

## Consent Form

### *Consent.*

#### **Survey on challenges and strategies in conducting systematic literature reviews**

This research project is being undertaken as part of a Ph.D. program at the school of Computer Science and Engineering, UNSW.

In this study, we are keen to receive your feedback on the new platform that we are implementing to aid researchers in conducting a systematic literature review(SLR). Our goal is to design an easy-to-use, inviting, and functional platform. We considered your valuable responses to our previous survey in this platform design. You are invited to participate in this survey as your experience and feedback would help with designing a practical and more reliable platform. In the previous study, we found the challenges researchers facing in conducting an SLR. In this survey, with presenting the wireframe model of the PRO\_SLR platform, we would like to receive your feedback on the proposed solutions.

#### **Participation:**

Participation will involve completing a survey that would take 15 minutes of your time, although this time may vary for each individual. You will not be asked to disclose any confidential or sensitive information about yourself.

In this survey, you will be asked to answer questions related to the SLR process and important considering your experience in conducting one. Your participation in this research project is entirely voluntary. If you agree to participate you do not have to complete any question(s) you are uncomfortable answering. Your decision to participate or not participate will in no way impact your current or future relationship with UNSW. If you do agree to participate you can withdraw from the research project during your participation without comment or penalty. However, the survey does not request any personal identifying information.

#### **Expected Benefits:**

It is expected that this research project will not benefit you directly. The outcomes of the research, however, may benefit the improvement of SLR researchers or implementing an initiative automatic SLR platform, which would be beneficial to the science society.

If you choose to receive the result of this study, you will need to provide some basic contact information such as an email address. However, your identity will not in any way be connected to other data collected relating to your involvement in the study.

#### **Risks:**

There are no risks beyond normal day-to-day living associated with your participation in this project.

#### **Privacy and Confidentiality:**

All comments and responses are anonymous and will be treated confidentially unless required by law. The names of individual persons are not required in any of the responses. Any data collected as part of this project will be stored securely as per UNSW's management of research data policy. This project has been approved by the UNSW Human Research Ethics Committee (approval number HC190895). Please note that non-identifiable data from this project may be used as comparative data in future projects.

#### **Withdrawal:**

If you want to withdraw, you can stop participating in the survey by closing the browser as we do not have any mean of tracing your submission after you submit it.

#### **Consent to Participate:**

Your submission of the completed online survey will be taken as your consent for participation in the study.

#### **Questions about the project:**

If you have any questions or require further information please contact:

Maisie Badami      [m.badami@unsw.edu.au](mailto:m.badami@unsw.edu.au)

Do you consent to these terms?

- ☐ Yes
- ☐ No

General Questions

Q2. Where are you located?

- Oceania☐
- Asia☐
- Europe☐
- Africa☐
- Latin America☐
- Canada and USA☐
- Prefer not to say☐

Q3. What is your gender?

- Woman☐
- Man☐
- Non-binary☐
- Prefer not to say☐
- Prefer to self-describe☐

Q4. How many SLRs have you conducted?

