

Project Presentation: Usability Optimization based on Log File Analysis and Web Monitoring

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Outline

Motivation

Related Work

Approach

Log file analysis

Get to know your customers



Motivation: Current situation

Why do we need to analyze log files?

- More and more consumers use the internet as their primary source of decision making
- Companies not optimizing their internet presence will face a competitive disadvantage
- Usability testing cannot be afforded by many SME
- Log files are a comparatively cheap and easy way to obtain large amounts of usability data
- Log files contain vital information about the web site visitor actions

Project overview: ULoFA

Usability Optimization based on Log File Analysis and Web Monitoring

- Duration: 1/2013 until 6/2013
- Funding: European Fond for Regional Development (EFRE), funding line 2.10 demand, feasibility and project studies
- Idea: Use web analytics to identify usability problems by taking into account the hierarchical structure of a website

Project goals

- Investigate the navigational behavior of website users by means of web analytics
- Discover navigational patterns that suggest usability problems (e.g. disorientation on a website)
- Develop a new plugin for Piwik which visualizes this navigational behavior in order to detect such usability problems
- Improve the competitive advantages of SME

Related work: Log-based studies

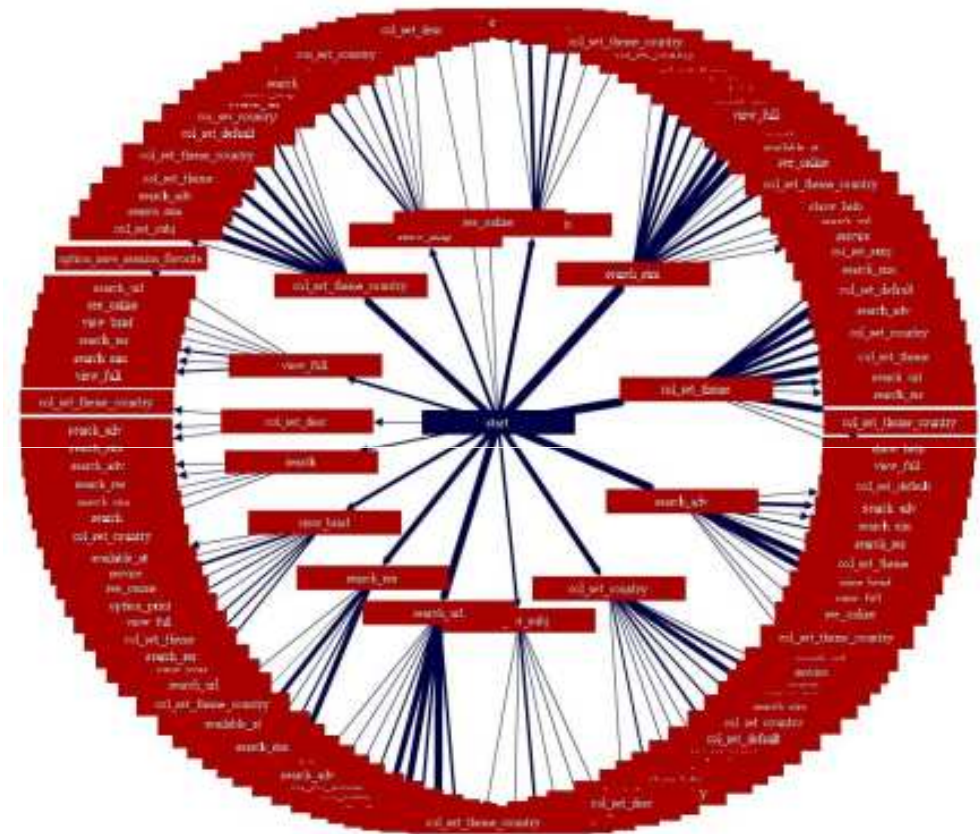
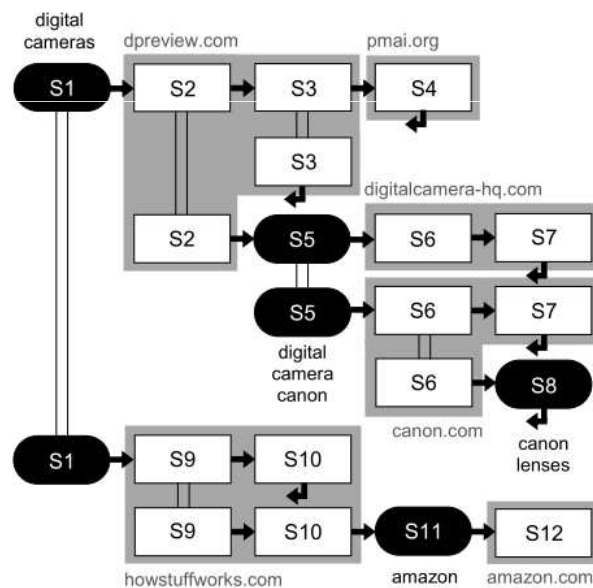
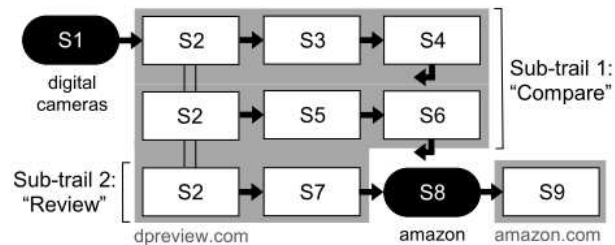
Investigating the behavior of search engine users

