



Methodology Workshop

How to Conduct a Systematic Literature Review

Dr. David Harborth
Chair of Mobile Business & Multilateral Security
Goethe University Frankfurt

What is a Systematic Literature Review (LR)?

- Why: Find research gaps and thereby show the relevance of a topic
- What: Provide an overview and synthesis for a research question based on a predefined selection of outlets and a search process that is as transparent as possible
 - **Replicability**
- How: see next slides for one possibility :)

Different Approaches for a LR

- There are several existing articles, books, etc. on conducting a LR
- Main goals are oftentimes the same
- A few references (Fink 2005; Boell and Cecez-Kecmanovic 2014; Webster and Watson 2002; ...)
- Nice overview provided by Fink (2005)

My Favorite Approach: vom Brocke et al. (2009)

- “*RECONSTRUCTING THE GIANT: ON THE IMPORTANCE OF RIGOUR IN DOCUMENTING THE LITERATURE SEARCH PROCESS*” (ECIS, 2009)
- Guidelines for conducting a LR
- Focus especially on rigor, i.e. documenting your search process
- Suggestions for tables to present results clearly

(1) Define the Research Question and Keywords

- Precise research question
 - specific keywords
 - more likely to get relevant results
- Number of keywords varies significantly
 - In rather general LR one keyword can be fine (e.g. "*information privacy*" used by Bélanger and Crossler 2011)
 - Oftentimes variation of keywords used (e.g. "*information privacy*" and "*information privacy and technology*" in Smith et al. 2011)

(2) Define the Characteristics of the LR – “Taxonomy of LR”

Characteristic	Categories			
Focus	research outcomes	research methods	theories	applications
Goal	integration		criticism	central issues
Organization	historical		conceptual	methodological
Perspective	neutral representation		espousal of position	
Audience	specialized scholars	general scholars	practitioners/politicians	general public
Coverage	exhaustive	exhaustive and selective	representative	central/pivotal

Table 1. Taxonomy of the Literature Review following Cooper (1988)

(3) Select the Coverage and Outlets

Journals	<ul style="list-style-type: none">• Communications of the ACM (CACM)• European Journal of Information Systems (EJIS)• Information Systems Journal (ISJ)• Information Systems Research (ISR)• Journal of the Association for Information Systems (JAIS)• Journal of Information Technology (JIT)• Journal of Management Information Systems (JMIS)• Journal of Strategic Information Systems (JSIS)• Management Information Systems Quarterly (MISQ)
Conferences	<ul style="list-style-type: none">• Americas Conference on Information Systems (AMCIS)• European Conference on Information Systems (ECIS)• Hawaii International Conference on System Sciences (HICSS)• International Conference on Information Systems (ICIS)• Pacific Asia Conference on Information Systems (PACIS)

