Studying Human-Computer Interaction for Social Good: the Case of Digital Government Evaluation and Re-Design Project

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Study context

- Six-week project in the context of the course ‘HCI and Design of Interactive Systems’
- Apply the theoretical and methodological background of the course to
  - Evaluate e-government services
  - Propose a re-designs
Key aspects

- Work in small groups.
- Evaluate the usability of web sites.
- Propose improvements of their design.
- The design and evaluation approach was only partially prescribed.
- Optional public presentation of their work.
- Strong societal relevance: The services are publicly available.
## Evaluated and re-designed e-gov services

<table>
<thead>
<tr>
<th>#</th>
<th>e-Service</th>
<th>Complexity</th>
<th>Typical users</th>
</tr>
</thead>
<tbody>
<tr>
<td>s1</td>
<td>Doctor appointment</td>
<td>low</td>
<td>public</td>
</tr>
<tr>
<td>s2</td>
<td>Annual car tax</td>
<td>low</td>
<td>public</td>
</tr>
<tr>
<td>s3</td>
<td>Doctor prescription</td>
<td>medium</td>
<td>specialist</td>
</tr>
<tr>
<td>s4</td>
<td>National chemical lab</td>
<td>medium</td>
<td>public, specialist</td>
</tr>
<tr>
<td>s5</td>
<td>Service fee payment</td>
<td>low</td>
<td>public</td>
</tr>
<tr>
<td>s6</td>
<td>Real estate value estim.</td>
<td>high</td>
<td>public, specialist</td>
</tr>
<tr>
<td>s7</td>
<td>Property tax</td>
<td>medium</td>
<td>public</td>
</tr>
<tr>
<td>s8</td>
<td>National cadastre</td>
<td>high</td>
<td>public, specialist</td>
</tr>
<tr>
<td>s9</td>
<td>National register office</td>
<td>low</td>
<td>public</td>
</tr>
<tr>
<td>s10</td>
<td>Urban planning</td>
<td>high</td>
<td>public, specialist</td>
</tr>
</tbody>
</table>
Evaluation methods used in the 10 projects

- Cognitive walkthrough
- Heuristic evaluation
- KLM
- User study
- Guidelines
- Inspection (scenario)
<table>
<thead>
<tr>
<th>Heuristic rule</th>
<th>s1</th>
<th>s2</th>
<th>s3</th>
<th>s4</th>
<th>s5</th>
<th>s6</th>
<th>s7</th>
<th>s8</th>
<th>Total</th>
<th>Occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1 Provide feedback</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td>50%</td>
</tr>
<tr>
<td>H2 Speak the user’s language</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td>5</td>
<td>50%</td>
</tr>
<tr>
<td>H3 Provide clearly marked exits</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td>8</td>
<td>75%</td>
</tr>
<tr>
<td>H4 Be consistent</td>
<td>3</td>
<td>1</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td>38%</td>
</tr>
<tr>
<td>H5 Prevent errors</td>
<td>1</td>
<td>1</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>38%</td>
</tr>
<tr>
<td>H6 Minimize user memory load</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td>9</td>
<td>75%</td>
</tr>
<tr>
<td>H7 Provide shortcuts</td>
<td>1</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>38%</td>
</tr>
<tr>
<td>H8 Aesthetic and minimalist design</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td></td>
<td>3</td>
<td>1</td>
<td>2</td>
<td></td>
<td>11</td>
<td>75%</td>
</tr>
<tr>
<td>H9 Good error messages</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>63%</td>
</tr>
<tr>
<td>H10 Help and documentation</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
<td>6</td>
<td>75%</td>
</tr>
<tr>
<td>total of rules violations:</td>
<td>12</td>
<td>8</td>
<td>7</td>
<td>8</td>
<td>5</td>
<td>10</td>
<td>4</td>
<td>9</td>
<td>63</td>
<td>58%</td>
</tr>
<tr>
<td>% of violated rules:</td>
<td>80%</td>
<td>40%</td>
<td>70%</td>
<td>70%</td>
<td>50%</td>
<td>50%</td>
<td>40%</td>
<td>60%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The case of e-appointment

- low complexity of user task
- service is aimed at the general public
- heuristic evaluation, cognitive walkthrough, KLM
- KLM analysis shows that on average 86sec are required to set up an appointment.
- Proposed design would require 56sec, an improvement of 36%.
The case of e-prescription

- medium complexity of user task
- aimed at specialist users

- KLM analysis shows that approx. 70sec are required for a doctor to issue a prescription.
- Proposed re-design would require approx. 30sec per prescription, a 60% improvement.
Services re-design

- All groups presented re-design proposals
- Functional prototypes and sketches
  - HTML/Bootstrap/JS
  - UXPin, Pencil
  - Hand-drawn sketches
- In 3 cases the prototypes were validated using KLM
Services re-design: e-prescription
Services re-design: e-prescription
Services re-design: e-prescription
Public presentation of student work

- Five groups published their work in the usability observatory
  - www.usabilityobservatory.gr
  - an initiative of academic and research groups
  - aim is to advocate usability practices and user-centered design
- There was a positive impact on the quality of these groups’ work.
Πολλά πεδία εισαγωγής κειμένου αντί για αναπτυσσόμενες λίστες επιλογής
Σε διάφορα σημεία στη σελίδα προσφέρονται πεδία για εισαγωγή κειμένου αντί για αναπτυσσόμενες λίστες επιλογής. Αυτό σε συνδυασμό με το γεγονός ότι η σελίδα αναγνωρίζει την είσοδο από το κρήστη μόνο αν αυτή ακολουθεί ένα συγκεκριμένο φορμά (το οποίο δεν γνωστοποιείται στο κρήστη) έχει σαν αποτέλεσμα ο κρήστης να καταλήγει συχνά σε αδιέξοδα.

Ασαφές ποια πεδία είναι απαιτούμενα και ποια προαιρετικά
Ασάφεια στην διάρκεια υποχρεωτικών και προαιρετικών πεδίων με αποτέλεσμα ο κρήστης να μην καταλαβαίνει σωστά την απόκριση του συστήματος. Δεν γίνεται κατανοητό μέχρι το πέρας της εκτέλεσης του σεναρίου αν έχει συμπληρωθεί όλα τα απαιτούμενα πεδία και αν οι τιμές τους είναι οι σωστές.
Πρόταση επανασχεδίασης
Discussion

• Though inexperienced, the students identified usability issues and proposed improvements
• Public presentation contributed to the quality of the student’s work
• Improved layout, fresh look, responsive design
• Re-design is based on task model, not on organizational structure
• The issue of user authentication
Thank you

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