

Individual Assignment: Literature Review “Requirements Engineering Practice”

For this assignment, you have to complete a literature review on the topic of requirements engineering practice. Literature reviews give you the opportunity to get a good overview of the field or of a specific topic within the field.

The purpose of a literature review is that someone else who is interested in the topic can read your review and get a good understanding of what the state of the art of that topic is, of what the best practices are (for example, which methods are most popular), and what the challenges are (what people struggle with in practice in that topic).

This is an exercise that requires good academic writing, which means you have to include a full list of reference and you have to cite works that you take ideas and content from throughout your paper. The reason for that is that no one would expect you to come up with all those ideas by yourself, but therefore you have to make clear which ideas come from somewhere else and which ideas were truly your own. Even though that style of writing is often called academic writing that doesn't mean it is not useful for non-academic purposes. As soon as you write something other than fiction, you always have to reference your information sources, also when you write a report in industry.

Make sure you describe the context of your work in an abstract or executive summary. An abstract is the “business card” of your report. Four sentences that describe the context and motivation (in your case: requirements engineering), the problem you are tackling (in your case: best practices and challenges), the solution or contribution you are providing (in your case: literature survey), and the impact your contribution has (in your case: others can get an easy overview).

If you have never written a literature review yourself, please make sure to look at each others' drafts and giving each other feedback on how they could be improved. Two pairs of eyes see more than one. That does not mean you should copy from each other but it means to learn from each other with regard to how to approach a problem and how to report on research. It happens often that I write a paragraph that is entirely clear to me but when I let one of my colleagues review it, they point out what they don't understand in that paragraph (because they are not as deep into my specific topic and therefore need things explained in a different way). Use that same concept of peer-review for improving your own writing.

Follow these steps - things that are in **bold** go into the report as well.

- Read the guidelines on how to conduct a literature review if you have never done one.
- Use the template on the next page to structure your (5-page, 10pt, single spacing) report.
- Specify your exact **research question**, e.g. pick one of the following or define your own:
 - Proposals “What is the state of practice in RE in industry?”
 - “What are the methods used in practice in requirements engineering?”

- “What methods are used in practice for RE for mobile device applications?”
- “What frameworks are used in practice for RE?”
- Choose an academic **search engine** you want to work with. Look up the available ones on the library homepage of CSULB. Or you might consider using scholar.google.com
- Carry out the search for “Requirements Engineering Practice” and define your **selection criteria**, for example peer-reviewed articles (journals or conferences), published within last 10 years, in English, etc.
- Select the ten search results best fitting your criteria
- Make a **table** structure for the analysis and compare them in the table. Provide a brief **summary** of every paper (2-3 sentences).
- Summarize what the overall findings are with regard to what has been achieved in practice (also over time), what the **best practices** are, and what the **problems and challenges** are → all of that goes into synthesis.
- Conclude with an outlook of what is important **future work** in RE.

Tips:

- Support your statements and opinions with ample evidence.
- When choosing the works that you wish to include in your review, be selective.
- Avoid the use of direct speech and quotations from the works, unless necessary.
- Include your own opinions as well, instead of merely summarizing the works.
- Don't forget to revise your work after it's completed.

Deliverables:

1. A single pdf file per student should be submitted to via Beachboard in the Dropbox.
2. Make sure the first page includes your name and student ID.

Evaluation criteria:

- Review carried out as described above
- Adhered to template and wrote a report according to guidelines
- Reasonable selection of included articles that is well argued
- Synthesis of most important aspects in overview table of the ten articles
- Thorough summary of what has been achieved in practice and what the problems and challenges are.
- Report is well written and easy to understand

Template for the literature review

Title

This is where you mention the title of the literature review.

Introduction

The introduction again consists of two parts; background and objectives.

Background

Here you should mention the reason you chose this topic.

Objectives

In this section, you mention the objectives for writing the literature review, say, for highlighting certain areas that need further research. Research question from above goes here!