- White & Drucker (2007)
 - Within-browser interaction logs of 3291 participants collected over a period of 5 months
 - Focus on variability in users' behavior within search-related activities on the Web
- Lamm, Mandl & Kölle (2009)
 - Interaction logs from the European Library (TEL) Website collected over a period of 18 months
 - Focus on evaluation of user-sessions with respect to search success

Visualization of search trails

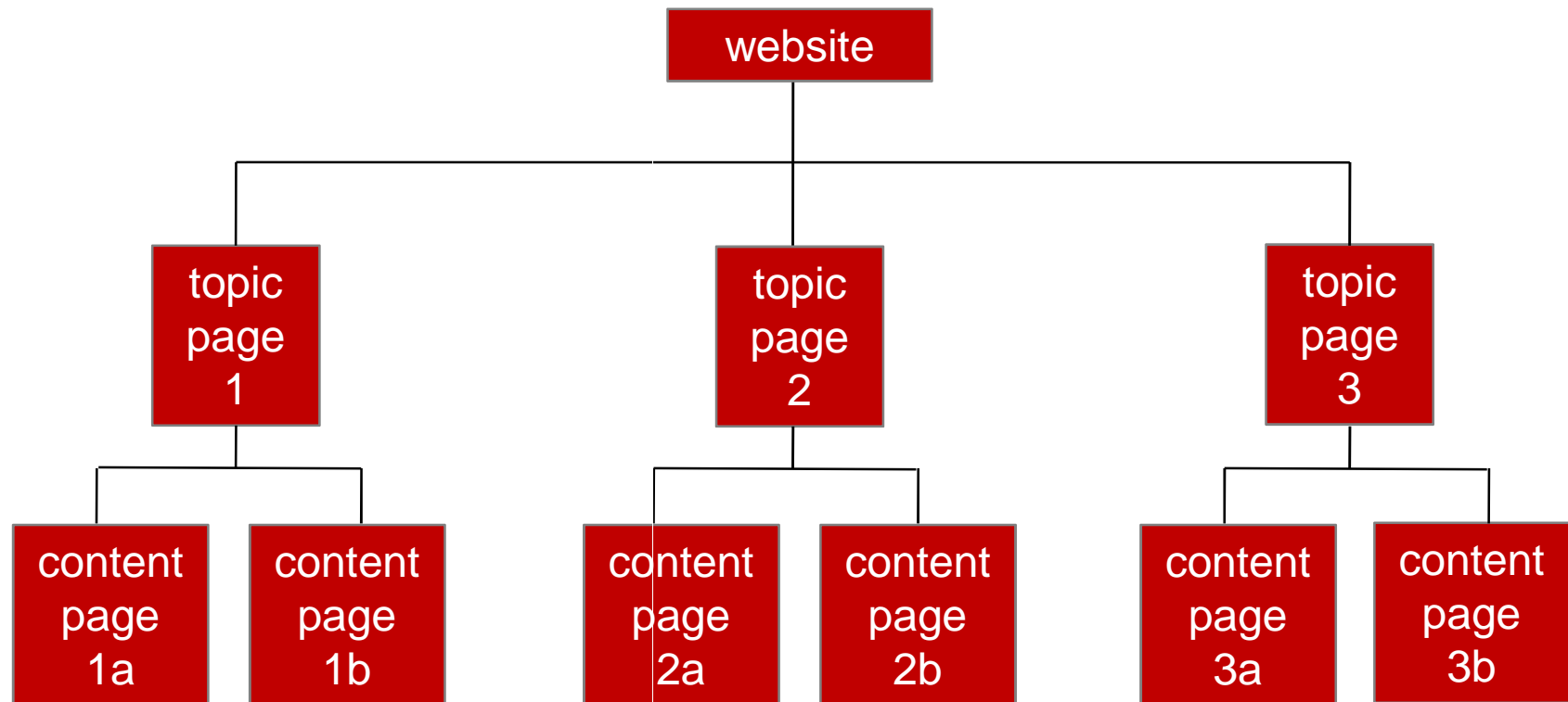
White & Drucker (2007)

