**Characterization of Sustainable Systematic Literature Reviews**

Systematic Literature Reviews played an important role in Software Engineering by summarizing data from studies in a reliable way. At the same time, researchers reported that most SLR suffer from several problems (e.g., poor documentation, lack of quality, lack of impact on industry, and excessive consumption of time and effort). To address these problems, we proposed a new vision named “Sustainability for SLR” that proposes a set of actions to make it possible to create high-quality SLR with less possible time and effort consumed and, ultimately, with an effective impact on the industry. We extracted from the literature several premises that could contribute positively to achieving this goal, hence, we would like to collect your opinion and agreement about their correctness.

Name

Henrique Ferreira

All your answers will be used for research purposes. This data will be further available online. Do you agree to participate? \*

(x) Yes

( ) No

**Section I - Profile**

1. Have you conducted one or more secondary studies?

(x) Yes

( ) No

1. How many secondary studies have you conducted? (Approximately)?

?

1. Which was your role during the conduction of secondary studies?

( ? ) Main researcher

( ? ) Advisor

( ? ) Team member

( ? ) External Stakeholder

**Section II –SLR Core Characteristics**

This section presents 24 premises about SLR. Check below your level of agreement with the premises.

**General**

**(premisses that are applicable for planning, conduction, packaging, update, and utilization)**

| **PID** | **Characteristic** | **SA** | **A** | **U** | **D** | **SD** |
| --- | --- | --- | --- | --- | --- | --- |
| **Researchers should avoid waste of their efforts by:** | | | | | | |
| **[P01]** | **checking if an SLR already exists on the same topic before starting a new SLR.** |  |  |  |  |  |
| **[P02]** | **reusing components (e.g., search string, selection criteria, quality criteria, and other elements like raw data, extraction forms, and set of studies selected) from previous SLR.** |  |  |  |  |  |
| **[P03]** | **publishing outputs that are indeed useful.** |  |  |  |  |  |
| **While conducting SLR, researchers should make decisions and adopt practices that have a positive impact (or minimize the negative impact) in:** | | | | | | |
| **[P04]** | **current research team (e.g., saving efforts automating tasks, selecting optimized search engines/electronic databases).** |  |  |  |  |  |
| **[P05]** | **future researchers and SLR users (e.g., documenting correctly in compliance with open science principles, and providing accessible recommendations for practitioners).** |  |  |  |  |  |

**Conduction Process**

**(includes planning, conduction, and reporting results)**

| **PID** | **Characteristic** | **SA** | **A** | **U** | **D** | **SD** |
| --- | --- | --- | --- | --- | --- | --- |
| **SLR should follow a conduction process that:** | | | | | | |
| **[P06]** | **reports reliable results, i.e., it mitigates threats to validity by reducing the uncertainty level of researchers.** |  |  |  |  |  |
| **[P07]** | **complies with conduction standards to ensure SLR quality.** |  |  |  |  |  |
| **[P08]** | **is iterative and concentrates the main changes in the protocol during the pilot test.** |  |  |  |  |  |
| **SLR should:** | | | | | | |
| **[P09]** | **have long-term goals aiming at impacting the research area and the community around (including SE researchers and practitioners) over a long period of time.** |  |  |  |  |  |
| **[P10]** | **be produced with responsible use of resources (e.g., human effort, monetary cost) and should be conducted aiming at reducing the time consumption (e.g., by adopting automation tools)** |  |  |  |  |  |
| **SLR should have a documentation (packaging) that is:** | | | | | | |
| **[P11]** | **detailed** |  |  |  |  |  |
| **[P12]** | **easily understandable** |  |  |  |  |  |
| **[P13]** | **auditable** |  |  |  |  |  |
| **[P14]** | **accessible to others (e.g., researchers and practitioners)** |  |  |  |  |  |

| **Items of SLR protocol (e.g., search string, selection criteria, included studies, etc.) and other elements (e.g., raw data extracted) should be:** | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| **[P15]** | **understandable/accessible** |  |  |  |  |  |
| **[P16]** | **reusable** |  |  |  |  |  |
| **[P17]** | **modifiable** |  |  |  |  |  |
| **[P18]** | **adaptable** |  |  |  |  |  |

**Update/Repetition**

| **PID** | **Characteristic** | **SA** | **A** | **U** | **D** | **SD** |
| --- | --- | --- | --- | --- | --- | --- |
| **[P19]** | **SLR over their whole life cycle should be continuously assessed and continuously documented, i.e., SLR should be continuously updated.** |  |  |  |  |  |
| **[P20]** | **Components of SLR (e.g., search string, selection criteria, quality criteria, and other elements like raw data, extraction forms, and set of studies selected) should be reused during the update of that SLR.** |  |  |  |  |  |
| **[P21]** | **Researchers should make accessible all evidence found (i.e., selected studies) in the SLR as well as all associated data (e.g., raw extracted data) aiming to keep the viability of future SLR updates.** |  |  |  |  |  |

