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Ajit Jaokar

Search for Mobile 2.0
Ajit Jaokar

UK based - Hands on Publisher (futuretext) - Author (Mobile Web 2.0, Social Media Marketing, Open Mobile) - Chair: Oxford University's Next Gen Mobile Applications panel - PhD student UCL/UK

Recent and forthcoming talks include Mobile world congress(2007,2008,2009), CEBIT, Stanford University - MIT Sloan - Web 2.0 expo – Ajaxworld Supernova - CNN money - BBC - Oxford University European parliament

Global top 20 wireless blogger According to fierce wireless www.opengardensblog.futuretext.com
• IPTS workshop .. Seville
• Web search v.s. Mobile Search
• Mobile 2.0 v.s. Mobile
Overview

• Market dynamics of mobile search
• Mobile Search Business Models
• Elements of mobile context
• Emerging Trends in Mobile Search Market
• Mobile Search: Drivers, Barriers and Disruptive factors
• SWOT analysis for the EU

Conclusions
Market indicators driving mobile search

- Content will be metadata enabled.
- There will be too much digital information
- More information is being indexed
- Search is no longer historical but also covers the Social, Real time and Enterprise domains:
  - A drive for reputation
  - A drive for semantics The mobile device is unique in that it can automatically add semantic data to content captured on the phone
  - The impact of Mobile: Increasingly user generated content, metadata enabled, captured at point of inspiration
Business drivers

- A greater emphasis and awareness of privacy

- Privacy backlash affecting personalization:

- Advertising leaning away from mass media:

- Different forms of content discovery: The ‘search function’ is being embedded into many applications like appstores (which search for applications).

- Recommendation engines: Search relates to recommendation (for instance peer recommendations are an input to reputation) especially with rise of social networks.

- Openness: In general, openness drives better search since more content is accessible and that content has better links (i.e. is referenced better)

- Deeper integration between devices, networks and services:
• The rise of appstores and Long tail content:

• Reverse search: A model where we find the source from the content – ex: Shazam(for music) and Tineye for images

• Discovery instead of search: The model tends to ‘searchless’ search and reverts the concept of search to an ‘agent’ which fetches information based on a set of parameters.

• Real time search: Search for content which is yet not indexed i.e. in real time
Social indicators

- Metadata enabled content captured from mobile devices at the point of inspiration:
  - Real time information
  - Community based organization of information:
  - The ability to compute trust and reputation through online mechanisms:
  - The acceptance or otherwise of profiling and behavioural targeting
  - Privacy and anonymity including pseudo anonymity discussions
The factors causing a shift in the value chain used to predict future:

Content:
- Creation of content (as opposed to consumption of content):
- DRM
- Declining role of the traditional media

Services:
- Privacy and security concerns:
- Advertising:
- Long tail applications and services:
- Deep integration between the Web service, device and the network
- Social networks:

Standards
- Standards and the emergence of microformats as standards
The factors causing a shift in the value chain:

**Devices:**
- Emergence of new devices
- A greater role for Internet of things through the evolution and the dominance of the Browsers
- New interfaces like touch screens, 3D etc
- Devices are capturing Metadata:

**Miscellaneous:**
Innovation and evolution: A range of factors are leading to an innovation and evolution of the ecosystem. These include Google Gears/offline browsing, open source ecosystems, Widgets, Javascript enhancements(Chrome, JS libraries), Location including Cell id databases, SIM/Smart card web server, APIs (GSMA, OpenAjax, Bondi, Gears, RCS), Browser plugins(MS Silverlight, Mozilla,W3C), Social network APIs, Local web, Near Field Communications
Factors causing a shift in the value chain

The factors causing a shift in the value chain:
Evolution of the Networks: Cellular networks, IMS, LTE, Radio Frequency Networks: such as Bluetooth, WiFi, WiMAX & Mesh, HSUPA and HSDPA
Network Operator application portals are declining:
Enablers are not tied to the network:
Networks are evolving to an IP ecosystem:
Chipset level changes
   LTE, IMS and services which are tightly coupled to the network:

Emerging
Cloud computing
Sensor based interaction
Rich Presence
Asynchronous activation, background processing
The role of emerging markets:
The rise of the browser and web standards:
Advertising

• Advertising is increasingly growing more personalised and context aware especially driven by mobile devices

• Early winners like Admob may not necessarily be winners in the new ecosystem where targeted – more granular advertising is needed which may be platform specific (as opposed to platform agnostic).

