EXPERIENCES WITH AUTOMATED FIELD USABILITY TESTING USING GENERATED TASK MODELS

Presented by Patrick Harms
Outline

• Introduction

• Automated Field Usability Testing

• Proposed Platform

• Conclusion and Outlook
Outline

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Motivation and Goal

- Web portals = key communication channels
  - Company representation
  - Online shops
  - Platform as a service

- Usability of web portals has high importance
Motivation and Goal

• Website lifecycle

(Re)Launch Updates Offline

Usability Engineering

User Conference on Advanced Automated Testing

26-28/10/2016
Motivation and Goal

• Typical Usability Engineering Process
Motivation and Goal

• Website lifecycle

“Expensive”

“Time-consuming”

“Not required”

“…”
Motivation and Goal

• Typical Usability Engineering Process
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Automated Field Usability Testing

- Capture
- Analysis
- Critique
Automated Field Usability Testing

1. User Action Recording
2. Task Model Detection
3. Usability Smell Detection

Report
Automated Field Usability Testing

• Example Result:
  • n of all users performed the following action combination:
    • Enter text into Field “username”
    • Enter text into Field “password”
    • Scroll
    • Click Button “Login”
  • Actions contain the required inefficient action “Scroll”
  • Website should be restructured that scrolling is not required
  • Reason: Increase of user efficiency
Automated Field Usability Testing

User Action Recording → Task Model Detection → Usability Smell Detection

P. Harms, S. Herbold, and J. Grabowski,
"Trace-based Task Tree Generation,"

P. Harms and J. Grabowski,
"Extended Trace-based Task Tree Generation,
in International Journal on Advances in Intelligent Systems 2015.

P. Harms, S. Herbold, and J. Grabowski,
"Automated Field Usability Evaluation Using Generated Task Trees,"

P. Harms and J. Grabowski,
"Consistency of Task Trees Generated from Website Usage Traces,

P. Harms,
"Representativeness and Descriptiveness of Task Trees Generated from Website Usage Traces,"
Automated Field Usability Testing

• Advantages
  • Continuous evaluation possible
  • Comparable results
  • Applicable for websites and desktop systems

• Open issues
  • Large number of results → sorting, filtering, prioritization
  • Usability smell specific filters required
  • Tooling usage on a scientific level
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Proposed Platform as a Service

MAUSI  Massive Automatic Usability Investigation

Know your users' usability problems

Projects

You do not have a project yet. Please add one.

Add a project
Proposed Platform as a Service

MAUSI  Massive Automatic Usability Investigation
Know your users usability problems

Create a new project

Give your project a name:

project name

Integrate the following script into all pages of the analysed website:

https://projectname.recording.autoquest.de

Your subsequent analysis results will be better, if you consider the following aspects:

* every element of the website should have a human readable HTML element id tag
* elements that reoccur on any page of the website, such as menu entries, should have the same HTML element id tag
* multiple elements with the same semantics, such as elements of a list or rows of a table, should have similar HTML element id tags that start with the same prefix and end with distinct suffixes

Cancel  Create project
Proposed Platform as a Service

MAUSI  Massive Automatic Usability Investigation
Know your users usability problems

Analysis results

The typical tasks users perform on the site have not yet been determined and now usability evaluation has been done.

Perform an analysis
Proposed Platform as a Service

MAUSI  Massive Automatic Usability Investigation
Know your users' usability problems

Determine User Tasks

Typical user tasks can be determined
- from all recorded actions,
- from a subset specified by dates of the
  first considered recording: 01.12.2014
  last considered recording: 12.05.2016

The more recorded actions are processed, the more representative are the determined typical user tasks. Hence, processing all recorded actions is typically a good idea.

But, if there were significant changes made on the website in the complete recording period, then typical user tasks should only be determined on time frames in which no significant changes took place.

Finally, you may define a personal label:

my label

to distinguish the result of this processing from others.

Cancel  Determine typical user tasks
# Proposed Platform as a Service

## MAUSI  Massive Automatic Usability Investigation

Know your users usability problems

### SWE Website

<table>
<thead>
<tr>
<th>All recorded data:</th>
<th>Users: 3.054</th>
<th>Sessions: 10.345</th>
<th>Actions: 150.769</th>
<th>Pages: 39</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From: 01.12.2014 12:31</td>
<td></td>
<td></td>
<td>To: ongoing</td>
</tr>
</tbody>
</table>

---

### Analysis results

<table>
<thead>
<tr>
<th>Your Label</th>
<th>Determined at</th>
<th>Date of first analyzed action</th>
<th>Date of last analyzed action</th>
<th>Users</th>
<th>Sessions</th>
<th>Actions</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>My 1st analysis</td>
<td>12.05.2016 14:10</td>
<td>01.12.2014 12:31</td>
<td>12.05.2016 14:10</td>
<td>3.023</td>
<td>10.231</td>
<td>148.123</td>
<td>processing...</td>
</tr>
</tbody>
</table>

Please wait for the processing to be finished. Determining typical user tasks and detecting usability issues may take quite a while depending on the number of processed actions. It may even take several hours. So please get yourself a coffee...
Proposed Platform as a Service

MAUSI  Massive Automatic Usability Investigation

Know your users usability problems

SWE Website

All recorded data:    Users: 3.054    Sessions: 10.345    Actions: 150.769    Pages: 39
From: 01.12.2014 12:31    To: ongoing

Analysis results

<table>
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<tr>
<th>Your Label</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Usability issues: 13</td>
</tr>
</tbody>
</table>

Perform an analysis
Proposed Platform as a Service

MAUSI  Massive Automatic Usability Investigation

Show your users usability problems

SWE Website
My 1st analysis

Processed data:
- Users: 3,023
- Sessions: 10,231
- Actions: 148,123
- Pages: 38
  From: 01.12.2014 12:31
  To: 12.05.2016 14:10

Defect 1 covering 235 user actions (3%) executed 58 times

Description:
Intensive Scrolling
When executing the below task, users perform a large amount of scrolling (5 of 10 user actions are typically scrolling).

Solution:
To solve this issue, you may check the corresponding page(s), if it contains all elements required for the below task in a way so that they are all visible at the same time.

Detailed actions
Sequence
  Iteration
    Sequence
      Click on "user_name"
      ENTER TEXT IN "user_name"
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Conclusion and Outlook

• Approach is available and validated
• Corresponding tooling is available
• Tooling has been applied for larger scale case studies
• Platform to be developed
  • Feedback from potential users on current draft
  • Design to be finalized
  • Implementation
  • Application by early adaptors
  • Adaptation of platform
Thank you for your attention!