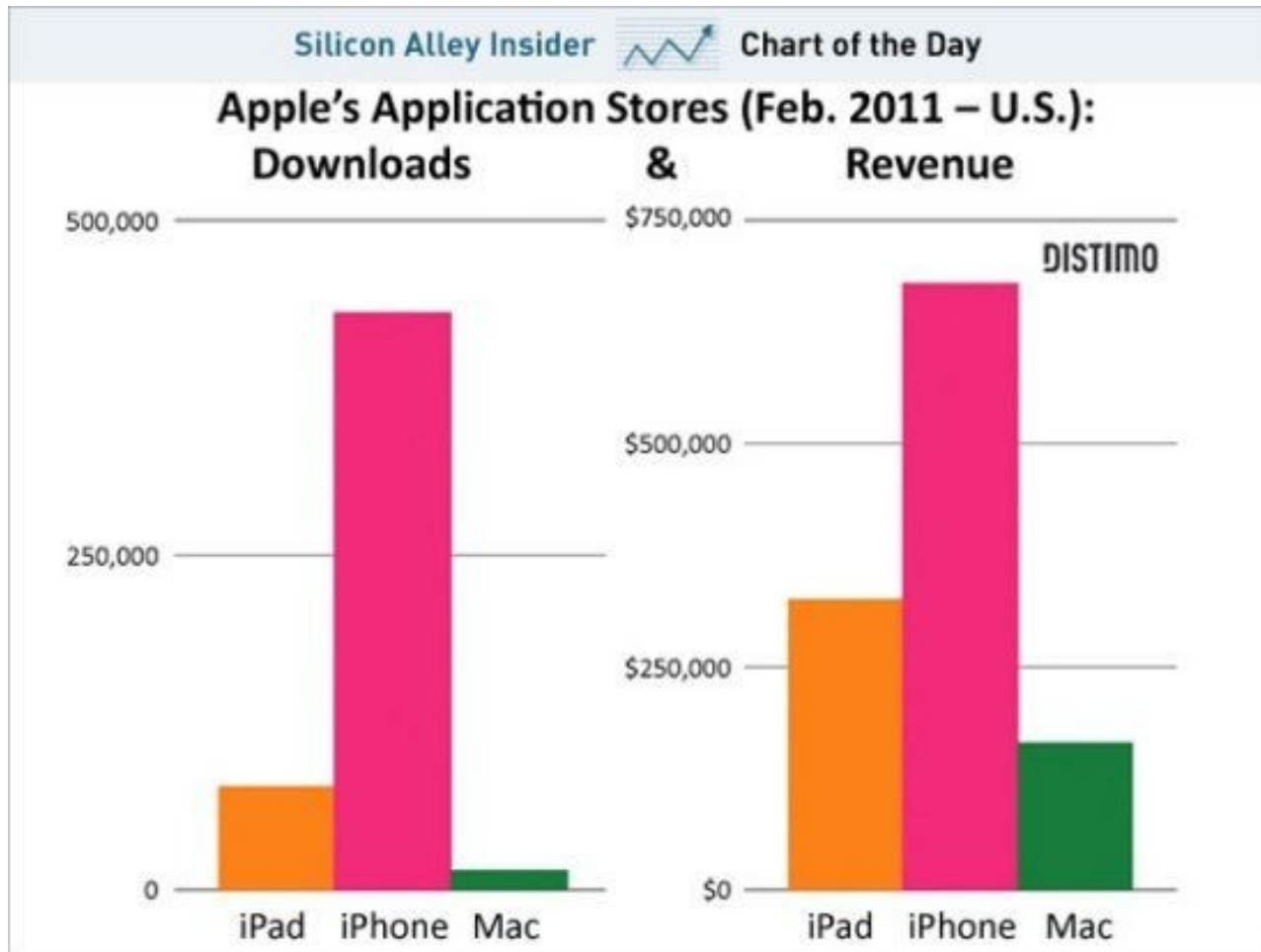


**MOBILE OPERATING SYSTEM
MARKET SHARE**
Version 2.0
February 2011



icrossing /

Data Source: <http://gs.statcounter.com/>
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Ref: phbeta.com

Native or Non-Native?

