Device Impact on User Mobile Infotainment Access

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Mobile Device Use in Real Life - Motivation

- Advances in communication technology e.g. WiFi, 3G
- 75% of adults in the UK own a mobile phone
- £600M worth multimedia downloads in 2005
- 58.5 million PDA\Smartphone sales projected by 2008
- Ofcom: Mobile data communication in its infancy
- O₂ – NTL: Mobile TV evaluations in Oxford area
- Shorts TV: First ever TV channel for mobile phones
User Experiences of Information Access

- Anderson et al.: Experiences with TabletPCs in classroom environments.
- Freire et al.: Transcoding of web content for mobile devices
- Jones et al.: Compared screen size impact on user experience
- Buranatrived and Vickers: Application and Device effects on user experience
- Gulliver et al.: Device effect on user perception of multimedia quality
Experimental Devices Selection

In the selection of each device its mobility and intrusiveness was considered

<table>
<thead>
<tr>
<th>Device</th>
<th>Laptop</th>
<th>Eye Trek (Head-Mounted Display)</th>
<th>Personal Digital Assistant</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mobility</strong></td>
<td>Limited, due to its large and heavy casing</td>
<td>Provides mobility, yet gives restricted vision and requires supporting equipment.</td>
<td>Causes no mobility restriction. Can be used on the go</td>
</tr>
<tr>
<td><strong>Intrusiveness</strong></td>
<td>Limited intrusiveness due to its screen, users have to position themselves to get the best angle</td>
<td>Slightly restricts the body movements due to the size of the equipment (Battery, control pack, glasses and processor)</td>
<td>No intrusiveness, due to the ergonomic design, size and weight of the latest personal digital assistants</td>
</tr>
</tbody>
</table>
Experimental Devices

- Little mobility: Hewlett Packard Laptop with an 54Mbps Wireless Card
- Limited mobility: Olympus Eye-Trek FMD 200 Head Mounted Display
- High mobility: HP iPAQ 5450 PDA with integrated WiFi adapter
Two scenario locations where identified for our experiments:

- On-the-street
- Coffee Shop

Above locations were selected to evaluate environmental distractions:

- Bypassing shoppers
- Sun light level and reflections on the screen
- Noises of the people, cars and the underground trains
- Self-consciousness caused with the use of various information access devices in public
## Information Oriented Tasks

| T1: | Connect to the Internet using the device provided. |
| T2: | Go to website and search for shopping centres in the area. |
| T3: | Open a shopping centre’s web page and find its interior map and identify the sports shops within. |
| T4: | Find the cheapest price for from the local shops. |
| T5: | Search on the Internet and compare the online prices with the prices in hand. |
| T6: | Send the cheapest price available to a friend via email |

## Entertainment Oriented Tasks

| T1: | Logon to web site. |
| T2: | Tap on the appropriate button on the website and start listening to the stream. |
| T3: | Listen to the online radio. |
| T4: | Note down the singer and the title of the song that is currently playing. |
| T5: | Use the details to search for the album cover on a music market web site. |
| T6: | After finding the album cover, download the image file to the mobile device for future use in the music store. |
Experimental Process

- Two main group of tasks: Information-oriented and Entertainment-oriented

- Information-oriented tasks
  - Involves online search, map reading, price comparison and on-the-move messaging

- Entertainment-oriented tasks
  - Involves mobile-friendly website browsing, on-the-move radio streaming and web search

<table>
<thead>
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<th>Information</th>
<th>Entertainment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1: It is easy to logon to the Internet.</td>
<td>Q1: It is easy to navigate through the website.</td>
</tr>
<tr>
<td>Q2: It easy to navigate through search results on the device.</td>
<td>Q2: It is easy to listen to online radio.</td>
</tr>
<tr>
<td>Q3: It is easy to find sports shops in the malls near to you.</td>
<td>Q3: It is easy to identify the track that is playing.</td>
</tr>
<tr>
<td>Q4: It is easy to read maps on my device.</td>
<td>Q4: It is easy to interact with the device.</td>
</tr>
<tr>
<td>Q5: It easy to find online prices of the product and make a comparison.</td>
<td>Q5: It is easy to do searches on the Web.</td>
</tr>
<tr>
<td>Q6: It is easy to send e-mails.</td>
<td>Q6: It is easy to access information and save it on my device.</td>
</tr>
<tr>
<td>Q7: I am comfortable using the device in a public place</td>
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Evaluation

- Made of 2 phases: Pilot Study, Main Evaluation
- Pilot Study: 3 Participants per device
- Main Evaluation: 36 Participants (11 female and 25 male)
- Participant age range: 18-32
- Each participant provided with 1-page task description and 2-page feedback questionnaire
- Evaluation took place at High Street and the Chimes shopping mall in Uxbridge, Middlesex
Results – Device Type

- Information Related Tasks
  - Device type does not have significant impact
  - HMD, however, scored the lowest of all three devices
  - The tasks the most affected with the use of HMD device type was reading maps
  - HMD was also the device that caused most self-consciousness

- Entertainment Related Tasks
  - Device type significant factor for while browsing mobile-friendly website
  - HMD was again the device that caused unease in public
Results – Location

- **Information Related Tasks**
  - Location does not have significant impact
  - Contrary to our expectation, web content assimilation is not affected by location

- **Entertainment Related Tasks**
  - Location has significant impact
  - Navigation is found to be harder
  - Easy of listening to online content is also affected by location
Conclusions and Future Work

- Device type do not have a significant impact on user information experience.
- Findings also highlight that users engaging in accessing content for information purposes are more tolerant to environmental factors and distraction. However, wearable devices cause self-consciousness.
- However, wearable devices cause self-consciousness.
- Future work… Combine & Tailor.
Thank You

Questions?