Lamm et al. (2009)



ULoFA-Approach

Website hierarchy:



ULoFA-Approach

- Use additional information to enhance predictive power of log file analysis
- In our case: Structure of website
- Link between log files and structure of page
- Easy integration into existing architecture: Piwik

Piwik

- Open Source (GPL licensed) web analytics software
- Tracks standard statistics of users: referrer url, keywords, user actions
- Real-time tracking of user behavior
- Easy integration into website via php-API or plugins for CMS and E-commerce systems
- Plugin system and customizable Dashboard

Piwik

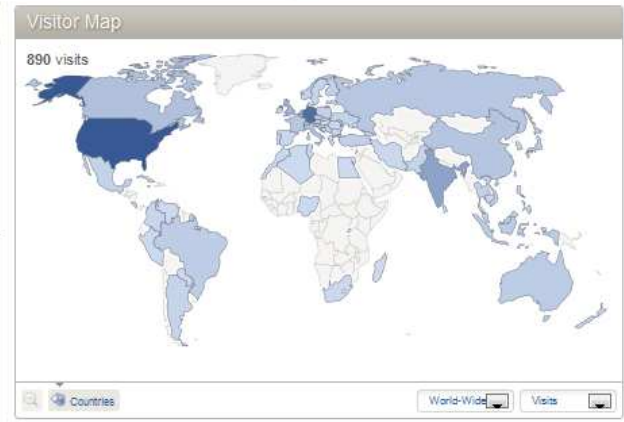
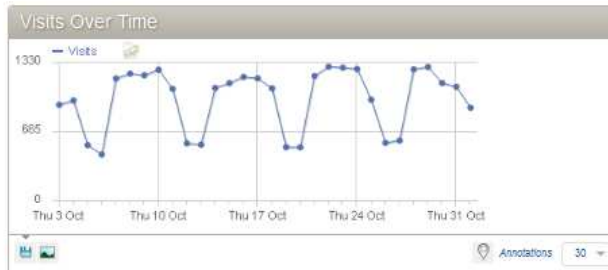
Piwik Demo

Dashboard **Visitors** Actions Referrers Goals

Website **Piwik Forums** ▾

Date range: 2013-11-01 All visits Widgets & Dashboard ▾

You are currently viewing the demo of Piwik



Visitors in Real-time

Date	Visits	Pageviews
Last 24 hours	723	1486
Last 30 minutes	17	24

Sat 2 Nov - 10:37:19	from Google - "Keyword not defined" = 3	Pages: 1
Sat 2 Nov - 10:34:41	from Google - "Keyword not defined" = 5	Pages: 1
Sat 2 Nov - 10:33:13 (3 min 18s)	from piwik.org	Pages: 1
Sat 2 Nov - 10:28:50	from Google - "Keyword not defined" = 3	Pages: 1

26 conversions
\$ 48 overall revenue
2.0% overall conversion rate (visits with a completed goal)

Goal 'New user registration'

11 conversions 1.2% conversion rate

Goal 'User login'

15 conversions 1.7% conversion rate

Goal 'Read the "Please read" post'

0 conversions 0.0% conversion rate

Visitor Browser

Browser	Unique visitors
Chrome	433
Firefox	236
Internet Explorer	49
Safari	28
Opera	11

1-5 of 13 Next

Related report: Browser version

Realisation

Two components setup:

1. Hierarchy crawler:
 - Analyses structure of website
 - Platform independent (Java)
2. Piwik-plugin:
 - Links hierarchy data with log files
 - Deals also with existing log file data
 - Different analysis functions

