Improving Quality of Service Based on Software Requirement Specification

Systematic Literature Review

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I. GROUP MEMBERS PARTICIPATION

The below tabulated form consists of the participation percentage of the members in the report.

Group Members	Idea Creation	Repot Writing
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Abstract

Software Requirement Specification (SRS) is a mandatory for every software system to be developed. An SRS is a guide for us to know the specifications needed while developing a software system, based on the functional requirements and non- functional requirements of the system. The development ofsoftware for any system requires thorough analysis and data collection and about the software that needs to be developed to satisfy the requirements of the user. In this report, we analyzed some software requirement issues and proposed some steps to overcome these problems.

II. . INTRODUCTION

CONTEXT

The Software Requirement Specification (SRS) plays a major role in the development of any software system. It analyzes both functional and non-functional requirements of the system and gives the report. Software requirements specifications (SRS) are often validated manually. SRS acts as an interface between the client and developer while building a software system. SRS is usually performed toprovide a clear idea to the developer about the cost, the risks involved in the software system[1].

BACKGROUND

As the System Requirement Specification uses the basic requirement of the client while developing a software system, the developer needs to gather all the information and data about the existing software system (if the similar software is already available) and need to be analyzed the problems faced by the client with the current running software system and a better upgrade is provided to the client to get better results[2].

OBJECTIVES

The main objective of this Systematic Literature Review is to analyze the functional and non-functional requirements of the software system of user by iterative process and to record the analyzed data, and examining the perfection of the problem from the data we obtained[3].

METHODS

To find the issues faced by the client while using the software we represent a systematic literature by following “Identifying quality based requirement”[4] Based on our research questions we referred IEEE papers from and IEEE database for our primary study. From that we selected 6 papers.

RESULTS

The 6 research papers were analyzed for SLR documentation.

CONCLUSION

We have compared different detection methods and from comparisons we have analyzed that proper requirement data should be collected and correlated

from different clients before developing the software system and to increase its quality of service.

III. RESEARCH QUESTIONS

RQ 1:
Why do we require applicable software specifications while developing a software system?

MOTIVATION:

Specifications permit accurate assessment of requirements before design which can reduce further load on the developer. It also provides realistic basis for estimating output.

EXPLANATION:

Software specification enlists necessary requirements that are required for the project in order to acquire the requisites of the clients before enhancing the software[2].

RQ 2:

What are the necessary considerations should be appropriated, while developing software?

Motivation:

Quality of service provisioning is an essential factor that should be appropriated.

Explanation:

There are at least four new sources of information that we can use to extract the quality requirements for services[5].

1. **Service Description**
2. **Service Discovery Information**
3. **Service Level Agreement**
4. **Runtime Profiling of Service Invocation and Execution**

Depending upon the above four sources of information the developer advances the quality of service

IV. REVIEW METHODOLOGY

Descriptive Research:

The SRS is done using the Observe and Describe method which is a descriptive design categorized into the Descriptive Research methodology.

REFINING RESEARCH QUESTIONS AND SEARCH STRING:

The keywords in our topic are software, requirements engineering and specification of requirements. By using the above keywords, we frame our search strings for the retrieval of papers (journals). We found some results in online database by relating the first two key words.

We used “Software AND Requirements”, “Software AND Requirements Engineering”, “(Software AND Requirements) OR Elicitation”.

SEARCH STRATEGY**:**

In online database we used INSPEC for our research topic. The search strategy includes the following steps:

Step1: Selection of Research Question.

Step2: Formulation of Research Problem.

Step3: Selection of Keywords.

Step4: Searching the database using those keywords.

Step5: Analyzing the papers found relevant to the topic.

All the above steps have been represented in the form of a flow chart.

