Implementation and Analysis of a Gamification Approach for User Integration into a Mobility Application via Crowdsourcing

Oct 24th
Robin Otto, Bachelor’s Thesis – Final Presentation
Agenda

1. Introduction
2. Important Concepts
3. Related Work
4. Technologies
5. App Development
Urbanization in Munich

- Public transport is overcrowded at business hours
- Not equally crowded over time
- Münchner Verkehrsgesellschaft (MVG) cannot provide enough means of transport
- Delays & cancellations as a result

Research Questions:

1. Would commuters change to less crowded means of transport?

2. How would information about cabins satisfy their needs?

3. Is it possible to make commuters provide the information?

Main Objectives:

1. Elaborate Theoretical Concepts

2. Implement Application based on Concepts
Main Objectives

1. Elaborate Theoretical Concepts
## General Concept

<table>
<thead>
<tr>
<th></th>
<th>Structural Gamification</th>
<th>Content Gamification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Basic Definition</strong></td>
<td>Change structure around content</td>
<td>Add game elements</td>
</tr>
<tr>
<td><strong>Common Implementation</strong></td>
<td>Leaderboard</td>
<td>Add story and characters</td>
</tr>
<tr>
<td><strong>How does it affect the application?</strong></td>
<td>• Competitive</td>
<td>• Fun factor</td>
</tr>
<tr>
<td></td>
<td>• Fun factor</td>
<td>• Curiosity</td>
</tr>
</tbody>
</table>

Robin Otto – Bachelor’s Thesis
Important Concepts

Gamification

Potential Elements

Medals

Leaderboard

Avatar

Important Concepts
Crowdsourcing

General Concept

- Originates from the economical expression Outsourcing
- Depicts process of anonymous people providing information on the web
- Crowdsourcing can lead to knowledge that is difficult to acquire
- Target group is unknown

Source: http://blog.optimizationgroup.com/crowdsourcing-vs-co-creation-whats-the-difference
Important Concepts

Usability & User Experience

Usability – Units of Measurement

- Is it possible to solve the problem with this product?
- How much effort do I have to put into the product in order to solve the task?
- How satisfied am I with the result that I get from the product?

User Experience

… comprises all perceptions and reactions, which:

- the product evokes before actually using it
- result from the actual or expected use of the product
- affect the client after using the product

Connected Mobility

Easy to use:
- Few pages & touches

Crowdsourcing:
- Outline contribution capability

Gamification:
- Encourage continuously
- No interference with intuitiveness

<table>
<thead>
<tr>
<th>Competitors</th>
<th>Easy to use</th>
<th>Crowdsourcing</th>
<th>Gamification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moovel</td>
<td>✗</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moovit</td>
<td></td>
<td>✗</td>
<td>✗</td>
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<tr>
<td>Waze</td>
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<td>✗</td>
<td>✗</td>
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</table>
Main Objectives

2. Implement Application based on Concepts
Approach

Planning
- Define Target Group
- Choose Technologies
- Define Specifications

Groundwork
- Draw sketches
- Design Mockups
- Develop Prototype

Final Implementation
- Implement Application
- Have in Mind the Elaborated Concepts

Gather Feedback & Apply it
**Hybrid App**

- Good performance
- Almost native user interface
- High Code Portability
- Reduced development time and cost

<table>
<thead>
<tr>
<th>Features</th>
<th>Native Apps</th>
<th>Mobile Web App</th>
<th>Hybrid App</th>
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<tbody>
<tr>
<td>Performance</td>
<td>High</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>Cross Platform Support</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>User Interface</td>
<td>Good</td>
<td>Average</td>
<td>Good</td>
</tr>
<tr>
<td>Development Time &amp; Cost</td>
<td>High</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>Code Portability</td>
<td>Low</td>
<td>High</td>
<td>High</td>
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</table>
Technologies
Mobile Backend as a Service

Advantages

- Provides logic
- Definition for access rules
- Quick & easy integration
- Data synchronization

Disadvantages

- Predefined logic
- Certain number of calls per second
- Superficial access rules
- Data is stored externally

Source: https://mitechnews.com/connected-tech/mobile-monday-detroit-sept-12-mobile-backend-service/
Live Demo
CrowdednessIndicator

ABFAHRTSTAFEL

17:26 Holzkirchen
17:35 Mammendorf

LEADERBOARD

KARTE AN/AUS

Sie sind hier

CrowdednessIndicator

ABFAHRTSTAFEL

LEADERBOARD

RANKING

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<thead>
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<th>P</th>
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<td>6</td>
<td>RABE</td>
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CrowdednessIndicator

ABFAHRTSTAFEL

LEADERBOARD

MARIENPLATZ

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<th>FÜLLGRAD</th>
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<tr>
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<td>Tutzing</td>
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<tr>
<td>15:10</td>
<td>Wolfratshausen</td>
<td>⬤igit</td>
</tr>
<tr>
<td>15:11</td>
<td>Aying</td>
<td>⬤igit</td>
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<tr>
<td>15:12</td>
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<tr>
<td>15:15</td>
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<tr>
<td>15:18</td>
<td>Saltedorf</td>
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</tr>
</tbody>
</table>

Sie haben erfolgreich Ihren Eindruck abgegeben. Als kleine Belohnung gibt es 50 Punkte auf unserem Leaderboard!
1. Would commuters change to less crowded means of transport?
   - Depending on time trade-off
   - Tolerable waiting time ~15 mins

2. How would information about cabins satisfy their needs?
   - Information goes into detail
   - Users tend to ignore it
   - Useful, if information is accurate and reliable

3. Is it possible to make commuters provide the information?
   - Contribution more likely if previous submissions exist
   - Gamification feature necessary
   - Attraction through gamification feature differed
Thank you for your attention!