An Example of User-Testing for an Airline Check-In System (Kiosk + Website)

Project realised for Amadeus Global Travel Distribution
Applications

- **Airline Check-In Kiosk (in airports):**
  - Touch-Screen
  - Allows to edit the Boarding Pass
- **Airline Check-In Website:**
  - For travellers who have already booked their flight
- > 2 series of User-Testing sessions
- > Analysis and Comparison of the 2 systems
Context and Challenges

- **Evolution in the Travel Industry:**
  - More and more 'self-service' operations

- **Access to different publics:**
  - Different profiles, cultures, computer skills…

- **Importance of the check-in:**
  - Critical (conditions Boarding)
  - Often under time pressure, in busy contexts
Usability Requirements: Kiosk Characteristics

- **Touch-Screen**, implying specific interaction constraints:
  - Size limitation (interaction zones not smaller than a finger size)
  - Sequential / straining input (1 finger / action at a time)
  - Reduced feedback possibilities (for example no 'mouse-over')
- Importance of Error Recovery interaction means
- Pointing more than Dragging

- **Presence of different devices:**
  - Credit card / passport insertion…
  - Less standard than computer devices
Usability Requirements: Kiosk Characteristics

• Non-trained users:
  – Requirement for a fast and efficient interaction

• Importance of physical parameters:
  – Environment, user size and position, etc.

• Presence of different devices:
  – Credit card / passport insertion…
  – Less standard than computer devices

• Importance of Confidentiality

• > Requires a specific approach and design
User-Testing Objective

• Assess the usability of 2 prototypes:
  – Respectively for Kiosk and Website
• Measurement Criteria (ref. ISO 9241):
  – Effectiveness > success / failure in task completion
  – Efficiency > compare collected data with ideal sequence
  – Satisfaction > measured by satisfaction questionnaire
What is User-Testing?

- A technique that allows to test an application with users who are representative of the 'real end-users'.
- Reproducing as much as possible the conditions of the real interaction.
- Establishing experimental hypothesis and controlling different factors that might affect the usability.
- Testing these hypothesis through pre-defined tasks.
- Applying the relevant analysis to collected data: quantitative (statistics) + qualitative.
User-Testing Preparation

• Prototypes Creation:
  – With a real kiosk for the Kiosk-based application

• Preparation of Testing Scenarios (tasks):
  – Real tasks that the end-users will be supposed to realize through the application

• Identifying User Profiles (according to Key Variables):
  – Travel Frequency, Travel purpose (Business vs Leisure), IT Skills
  – Impairments (visual + mobility)
User-Testing Preparation

- Experimental Design:
  - Combining user profiles with tasks
- Users' recruitment:
  - Based on defined Users' Profiles: 'screening questionnaire'
User-Testing Sessions

• User Lab (Amadeus User Lab in Sophia):
  – Two-way mirror
  – Test session recording (screen-recording + video-recording)

• Team:
  – A usability specialist / facilitator who explains the protocol to the user
  – Observers (members of the team: usability, marketing, development)
User-Testing Sessions

- Participant's welcome
- Pre-test questionnaire (control user's profile)
- Realisation of the tasks
- Task de-briefing with the user
- Post-test satisfaction questionnaire (SUS – System Usability Scale)
- **Duration:** 1 to 1,5 hr per user
  - 21 participants for the Kiosk
  - 20 participants for the Website
Equipment for Kiosk Testing

Air Kiosk User Testing - Analysis
Equipment for Website Testing

Air Kiosk User Testing - Analysis
Collected Data

- Profile Data
- Comments per screen per user / task
  - With screen + video-recording
- Answers to the SUS Questionnaire
Analysis

• Problems Inventory:
  – Per screen / task
  – Including Severity: very high, high, medium, low

• Problems Categorisation. Example:

<table>
<thead>
<tr>
<th>Finding</th>
<th>Usability Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;User selects the passenger, is surprised by the term, deselects and continue&quot;</td>
<td>&quot;Status and action are associated&quot;</td>
</tr>
<tr>
<td>Total: 246 findings</td>
<td>Total: 120 usability problems</td>
</tr>
</tbody>
</table>
Analysis

- **Statistics:**
  - Per Tasks / User Groups
    > identify the impact of users' profiles on interaction. Ex:
  - Per Screen > identify most problematic parts of the application

- Etc.
Analysis

• Satisfaction (qualitative). Example:
Key Conclusions

- Users' profiles requiring the most attention are:
  - IT novices who are occasional travellers
  - Frequent flyers with good IT skills (high-level of expectations, tend to go fast, do not read and therefore make more errors)

- User-Expectations for Internet Check-In were higher than for Kiosk:
  - In general, users more used to Internet > more demanding
Output from User-Testing

• Identify key problems (most frequent / most critical)
• Identify if these problems are correlated to users' profiles:
  – E.g. travel frequency, IT Skills
  – > Identify if the interface should be adapted according to users' profiles

• Localize precisely the origin of the problem:
  – For example, a specific element / feature in a specific screen
  – > Find solutions for improving the interface
Output from User-Testing.

- General recommendations:
  - Transversal usability principles
  - Design guidelines
- Specific Recommendations:
  - Screen Per Screen
  - Usability Problem > Design Recommendation
Output from User-Testing. Example.

- **Usability Problem:**
  - (ex.) Interaction problem with the mini seat-map

- **Design Solution(s):**
  - (ex.) Modifications on the mini seat-map (e.g. representation of the plane front-back, speeded-up scrolling, etc.)
Thank You!

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