- 1☐
- 2☐
- 3☐
- More than 3☐

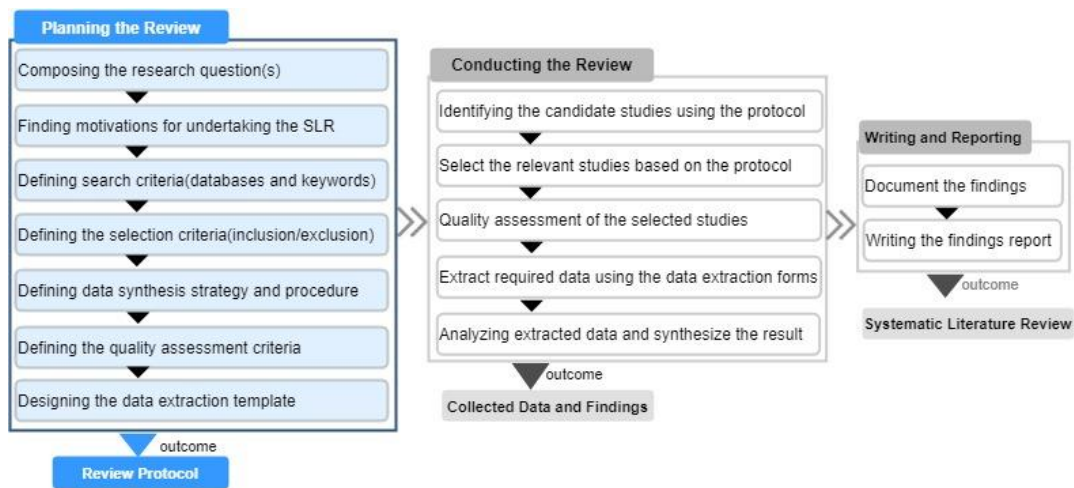
Q5.

Please answer the following questions about your latest experience in conducting a systematic literature review (SLR).

How many senior researchers were involved in conducting the review(s) (on average)?	1	2	3	More than 3
How long did it take for the review to be completed?( excluding publication period)	Up to 3 months	Up to 6 months	Up to 1 year	More than 1 year
What level of research expertise did you have when conducting SLR?	Novice	Intermediate	Senior	Supervising

Tasks

*SLR Planning Phase.* This section contains questions related to SLR "Planning phase" that is also known as defining the research protocol phase. This phase is the starting point of the SLR process in which the authors look for reasons to conduct a new review, defining the boundaries and scope of the review. The result of this phase is the "review protocol" which is used as a guideline for performing the remaining phases of SLR. This phase comprises of the tasks shown in the below image.



Q7.

Based on your own latest experience in conducting SLRs, please specify your agreement with the following statement.

The following tasks have been **properly addressed** in the SLR I've participated in, during planning ( If you were not aware of a task, please choose "Not aware" option)

	Strongly disagree	Disagree	Neutral
Composing the research question(s) by following the guidelines to struct standard questions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Identify the need for conducting a new SLR (by searching for previous reviews)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Defining the search strategy to search for primary studies (including search terms and digital libraries)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Defining study selection criteria and procedure (inclusion/exclusion criteria)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Defining data extraction strategy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Defining data synthesis strategy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Defining study quality assessment checklists and procedures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Challenges

Q8.

In this section, we explore some of the SLR challenges:

Based on your experience, how important is it to address the following challenges so as to improve the planning of SLRs.

	Not important	Slightly importance	Very important
Guidelines do not provide practical support and solutions to challenges in the process	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Not enough context and knowledge to anticipate all the tasks in the planning phase	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Limitation in digital libraries to identify previous relevant reviews	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inadequate experience and expert support to conduct the planning tasks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trust concerns about obtaining external feedback (early sharing of planning artifacts, e.g. protocol, RQs)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inadequate support or unawareness of SLR planning support tools	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Scarce research funding limiting the scope and planning of an SLR	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Insufficient channels/communities for seeking support and collaboration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q9.

Please, let us know with your comments what other important challenges you faced when planning SLRs.

Potential solutions

SLR-PRO-Intro.

Feedback on design directions:

In this section, we present a conceptual design of a platform to support the planning of SLRs. We proposed two groups of solutions and strategies to overcome some of the SLR challenges. In the following, we illustrate these strategies in an example interaction involving the first two steps in the SLR planning: defining the RQs and identifying the need for the SLR. The same strategies apply to the rest of the steps.

We kindly ask you to provide your feedback on whether the solutions can help address some common challenges in the planning.

Automation

The first solution is related to automation techniques and using the state of the art of machine learning and data-mining to support the tasks that are iterative and time-consuming such as the search for relevant reviews. Some of the supports are as follow: *ChatBot assistant*, *Automatic search*, *Automatic data extraction*. The wireframe image showing below is showing how this automation can help to find relevant reviews in the first step of planning by using the research question.