Realisation

Dashboard							Besucher		Aktionen		Verweise		Ziele		Hierarchie: Auswertung		Webseite usability-toolkit.de	
Klickpfad (tabellarisch)							Anzahl der Datensätze		Tupelhäufigkeit (statisch)		Tupelhäufigkeit (dynamisch)							
Zeitspanne: 2012																		
Nr.	BesucherID	Anzahl der Links	Datum des Servers	Startzeit	Verweildauer	URL	Hierarchischer Klickpfad											
1	24753	8	2012-08-08	12:28:38	4 Minuten 21s	<ul style="list-style-type: none"> • http://usability-toolkit.de/usability/navigation-auf-websites/navigationselemente/filterfunktion/ [4] • http://usability-toolkit.de/praxisbeispiel/ [1] • http://usability-toolkit.de/usability/ [1] • http://usability-toolkit.de/usability/filterfunktion/gestaltung-von-filterfunktionen/ [3] • http://usability-toolkit.de/usability/filterfunktion/wie-koennen-verschiedene-facetentypen-dargestellt-werden/ [3] • http://usability-toolkit.de/usability/filterfunktion/aktuelle-auswahl-hervorheben/ [3] • http://usability-toolkit.de/usability/filterfunktion/was-ist-bei-sehr-vielen-facetten-und-auspraegungen-zu-beachten/ [3] • http://usability-toolkit.de/usability/filterfunktion/empfehlungen-fuer-die-gestaltung/ [3] 	→ [4]	→ [1]	→ [1]	→ [3]	→ [3]	→ [3]	→ [3]	→ [3]	→ [3]	→ [3]	→ [3]	→ [3]
2	24752	1	2012-08-08	12:06:18	0s	• http://usability-toolkit.de/usability/filterfunktion/gestaltung-von-filterfunktionen/ [3]	→ [3]											
3	24751	1	2012-08-08	11:46:14	0s	• http://usability-toolkit.de/projekt/ueber-das-projekt/ [2]	→ [2]											
4	24750	4	2012-08-08	10:44:51	14 Minuten 17s	<ul style="list-style-type: none"> • http://usability-toolkit.de/usability/usability-methoden/personas/ [3] • http://usability-toolkit.de/usability/usability-methoden/personas/ [3] • http://usability-toolkit.de/usability/usability-methoden/personas/ [3] • http://www.bboxesandarrows.com/view/personas-and-the [→] 	→ [3]	→ [3]	→ [3]	→ [3]	→ [→]							
5	24749	1	2012-08-08	10:31:22	0s	• http://usability-toolkit.de/usability/usability-methoden/use-case-interaktionsszenario/ [3]	→ [3]											

Realisation

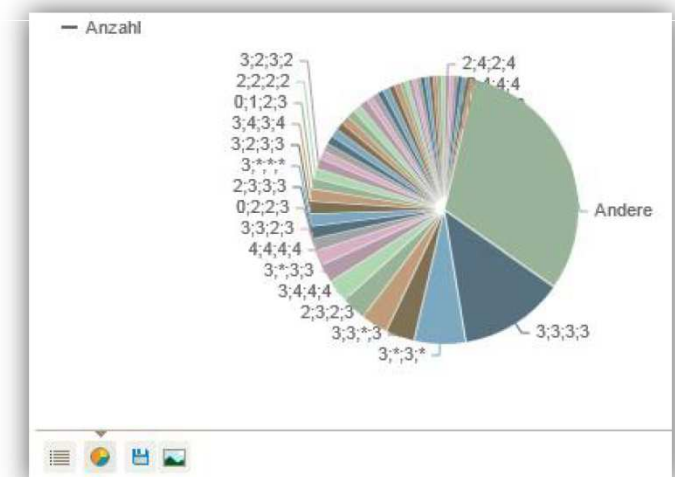


Kleinste Klickpradiänge: 4 Größte Klickpradiänge: 4 Tupellänge: 4 Wählen

Klickpfad	Anzahl
3,3;3;3	51
3,*;3;*	25
3,3;*,3	14
2,3;2;3	13
3,4;4;4	12

1-5 von 168 nächste >

5



Outlook

- Start additional cooperations with SMEs
- Extend applicability of Hierarchy-Crawler to dynamical websites
- Identify patterns that indicate specific usability problems

Thank you for your attention!

References

Ahrens, Marc (2013): Visualisierung für Webanalytik: Entwicklung einer Komponente für die hierarchische Analyse des Navigationsverhaltens im Open-Source-System „Piwik“, MA-Arbeit, Universität Hildesheim

Lamm, Katrin; Mandl, Thomas; Kölle, Ralph (2010): Search Path Visualization and Session Performance Evaluation with Log Files. In: Multilingual Information Access Evaluation I: Text Retrieval Experiments: Proceedings of the 10th Workshop of the Cross-Language Evaluation Forum (CLEF 2009), Berlin: Springer

White, Ryan W.; Drucker, Steven M. (2007): Investigating behavioral variability in web search. In : Proceedings of the 16th international conference on World Wide Web (WWW '07), New York: ACM, pp. 21–30.