



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

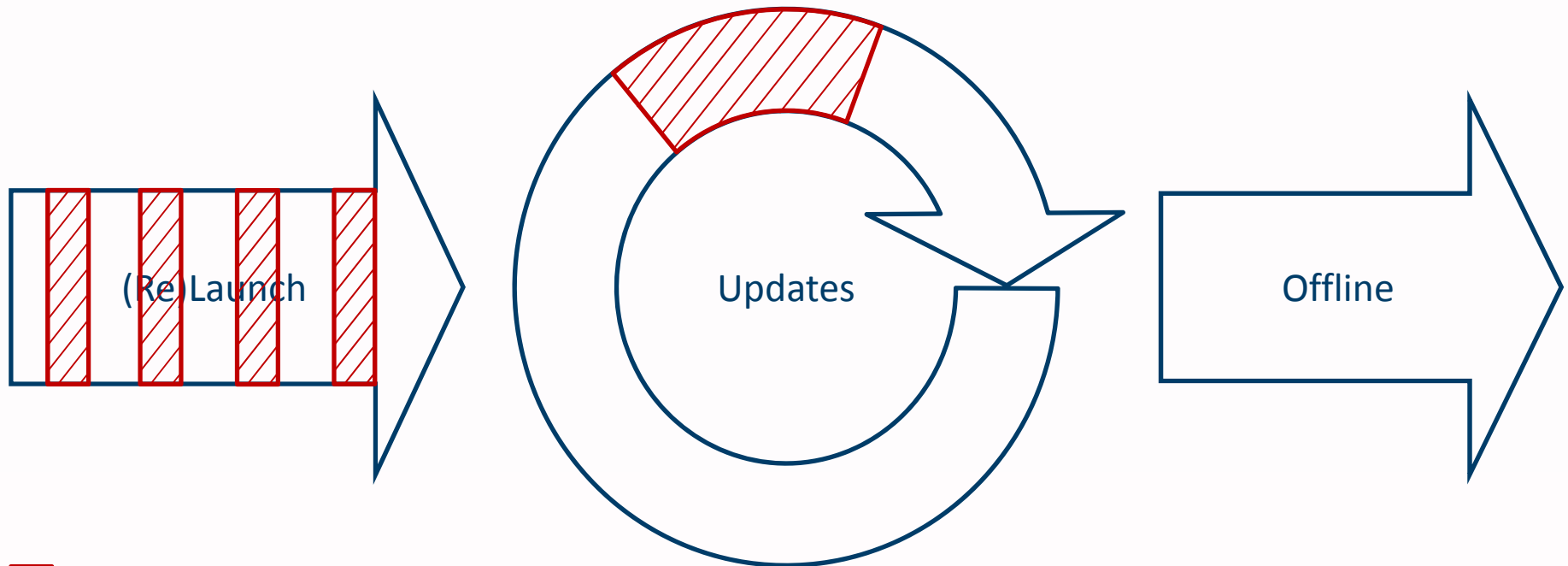
- **Introduction**
- Automated Field Usability Testing
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Motivation and Goal

- Web portals = key communication channels
 - Company representation
 - Online shops
 - Platform as a service
- Usability of web portals has high importance