PRO-SLR

My SLR Community

Moise Badami UNSW

Planning Review Conducting Review

step 1 Composing research questions

step 2 Finding the need for a new review

step 3 Defining search criteria (increased)

Download Protocol

Composing Research Questions

Research Question RQ3 Which is the intensity of the research activity on software engineering methods for game development?

Guided step-by-step mode

Research Questions

Composed Research Question 1 Evaluated

RQ1: What... it in progress

RQ2: How... it not assigned

Request Feedback View Feedback (5)

Ask me anything about SLR SLR-BOT

PRO-SLR

My SLR Community

Moise Badami UNSW

Planning Review Conducting Review

step 1 Composing research questions

step 2 Finding the need for a new review

step 3 Defining search criteria (increased)

Download Protocol

Identifying the need for review

Search for similar reviews

Research Question RQ1 Which is the intensity of the research activity on software engineering methods for game development?

Research questions (RQs) are used as the basis to find similar reviews

Similar Studies

Title	Author	Topics	Research Question(s)	Type	Year	Abstract	Similarity
Article1	Giacomo Galuzzi	Gamification	what software engineer	SLR	2019		70%
Article2	Marco Botton	Computer Game	what research approach	SLR	2010		65%
Article3	Marion Madachian	Crowd gaming	what are different gamification	survey	2016		30%

Actions on selected SLR: Update SLR Fork Review Add as reference example

These actions inform the entire process (RQ, search criteria, extraction, etc)

SLR-BOT

1 The user starts by (partially) defining one or more research questions (RQs)

2 The user can receive support in defining the RQs with a step-by-step guide that captures practical suggestions with relevant examples

3 The user can also consult with the SLR-bot, a Chabot that can reply to questions about the process by encoding information from standard guidelines, and FAQs

4 The user can also request feedback from peers and other "community" members

The information above informs the next phase

5 The user can identify similar SLRs directly from the definition of the RQs

6 The user is presented with the list of SLRs, with attributes and metadata specific to SLRs (e.g., RQ, search criteria, inclusion / exclusion criteria)

7 The user can use a similar SLRs to inform the entire planning by i) deciding to run an update of the existing SLR, ii) "forking" an SLR, using it as a template, iii) adding an SLR as reference example easily accessible in the step-by-step guides

Q11.

Inadequate experience and support (technology and guidelines). To address this challenge we provide the following solutions:

- **ChatBot assistant** that allows authors to ask questions about the SLR process and best practices. The chatbot provides a natural language interface to all information encoded in guidelines and recommendations

- **Step by Step guidelines** for each of the tasks. The interface encodes best practices and can guide authors in the overall planning, and in the preparation of each "artefact" (e.g., RQs, inclusion/exclusion criteria) by providing step by step informative prompts.
- **Support from peers** who can provide support when there is not enough context and knowledge available to anticipate the planning tasks ( e.g. evaluating the research questions )

The above solutions address this challenge

Strongly disagree      Disagree      Neutral      Agree      Strongly Agree

☐      ☐      ☐      ☐      ☐

*Q12.* What reasons would prevent you from using the above solutions?

*Q13.*

Do you have other suggestions for addressing the given challenge?

*Q14.*

**Not enough context and knowledge to anticipate all tasks in the planning phase.** To address this challenge we provide the following solutions:

- **Iterative process.** The planning can be refined iteratively as more information emerges during the process. For example, RQs and inclusion/exclusion criteria can be refined as we identify similar literature reviews and learn more about the topic.
- **Incorporating context and knowledge.** To address this challenge, the system leverages information available in similar literature reviews by extracting SLR-specific metadata relevant to the protocol (e.g., RQs, criteria, search strategy) and made them available to the authors as a reference point in each step of the planning.