Search Strategy

This is where you should mention what are the methods you have used to search for the data collected for your work. Remember to mention every source of reference used, such as books, journals, research papers, etc. If you have taken the help of any organization for collection of relevant data, make sure to mention the names. Also add the names of search engines used to obtain the data.

Criteria for Selection

You need to mention somewhere the criterion/criteria used for selecting material for your work. A literature review is all about highlighting the most important works, but who decides which ones deserve to be included and which don't? Of course, it is you who does it and on the basis of certain criteria, isn't it? Well, then just mention them here!

Extraction of Data / Results

This section will contain the comparison of different works on the topic, represented in a tabular form. Here you should be careful in selecting the criteria for comparison and extraction of relevant data from each source in a correct and precise manner. The table should be such that the reader should be able to comprehend the data easily.

Criteria	Process model	Tools	Methods	Frameworks	Application Domain	RE Phase			
Pub 1	Agile	BugZilla	User stories	None	Web apps	Elicitation			
Pub 2									
Pub 3									

Write a one paragraph (2-3 sentences) summary of each paper.

Synthesis

If the literature review you are writing is a part of your research paper, then you can synthesize the information and ideas from all the works discussed in the sections above to show how your idea was called for, is relevant, or something never thought of before. Write about the problems and challenges

you found out about.

Limitations

In this section, you should mention if there has been any issues arising out of conflicting or contradictory theories on the topic, which is beyond your scope, to resolve.

Conclusion

You should conclude your literature review with suggestions concerning scope for future research, how well you feel you handled the topic, any major difficulties you came across, etc.

Source: <http://www.buzzle.com/articles/literature-review-template.html>

Example for the literature review (shortened!)

Title

Software Engineering for Sustainability

Introduction

Background

The objective of achieving higher sustainability in our lifestyles by information and communication technology has led to a plethora of research activities in related fields. Consequently, Software Engineering for Sustainability (SE4S) has developed as an active area of research.

Objectives

Though SE4S gained much attention over the past few years and has resulted in a number of contributions, there is only one rigorous survey of the field. We follow up on this systematic mapping study from 2012 with a more in-depth overview of the status of research, as most work has been conducted in the last 4 years.

Search Strategy

The applied method is a systematic mapping study through which we investigate which contributions were made, which knowledge areas are most explored, and which research type facets have been used, to distill a common understanding of the state-of-the-art in SE4S. The search process for this study is based on an automated search of the following indexing systems and digital libraries: DBLP, Science Direct, Web Of Science, INSPEC, IEEE Xplore, Springer, ACM, JSTOR, arXiv, Wiley, and Citeseer. The aim for our search string is to capture all results that relate sustainability or environmental issues with software engineering or requirements for software systems. The search string was (sustainab* OR ecolog* OR green) AND (software engineering OR requirement* engineering OR requirement* specification OR software specification OR system specification).

Criteria for Selection

We chose the following inclusion criteria to select the relevant publications to answer our research questions: Relevance with respect to research questions, scientific soundness, and coverage of a software system (as opposed to pure hardware systems).

Exclusion Criteria are *Environment* used in the sense of system environment, not nature, and *Ecosystem* used as population of interacting systems, for example, agents.

Extraction of Data

Tables that extract information on topics, methods, frameworks, tools, case studies, and application domains. [Look this up in the full paper provided as example.](#)

Synthesis

Statistics and analysis of the included results in further detail.

Map of the current research. To conduct the data synthesis, we derived descriptive statistics for maps from the extracted data, performed semantic modeling of research topic clusters, and mapped out current work. We made timelines with amount of publications according to research topic, research type facet, and knowledge area. [Look this up in the full paper provided as example.](#)

Limitations

For example, completeness of results, search engine correctness, data synthesis problems, etc. [Look this up in the full paper provided as example.](#)

Conclusion

We contribute an overview of current research topics and trends, and their distribution according to the research type facet and the application domains. Furthermore, we aggregate the topics into clusters and list proposed and used methods, frameworks, and tools.

The research map shows that impact currently is limited to few knowledge areas and there is need for a future roadmap to fill the gaps.