Stability **Multiple Codebases**
App Store 'Frontage'

Functionality
Developer Skills Technical Roadmap

Available APIs **Vendor Lockin**

Performance
Cross-Platform

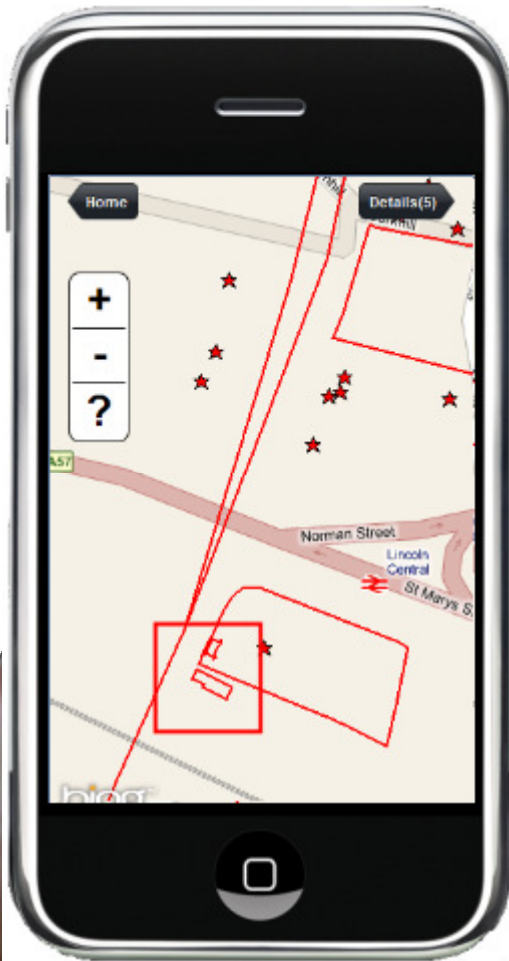
Third option: Hybrid? (e.g. PhoneGap, Airplay SDK)

Technical Solution

- Architecture
 - SOA, non-native, HTML5, CSS and JS
- Framework
 - Dojo Mobile, ESRI JS API
- Delivery
 - Rapid prototyping with client
- Testing
 - Restricted, emulators, limited devices

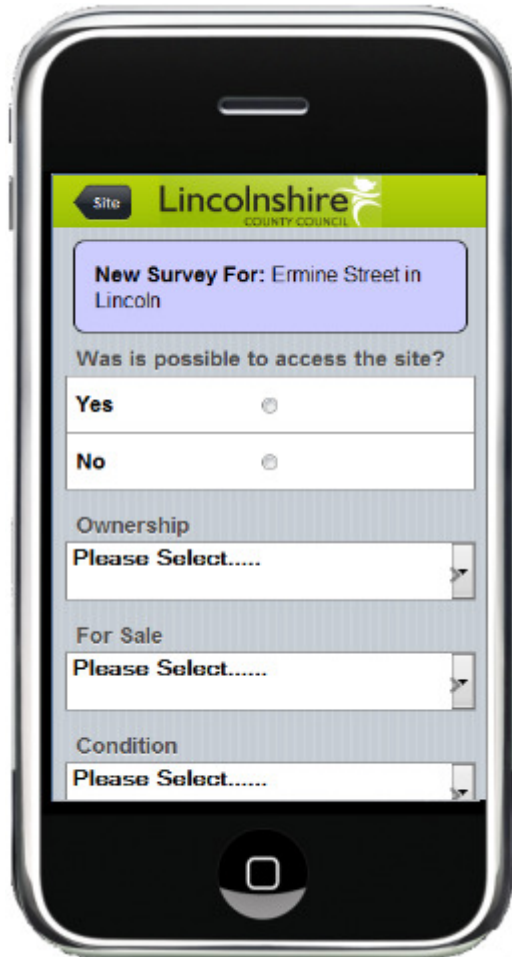


- Started with a simple map
- Tested various API's
 - OpenLayers 2.3
 - ESRI JS API 2.1
 - TouchMapsLite
 - Google Maps API
- Various testing environments
 - On-device, emulator, browser