Motivation and Goal

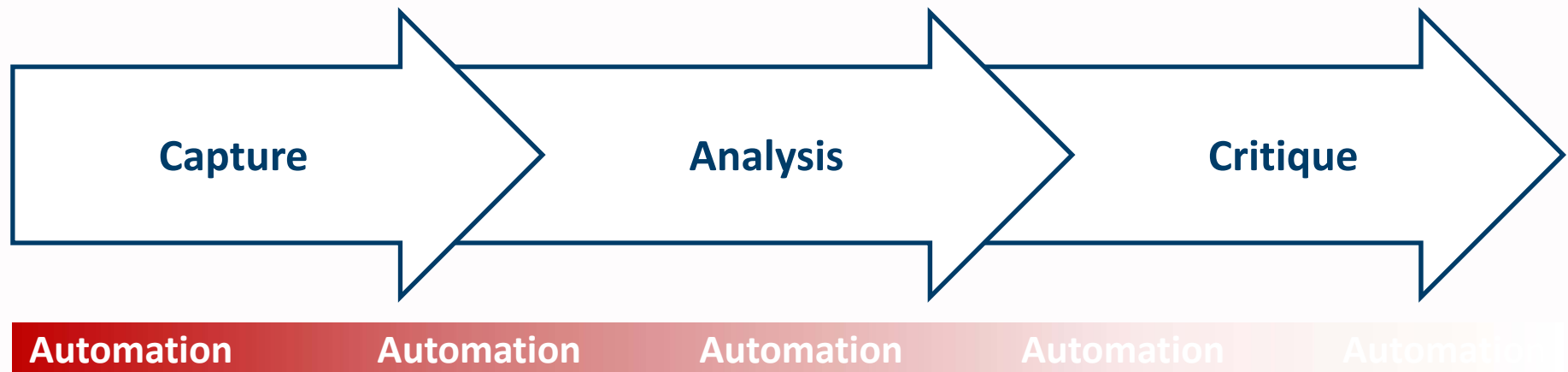
- Website lifecycle



 Usability Engineering

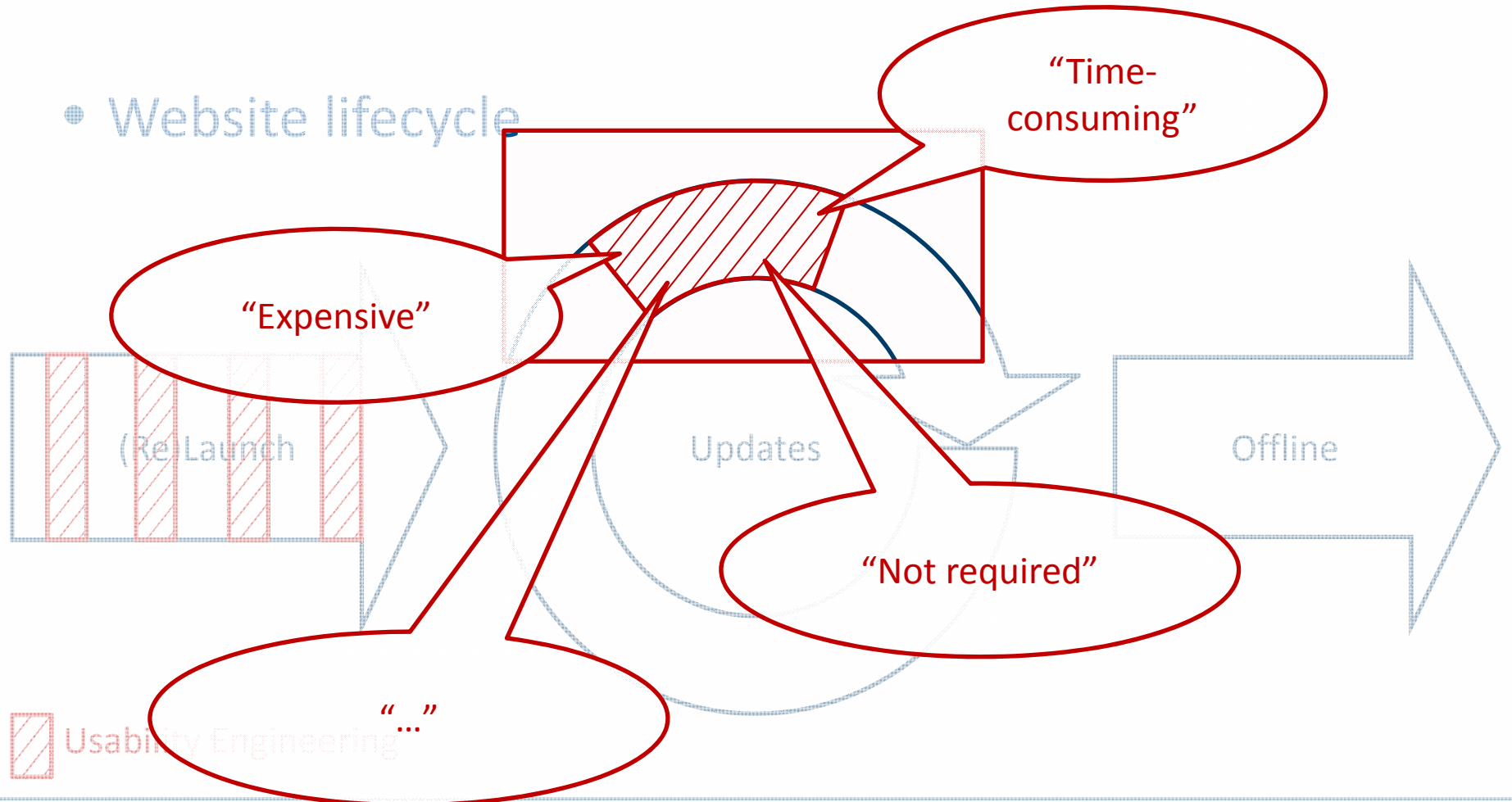
Motivation and Goal

- Typical Usability Engineering Process



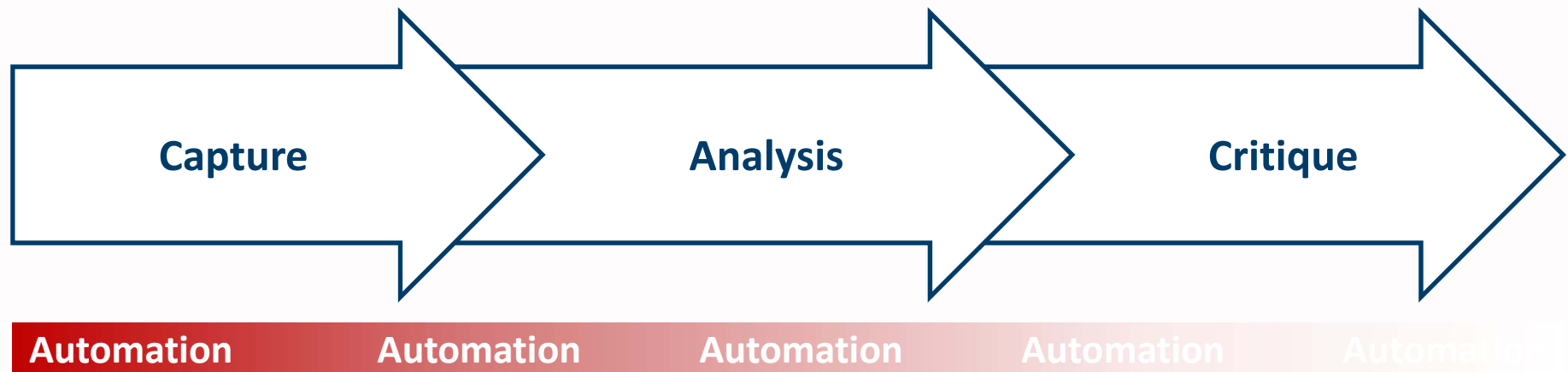
Motivation and Goal

- Website lifecycle



Motivation and Goal

- Typical Usability Engineering Process