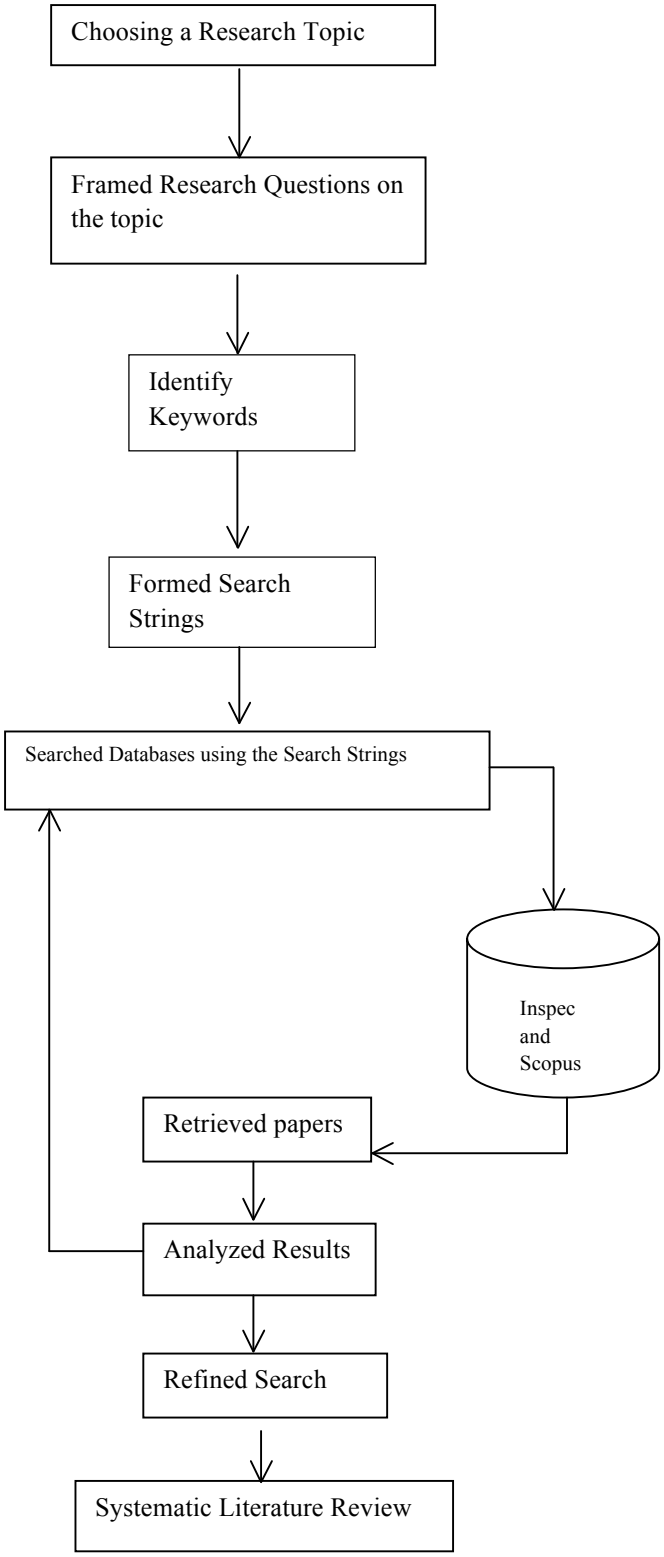


Fig1: Flow chart for search strategy

V. INCLUDED AND EXCLUDED CRITERIA

This systematic literature review was based on the following criteria:

INCLUDED CRITERIA:

- Articles and Journals related to ourtopic that is published by IEEE. The review has been written based on the guidelines of Kitchenham[6].
- Articles which are dated from 1990-2014 have been considered from the database (Inspec), as Software Requirement Specifications has been in evolution since then.
- Some publications and journals were referred on topics relevant to SRS.

EXCLUDED CRITERIA**:**

- Articles that don't contain information about our topic were excluded.
- Articles published in other languages than English were not referred.

QUALITY ASSESSMENT CRITERIA

The '6' articles that we selected are graded (from A to D) based on their quality criteria that we considered.

Research questions are explained as follows:

QC1: Are the objectives of the research topic are clearly stated?

QC2: Are the research questions adequately answered?

QC3: Are the results documented properly?

QC4: Is the answer to the stated problem derived efficiently?

Primary Studies	QC1	QC2	QC3	QC4
[1]	A	B	A	D
[2]	A	C	B	B
[3]	C	A	B	A
[4]	C	B	C	C
[5]	C	D	C	C
[6]	D	B	D	D

Where A is the maximum and D is the minimum grade given.

DATA EXTRACTION AND SYNTHESIS:

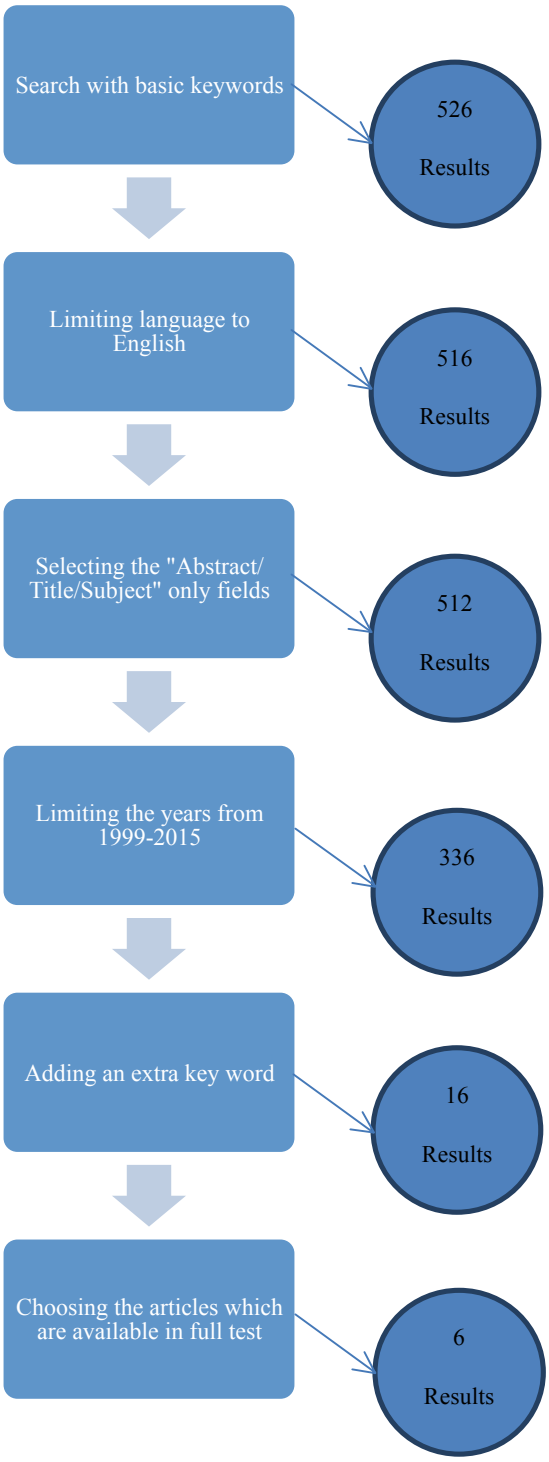
- We first searched for the articles related to our topic by forming the basic keywords
- After the identification of all the related articles, we have gone through them and extracted the necessary information which can answer our research questions in an effective way.
- During this extraction process, we have gone through all the abstracts and introductions and if found related, proceeded to read the whole journal.

VALIDATION OF THE PROTOCOL

INCLUDED AND EXCLUDED STUDIES:

Based on the search strings, we performed the search strategy by including and excluding articles as shown in the fig2.

We used INSPEC database to get the related articles which are closely related to our topic we performed various inclusion and exclusion studies by using certain keywords and limiting the searches to meet our requirements.



VI. RESULTS

By referring to 6 articles

RQ 1: Why do we require applicable software specifications while developing a software system?

Software specification enlists necessary requirements that are required for the project in order to acquire the requisites of the clients before enhancing the software.

The software architect need to have a clear and thorough idea about what the software and its requirements before developing the service. The SRS help the architect to know the requirements of the software by and helps to study all the information gathered regarding the software.

Since the SRS deals with the information regarding the software before its development the designer have to advance the software depending upon the client requirements during the functioning of the software. It gives full specification on what a given service can possibly provide.

RQ 2: While developing the software what are the necessary considerations should be appropriated?

There are at least four new sources of information that we can use to extract the quality requirements for services.

1. **Service Description**:

It gives full specification on what a given service can possibly provide[2].

2. **Service Discovery Information**:

In this stage, the client usually puts up the quality requirements that he needs[2].

3. **Service Level Agreement**:

SLA is the formal contract between a service provider and a service requestor. It consists of all the essential quality requirements that the given needs to provide[2].

4. **Runtime Profiling of Service Invocation and Execution**:

This information source can be viewed as the quality of service experience, or Quality of Execution, of users. It includes both the objective monitoring information of service invocation and the subjective user feedback and rating[2].

VII. DISCUSSIONS

- In order to overcome the difficulties during the requirement analysis, work analysis has been introduced.
- It is not the same as most traditional methods that are used for the analysis of requirements [7].
- Firm users point of view work analysis deals with application domain.
- To deal with a specific problem type, problem analysis is used.
- Overall quality assurance program can be quantified and measured by quality requirements.
- There are two levels of quality
  i. At system level that ensures a quality software product, and
  ii. At the process level that reduces project risk [2].

VIII. LIMITATIONS:

Limited Information:

Taking the time and research scope into consideration, a limited number of articles were referred but only important ones are extracted from those.

Single Data Base:

As we selected only INSPEC database to refer the articles there are high chances that we may missed some important articles in other database.

IX. CONCLUSION

In order to develop software, we need to know its requirements and specifications. Through this review, we have researched about the various methods to elicitate requirements, which are needed to design software.

X. REFERENCES

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