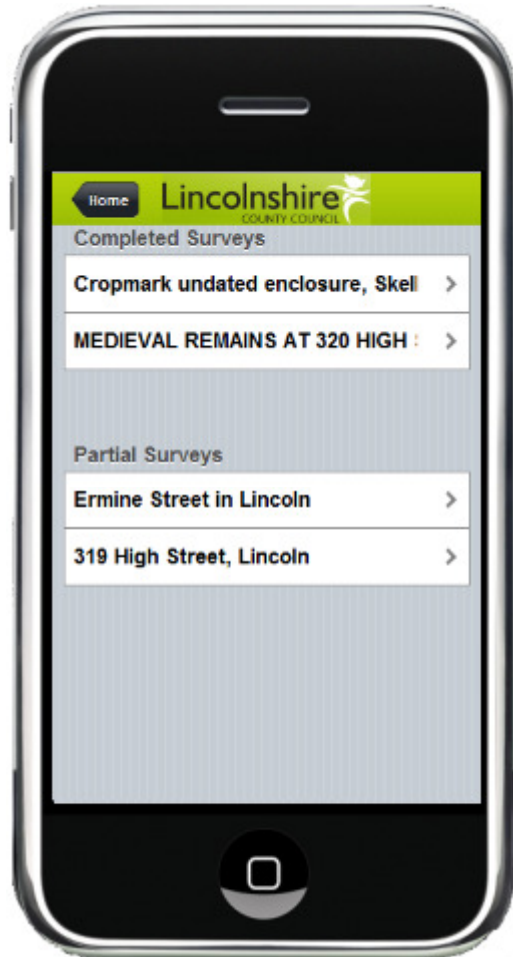


- UI considerations
 - Map navigation
 - Pinch zoom/performance
 - ‘Identify’ results
 - Feedback to the user
 - Follow standards (Google?)
- Consume existing services





- Standard methods for data entry
 - checkboxes, free text, etc
- Ability to add photos and comments
- Metadata also auto-captured
 - Username, Date, etc
 - Geo-tag photos



Advanced Functions

- Offline app storage (HTML5) ✓
- Photo upload ✓₂
- Cache data locally ✓
- Cache map tiles locally ?
- Redlining ✗

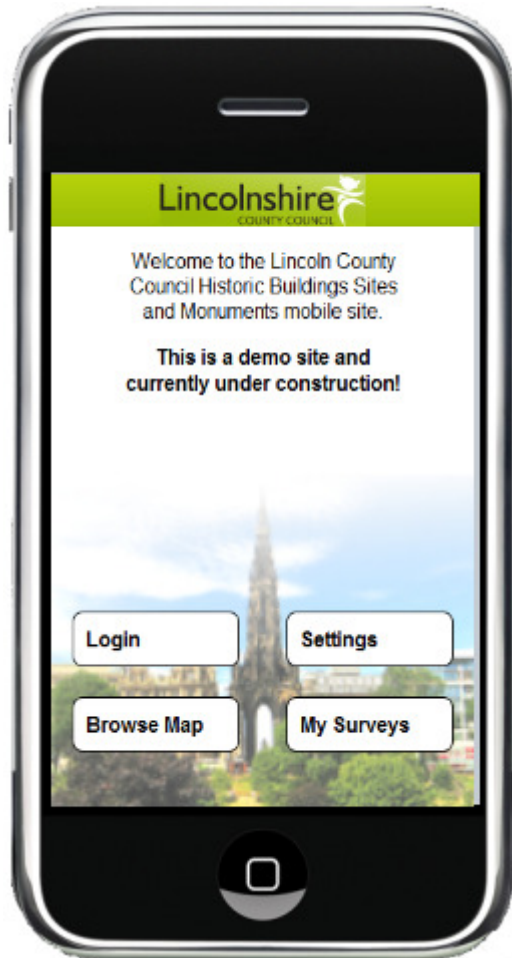


Technical Lessons Learnt

- Non-native solution has major benefits
- Choose your framework carefully
- Be aware of connectivity
- Explicitly plan your test strategy
- Pay particular attention to the UI

Design for rapid development

Lincolnshire HER21 - Outcome



- The client loved our idea and demonstrator!
- Quickly added into HER21 contract
- Application now in final build & testing
- Future?