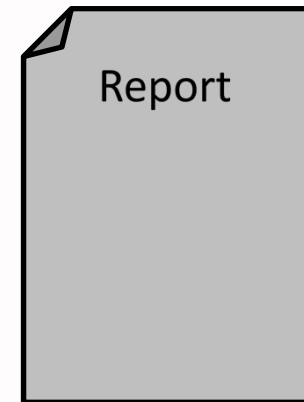
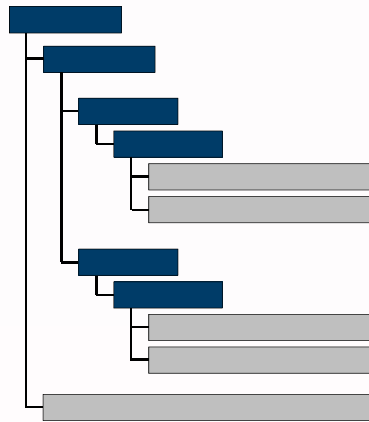
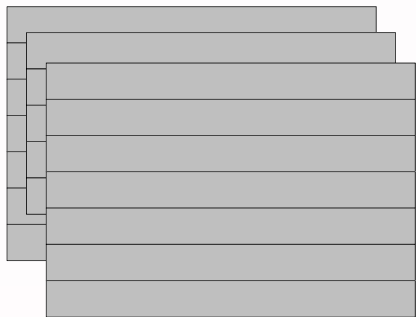
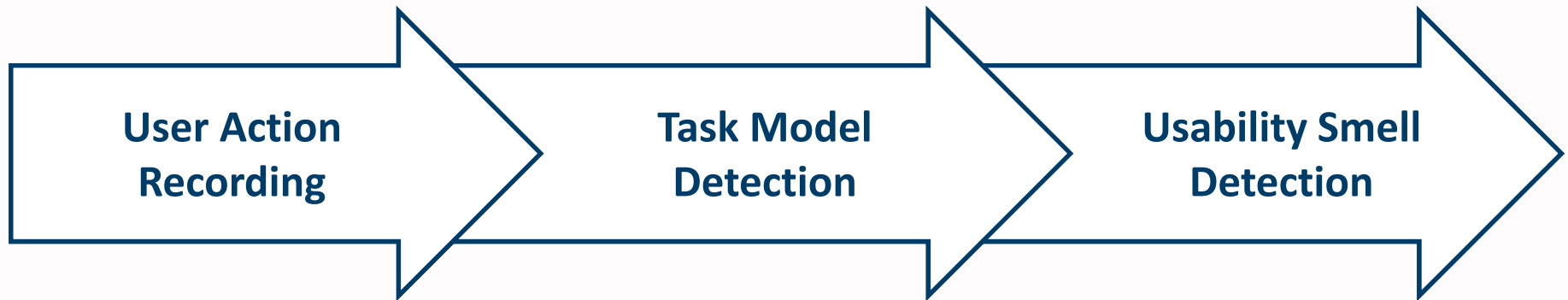
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- **Automated Field Usability Testing**
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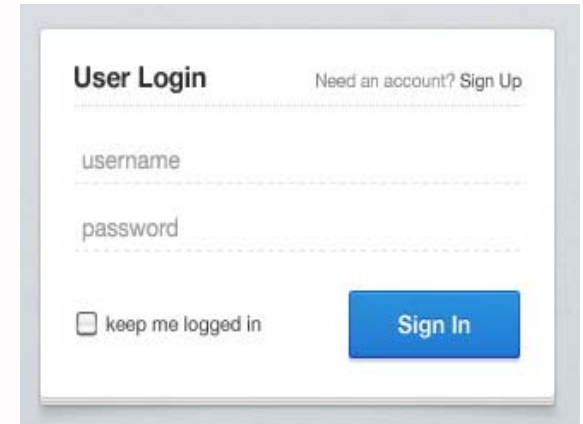
Automated Field Usability Testing