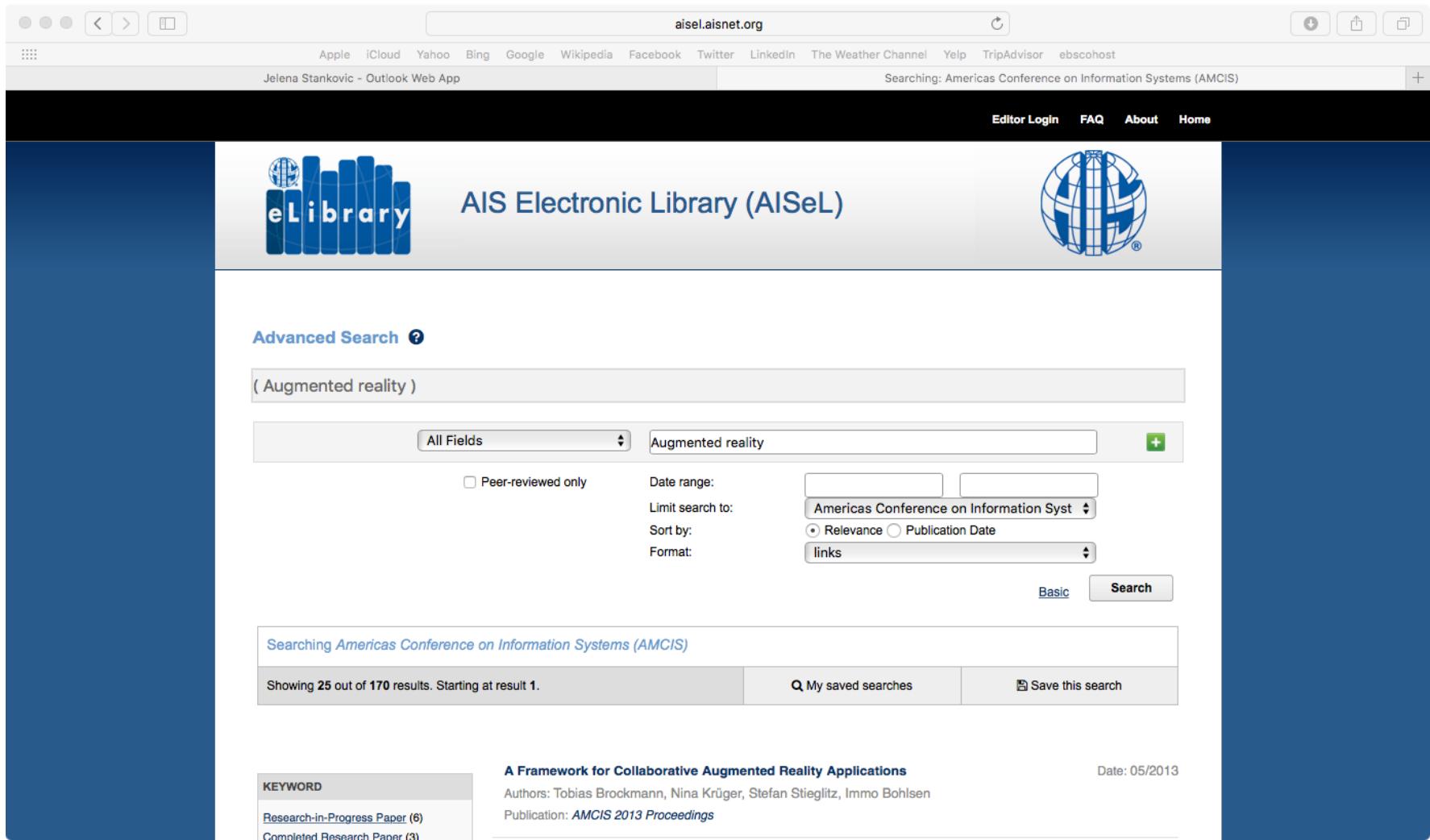
Table 2. Selected Journals and Conference Proceedings included in the Literature Search

(4) Conduct the Search Process

	Journal/ Conference	Database	Search	Coverage	Hits	Final Hits
1	CACM	EBSCOhost	"all fields"	since 1965	84	11
2	EJIS	EBSCOhost	"all fields"	since 1991	0	0
3	ISJ	EBSCOhost	"all fields"	since 1991	2	0
4	ISR	Informs	"anywhere"	since 1990	91	0
5	JAIS	EBSCOhost	"all fields"	since 2003	3	0
6	JIT	EBSCOhost	"all fields"	since 1986	0	0
7	JMIS	EBSCOhost	"all fields"	since 1984	8	2
8	JSIS	Elsevier	"all fields"	since 1991	0	0
9	MISQ	EBSCOhost	"all fields"	since 1977	5	0
10	AMCIS	AIS Electronic Library	"all fields"	since 1995	170	4
11	ECIS	AIS Electronic Library	"all fields"	since 2000	89	0
12	HICSS	IEEE Xplore	"Full Text & Metadata"	since 1992	13	7
13	ICIS	AIS Electronic Library	"all fields"	since 1980	147	2
14	PACIS	AIS Electronic Library	"all fields"	since 1993	57	2
15	Backward	--	--	--	-	118
Total (no. in parentheses equals the sum of keyword and backward results)					669	28 (146)

Table 3. Summary of the Literature Search Findings

(4) During the Search Process – Document the Steps (I)



The screenshot shows a web browser window for aisel.aisnet.org. The search bar at the top contains the query "Searching: Americas Conference on Information Systems (AMCIS)". Below the search bar, the page title is "AIS Electronic Library (AISeL)". On the left, there is a sidebar with a "eLibrary" logo and a navigation menu. The main content area displays an advanced search form. The search term "Augmented reality" is entered in the "All Fields" dropdown. Other search parameters include "Peer-reviewed only" (unchecked), "Date range" (empty), "Limit search to" set to "Americas Conference on Information Syst", "Sort by" set to "Relevance" (selected), "Publication Date" (unchecked), and "Format" set to "links". Below the search form, a message says "Showing 25 out of 170 results. Starting at result 1." There are links for "My saved searches" and "Save this search". At the bottom, there is a section titled "A Framework for Collaborative Augmented Reality Applications" with authors Tobias Brockmann, Nina Krüger, Stefan Stieglitz, Immo Bohlisen, and publication information "AMCIS 2013 Proceedings". The date is listed as "Date: 05/2013".

(4) During the Search Process – Document the Steps (II)

Screenshot of the EBSCOhost Business Source Premier search interface:

Search Query: augmented reality AND Journal of Management Informatic

Results Overview: 1 - 8 von 8

Result 1: Attention Issues in Spatial Information Systems: Directing Mobile Users' Visual Attention Using Augmented Reality.