• We are likely to see new players take up mobile advertising especially in more richer platforms like the iPhone

• We are likely to see advertising emerge along globally harmonised platforms like Nokia ad service, Android and the iPhone
Factors causing a shift in the value chain

**Discovery**
- Searchless search
- Twitter notifications
- Google alerts?

**Future business models**
- Evolution of advertising to a more context aware, granular model
- Recommendation engines
- Discovery
- Premium for real time alerts
To recap: Types of search

**Types of search:**
1) Vertical search
2) Mobile search
3) Context aware search
4) Real time search
5) Local search
6) Social search
7) Semantic search
8) Build your own search engine (Google custom search engine.)
9) Reverse search (shazam, tineye)
10) Multimedia search engines: (blinkx)
11) On device search
12) P2P search
13) Cloud search
14) The Internet Of Things (search for)
15) Perspective-based search
To recap: Types of search

16) Human-powered Search – Mahalo
17) Swarm Intelligence search engines (logical patterns)
18) Visual search – Nokia Point and Find
19) The mobile address book
20) Conventional web search
Based on the above analysis, the key disruptive trends appear to be:

• Discovery instead of search

• Recommendation engines

• Internet of things and search engines based on IOT

• Search engines based on the increasing use of context

• Social search and

• Real time search

• Privacy and management of privacy
Key drivers and barriers are

- Walled gardens (barrier)
- De-Coupling network and services (driver)
- Location (driver)
- Regulation (both)
- DRM (barrier)
- Reputation (driver)
- Internet of things (driver)
### Factors – near term (2009 – 2012) – Based on LTE adoption + Olympics + Recession

<table>
<thead>
<tr>
<th>Factor</th>
<th>Notes</th>
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<tbody>
<tr>
<td>The debates of Open and closed take place</td>
<td>A balance is reached – with most ecosystems leaning to Open but also co-existing with situations that need a closed ecosystem</td>
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<tr>
<td>Search becomes context aware</td>
<td>Driven largely by mobile devices</td>
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<tr>
<td>We see the role of search expanded from textual search to real time search and social search</td>
<td>These are already strong trends today</td>
</tr>
<tr>
<td>Privacy and personalization debates are conducted and resolved</td>
<td>A phase dominated by discussion and legislation</td>
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## Factors – Short term (2012-2015)

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<th>Factor</th>
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<tbody>
<tr>
<td>Most of the technologies we indicate above enter</td>
<td>This is driven by increasing processor, storage and bandwidth capability</td>
</tr>
<tr>
<td>a phase of maturity and user acceptance</td>
<td></td>
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<tr>
<td>Non textual search gains in importance</td>
<td></td>
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<tr>
<td>The Internet of things becomes deployed</td>
<td>The recession may be a driver to the Internet of things and machine to machine communication especially in</td>
</tr>
<tr>
<td>Augmented reality search</td>
<td>The technologies underpinning augmented reality already exist. As they become mainstream, we will start to see more impact in daily life</td>
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## Factors – Long term (Beyond 2015)

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<td>Elements of semantic search becoming common</td>
<td>Inspite of industry optimism in some quarters, semantic search will take some time to take off because it needs a change in user behavior to add semantics to data</td>
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<tr>
<td>Discovery/Agents is an important part of search</td>
<td>i.e. content is fetched by agents</td>
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<td>P2P search becomes important</td>
<td>Ultimately, the client server nature of the Web will lean to a more scaleable Peer to Peer ecosystem</td>
</tr>
<tr>
<td>Search becomes ubiquitous</td>
<td>Search becomes a part of the service and no longer a distinct element</td>
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**SWOT analysis**

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<tr>
<th>Strengths</th>
<th>Opportunities</th>
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<tr>
<td>Multicultural background</td>
<td>Internet of things debate.</td>
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<td>Very strong culture of mobile</td>
<td>Liberate data allowing European companies to create new services</td>
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<tr>
<td>Strong history of co-operation and collaboration – ex GSM</td>
<td>Make it easier for existing players (Telecoms Operators) to share and use data within statutory frameworks (current discussion is aimed at new entrants)</td>
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<tr>
<td>Privacy (our laws) - regulation</td>
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<table>
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<th>Weaknesses</th>
<th>Threats</th>
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<tr>
<td>Web Search mostly dominated by Global companies</td>
<td>A closed ecosystem (since search needs links and references to make it valuable)</td>
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Thanks!

ajit.jaokar@futuretext.com
www.futuretext.com
www.opengardensblog.futuretext.com

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