Automated Field Usability Testing



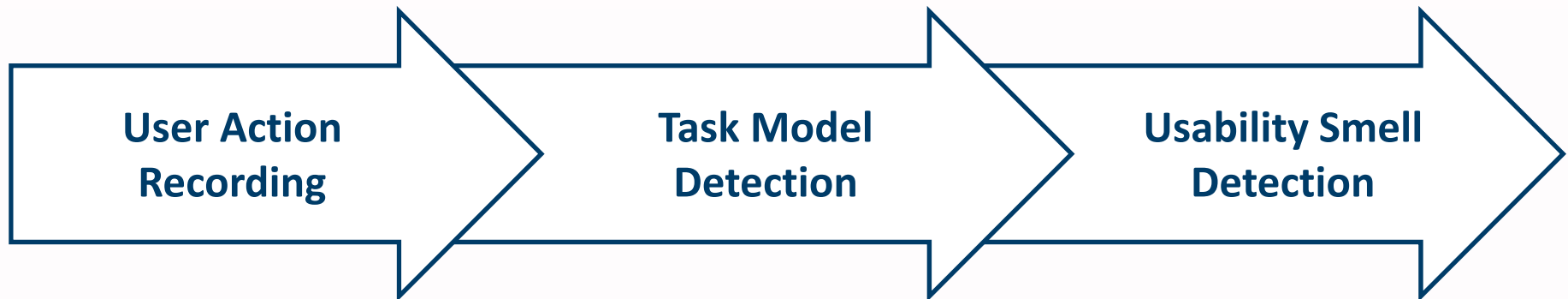
Automated Field Usability Testing



The screenshot shows a 'User Login' form. At the top right, there is a link: 'Need an account? Sign Up'. Below the title, there are two input fields: 'username' and 'password'. At the bottom left, there is a checkbox labeled 'keep me logged in'. At the bottom right, there is a blue button labeled 'Sign In'.

- 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



P. Harms, S. Herbold, and J. Grabowski,
"Trace-based Task Tree Generation,"
in Proceedings of ACHI 2014.

P. Harms and J. Grabowski,
"Usage-based Automatic Detection of Usability Smells,"
in Proceedings of the 5th HCSE 2014.

P. Harms, S. Herbold, and J. Grabowski,
"Extended Trace-based Task Tree Generation,"
in International Journal on Advances in Intelligent Systems 2014.

P. Harms,
"Automated Field Usability Evaluation Using Generated Task Trees,"
PhD thesis, 2016.

P. Harms and J. Grabowski,
"Consistency of Task Tree Generation from Usage Traces,"
in Proceedings of the SDL-Forum 2015

P. Harms,
"Representativeness and Descriptiveness of Task Trees Generated from Website Usage Traces,"
in Proceedings of SAM 2016.