Details: By: BIOCCA, FRANK; OWEN, CHARLES; TANG, ARTHUR; BOHIL, COREY. *Journal of Management Information Systems*. Spring2007, Vol. 23 Issue 4, p163-184. 22p. 5 Black and White Photographs, 2 Illustrations, 2 Graphs.

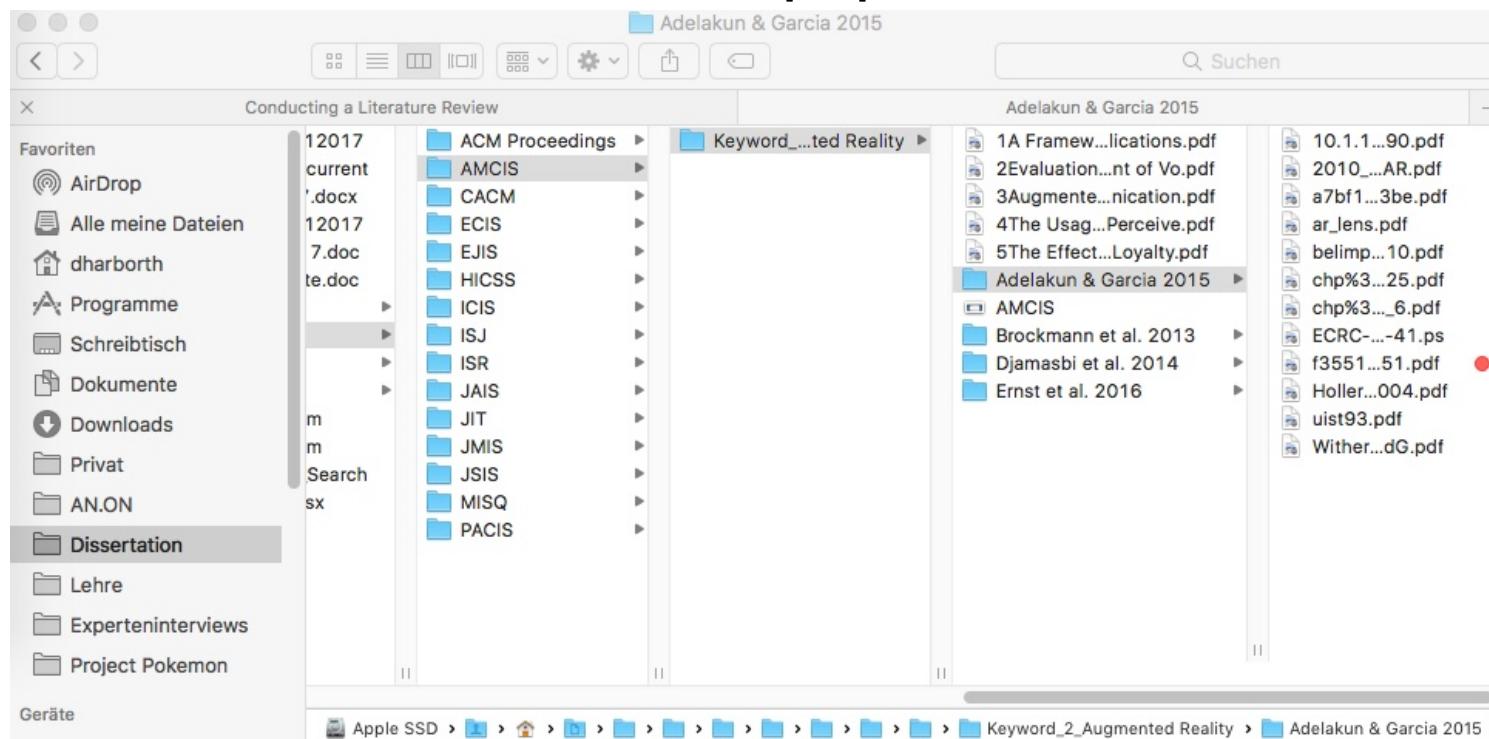
Themen: VIRTUAL reality in management; MANAGEMENT science; HIGH technology industries; COMPUTER industry; Computer and peripheral equipment manufacturing; Electronic Computer Manufacturing; Computer, computer peripheral and pre-packaged software merchant wholesalers; Electronics Stores; Computer and software stores; VIRTUAL reality; COMPUTER simulation; SHARED virtual environments

Result 2: Augmented Virtual Doctor Office: Theory-based Design and Assessment.