The above solutions address this challenge:

Strongly disagree      Disagree      Neutral      Agree      Strongly Agree

☐      ☐      ☐      ☐      ☐

*Q15.* What reasons would prevent you from using the above solutions?

*Q16.*

Do you have other suggestions for addressing the given challenge?

*Q17.* **Limitations of digital libraries to identify relevant SLRs.** To address this challenge we provide the following solutions:

- **Search focused on SLRs.** Instead of defining complex queries and terms to identify SLRs, the search focuses only on SLRs.
- **From RQs to similar SLRs.** Similarly, the system allows users to go from their (partially) defined RQs directly to similar SLRs.
- **SLR-specific metadata.** Besides the typical, title, authors, and abstract, the search results provide information that is specific to SLR, including RQs, inclusion/exclusion criteria, search strategy, etc.

The above solutions address this challenge.

Strongly disagree

Disagree

Neutral

Agree

Strongly Agree

☐

☐

☐

☐

☐

Q18. What reasons would prevent you from using the above solutions?

Q19.

Do you have other suggestions for addressing the given challenge?

SLR-PRO-Intro.  
Community

The second solution is to providing support to conduct tasks that require adequate experience and knowledge or years of experience. We propose to use "expert networking" as a promised solution. This network is build around the trust and the topic of interest. The wireframe image showing below is showing how this solution help the researcher to seek feedback about composing a research question.

PRO-SLR

My SLR

Community

Maria Sudami

UNSW

Planning Review

Conducting Review

step 1

Composing research questions

step 2

Finding the need for a new review

step 3

Defining search criteria (keywords)

Download Protocol

Composing Research Questions

Research Question

RQ3: Which is the intensity of the research activity on software engineering methods for game development?

Guided step-by-step mode

Research Questions

Composed Research Question II Evaluate

RQ1: What... it in progress

RQ2: How... it not assigned

Group

UNSW Lab

Type Message

Request

Request Feedback

View Feedback (5)

SLR-BOT

Submit request

Community provided feedback and support

PRO-SLR

My SLR

Community

Alex Mann

UNSW

Groups

SLR Co-authors

UNSW

SWENG

Gamification

Groups are build around network of trust

Feedback on RQ

Software engineering and game development

Research Questions

Table with 4 columns: ID, RQ, Status, and a checkbox.

Evaluation (standard for RQs)

Form with checkboxes: Focused, Researchable, Feasible, Complex, Relevant.

Comment

Submit Feedback

SLR-BOT

1

Users can decide to request feedback from "trusted" groups of peers

2

Users can create or join groups based on research interests and trust. Example groups are SLR co-authors, member of the research, the extended network of the researchers, or topical groups such as Software Engineering.

3

Users can use the same approach to look for collaborators. Topical experts and communities are suggested by the system.

4

The community member providing feedback is presented with artefact-specific questions (e.g., checklist for assessing the quality of RQs) in addition to textual comments.

5

The feedback received will appear in the user dashboard, and based on this the user would decide to re-compose the RQ or to continue to the next step.

**Q21. Inadequate expert support and trust concerns in obtaining external feedback.**

To address this challenge we provide the following solutions:

- **Ability to get adequate external peer support** The system enables authors to get feedback and input from external peers on the artifacts related to the review protocol (e.g., RQs, search strategy, etc), where each artefact can be evaluated according to artifact-specific quality criteria to keep feedback focused.
- **Connecting peers based on the topic of the SLR.** Authors are connected to external peers based on the topic of the SLR (as well as expertise) to make sure the peers are qualified to provide feedback.
- **Groups build around trust.** Authors can create and join communities based on mutual trusts, such as members of the same lab, current, and past collaborators, so as to leverage and build their own networks.

The above solutions address this challenge.

Strongly disagree



Disagree



Neutral



Agree



Strongly Agree

**Q22. What reasons would prevent you from using the above solutions?****Q23.**

Do you have other suggestions for addressing the given challenge?

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