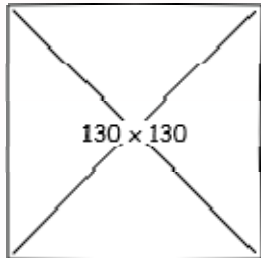
Automated Field Usability Testing

- 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

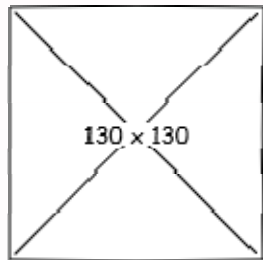
Know your users usability problems

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

Projects

You do not have a project yet. Please add one

Add a project

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

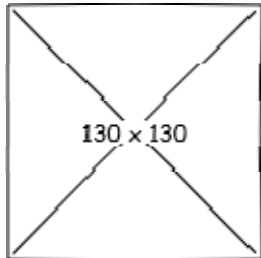
Your subsequent analysis results will be better, if you consider the following aspects:

- * 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

Projects

SWE Website

SWE Website

All recorded data:

Users: 3.054

Sessions: 10.345

Actions: 150.769

Pages: 39

From: 01.12.2014 12:31

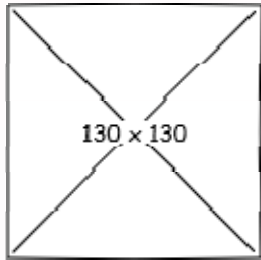
To: ongoing

Analysis results

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

Projects SWE Website

SWE Website All recorded data

Analysis results

The typical tasks users perform on the

Perform an analysis

Determine User Tasks

Typical user tasks can be determined

- from all recorded actions, or
- 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.

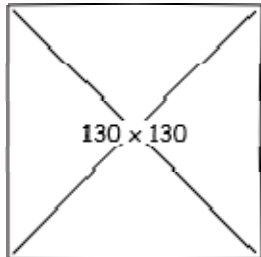
Cancel

Determine typical user tasks

69 Pages: 39

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Proposed Platform as a Service



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Know your users usability problems


Projects

SWE Website

SWE Website

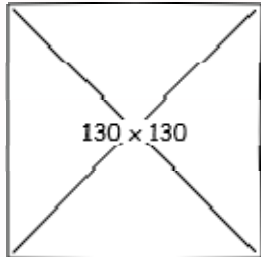
All recorded data: Users: 3.054 Sessions: 10.345 Actions: 150.769 Pages: 39
From: 01.12.2014 12:31 To: ongoing

Analysis results

Your Label	Determined at	Date of first analyzed action	Date of last analyzed action	Users	Sessions	Actions	Results
My 1st analysis	12.05.2016 14:10	01.12.2014 12:31	12.05.2016 14:10	3.023	10.231	148.123	processing...  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...

Perform an analysis

Proposed Platform as a Service



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Know your users usability problems

Projects

SWE Website

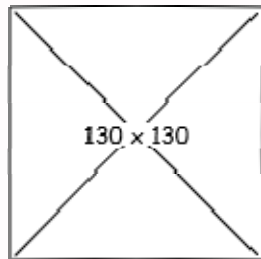
SWE Website

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Analysis results

Your Label	Determined at	Date of first analyzed action	Date of last analyzed action	Users	Sessions	Actions	Results
My 1st analysis	12.05.2016 14:10	01.12.2014 12:31	12.05.2016 14:10	3.023	10.231	148.123	Typical user tasks: 53 <input type="button" value="Show"/> Usability issues: 13 <input type="button" value="Show"/>

Proposed Platform as a Service



MAUSI Massive Automatic Usability Investigation

Know your users usability problems

Projects

SWE Website

SWE Website - My 1st analysis - Usability Defects

SWE Website

My 1st analysis

- Defect 1
- Defect 2
- Defect 3
- Defect 4
- Defect 5
- Defect 6
- Defect 7
- Defect 8
- Defect 9
- Defect 10
- Defect 11
- Defect 12
- Defect 13

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 (8%) 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"

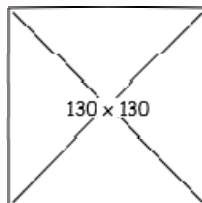
Enter text in "user_name"

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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



MAUSI Massive Automatic Usability Investigation

Know your users usability problems

Projects
SWE Website
SWE Website - My 1st analysis - Usability Defects

SWE Website

My 1st analysis

- Defect 1
- Defect 2
- Defect 3
- Defect 4
- Defect 5
- Defect 6
- Defect 7
- Defect 8
- Defect 9
- Defect 10
- Defect 11
- Defect 12
- Defect 13

Processed data:	Users: 3.023	Sessions: 10.231	Actions: 148.123	Pages: 38
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Detailed actions

Sequence

Iteration

Sequence

Click on "user_name"

Enter text in "user_name"

Selection

Click on "password_field"

Press "tab" key

Enter text in "password_field"

Click on button "OK"

Thank you
for your
attention!