Details: By: Zahedi, Fatemeh Mariam; Walia, Nitin; Jain, Hemant. *Journal of Management Information Systems*. 2016, Vol. 33 Issue 3, p776-808. 33p. 4 Diagrams, 2 Charts, 1 Graph. DOI:

(5) Analyze the "Hits"

- Scan the hits based on their titles and abstracts
- Provide selection criteria that can be used to reproduce your results
- Recommendation: Save the papers in an extra folder



(6) Backward and Forward Search

- Backward search: highly recommended
 - There is also a possible saturation criterion in the literature: "*Another criterion for saturation can also be established by looking at cited publications. If most of the cited references of a new publication are already known a point of saturation may be reached*" (Boell and Cecez-Kecmanovic 2014, p. 273)
- Forward search can be done to find newer research on the topic

(7) Analyze and Synthesize the Final Results (I)

- Provide a research agenda, show research gaps and recommend useful research questions for future work
- Can be nicely done with a concept matrix (Webster and Watson 2002)
- Specificity of the matrix depends on the research question

(7) Analyze and Synthesize the Final Results (II)

- Concept matrix rather generic since
 - a) research question aims at providing an overview
 - b) the topic at hand is not heavily investigated in the community

Focus Domain of Application	Technology	User Behavior	Total
Browser	Langlotz et al. 2013, <i>MacIntyre et al. 2011</i> (2)		3
Collaboration/ Communication	Billinghurst et al. 2002, Brockmann et al. 2013, <i>Zhong et al. 2001</i> (19)	Djamasbi et al. 2014, <i>Billinghurst et al. 2002</i>	23
Commerce/ E-Commerce	Nguyen et al. 2012	Kumar et al. 2016, Ross & Harrison 2016, <i>Olsson et al. 2013</i>	4
Construction/ Manufacturing	Biocca et al. 2007, Biocca et al. 2006, Caudell & Mizell 1992, <i>Klinker et al. 2001</i> (2)	Saggiomo et al. 2016	6
Education/ Learning	<i>Cooperstock 2001</i> (14)	Deng & Christodoulidou 2015, Salvador-Herranz et al. 2013, Shatte et al. 2014, <i>Arvanitis et al. 2009</i> (6)	23
Gaming	Piekarski & Thomas 2002, <i>Thomas et al. 2002</i> (4)		5
Geography/ Travelling/ Navigation	Huang et al. 2012, <i>Feiner et al. 1997</i> (10)	Adelakun & Garcia 2015	12
Health	Scharver et al. 2004, Weghorst 1997, <i>Bajura et al. 1992</i> (4)	Zahedi et al. 2016, <i>Nilsson & Johansson 2007</i> (3)	10
Home- Entertainment	Jones et al. 2015	Ernst et al. 2016, <i>Rauschnabel et al. 2015</i>	3
Maintenance	Feiner et al. 1993	Krishna et al. 2015, <i>Tang et al. 2003</i> (2)	4
Military	<i>Livingston et al. 2011</i> (9)	Hix et al. 2004	10
No specific domain	Azuma 1993, Roesner et al. 2014, Tatham 1999, <i>Billinghurst & Lee 2012</i> (34)	<i>Swan II & Gabbard 2005</i> (6)	43
Total	114	32	146

References

- Bélanger, F., and Crossler, R. E. 2011. "Privacy in the Digital Age: A Review of Information Privacy Research in Information Systems," *MIS Quarterly* (35:4), pp. 1017–1041.
- Boell, S. K., and Cecez-Kecmanovic, D. 2014. "A Hermeneutic Approach for Conducting Literature Reviews and Literature Searches," *Comm. of the Association for Information Systems* (34:1), pp. 257–286.
- Cooper, H. M. 1988. "Organizing Knowledge Synthesis: A Taxonomy of Literature Reviews," *Knowledge in Society* (1), pp. 104–126 (doi: 10.1007/BF03177550).
- Fink, A. 2005. *Conducting Research Literature Reviews*, London: Sage.
- Smith, H. J., Dinev, T., and Xu, H. 2011. "Theory and Review Information Privacy Research: An Interdisciplinary Review," *MIS Quarterly* (35:4), pp. 989–1015.
- vom Brocke, J., Simons, A., Niehaves, B., Riemer, K., Plattfaut, R., and Cleven, A. 2009. "Reconstructing the Giant: On the Importance of Rigour in Documenting the Literature Search Process," in 17th European Conference on Information Systems, pp. 2206–2217.
- Webster, J., and Watson, R. T. 2002. "Analyzing the Past to Prepare for the Future: Writing a Literature Review," *MISQ Quarterly* (26:2), pp. xiii–xxiii.





Deutsche Telekom Chair of Mobile Business & Multilateral Security

David Harborth

Goethe University Frankfurt

E-Mail: david.harborth@m-chair.de

WWW: www.m-chair.de