**Utilization**

| **PID** | **Characteristic** | **SA** | **A** | **U** | **D** | **SD** |
| --- | --- | --- | --- | --- | --- | --- |
| **[P22]** | **The needs of stakeholders should be translated into research questions that the SLR will answer.** |  |  |  |  |  |
| **[P23]** | **SLR should provide results that are useful to a wider community, not just fulfilling particular needs of the authors or specific research groups.** |  |  |  |  |  |
| **[P24]** | **Results of SLR should positively impact a research area.** |  |  |  |  |  |

**Section III – SLR Critical Factors**

This section presents 16 premises that refer to critical factors to achieve sustainability in SLR. Check below your level of agreement with the premises.

* SA → Strongly Agree
* A → Agree
* U → Undefined
* D → Disagree
* SD → Strongly Disagree

| **Critical Factors** | **SA** | **A** | **U** | **D** | **SD** |
| --- | --- | --- | --- | --- | --- |
| **CF1 - Rich communication (i.e., communication among researchers and external collaborators (e.g., industry practitioners) while they conduct/update an SLR, e.g., communication to elaborate the SLR protocol or during consensus meetings to resolve disagreements in tasks like studies selection or data extraction/summarization).** |  |  |  |  |  |
| **CF2 - Effective participation of stakeholders (researchers and SE professionals) in the SLR process (i.e., usage of stakeholder's opinions to adjust SLR planning items (e.g., aims, scope, restrictions, etc.) and to validate the findings to be helpful in real-world scenarios aiming to uptake SLR evidence into practice improving the usage of research findings into real scenarios).** |  |  |  |  |  |
| **CF3 - Knowledge of stakeholders about the research domain (i.e., knowledge about previous solutions proposed, current research gaps, important open issues, trends from industry/academia, and other aspects that could guide researchers to address important research topics and provide helpful evidence to SE community)** |  |  |  |  |  |
| **CF4 - Experience of team members in SLR conduction (i.e., experience includes knowledge about the scientific research process, mainly regarding the best practices to conduct/update SLR; consequently, the experience can support researchers to minimize bias, improve transparency, replicability, overall quality and avoid well-known pitfalls in the process)** |  |  |  |  |  |
| **CF5 - Improvement of SLR reusability (i.e., it refers to the careful documentation that allows researchers to reproduce/replicate SLR results and reuse any components of the previous SLR (e.g., SLR protocol items like search string, inclusion/exclusion criteria) or adapts research efforts like studies selection or data extraction to create new evidence.)** |  |  |  |  |  |
| **CF6 - Usage of refactoring techniques (i.e., refactoring refers to using different ways to conduct SLR steps prioritizing the reuse of elements, and avoiding starting from scratch. A refactoring technique refers to a systematic way to reuse elements from the previous SLR (e.g., search strategy, set of studies selected, quality assessment criteria, data extracted) that ensure the reliability of this process and allows that former data to be used as a baseline to answer new research questions.)** |  |  |  |  |  |
| **CF7 - Efficient knowledge sharing and transfer (it involves knowledge sharing in three different moments: (i) when researchers share their experience during consensus meetings; (ii) when researchers provide open access to data extracted (including raw data) and report carefully all decisions taken in the SLR process; and (iii) when researchers report lessons learned, their insights about the applicability of results in practice and provide recommendations for SE professionals.)** |  |  |  |  |  |
| **CF8 - Usage of tools to support SLR (i.e., it involves: (i) tools to support the whole SLR process (StArt, Parsifal, SLuRP); (ii) tools to support specific tasks and save efforts by avoiding manual work (e.g., reference managers, text editors, spreadsheets); and (iii) automation or semi-automation tools, e.g., for search string calibration, studies selection review)** |  |  |  |  |  |
| **CF9 - Maturity of support technology (i.e., maturity refers to producing support tools that are more than prototypes or proof of concept tools. Mature tools should be intensively tested and assessed in a wide range of scenarios (e.g., different domains, using qualitative and quantitative data, using heterogeneous data sources, etc.) aiming to deliver a mature product with (i) long-time support, (ii) solutions for complex SLR tasks (e.g., data summarization), and (iii) integration with other tools.)** |  |  |  |  |  |
| **CF10 - Accessibility of support technology (i.e., accessibility refers to developing tools that are easy to use (including an intuitive user interface/experience, comprehensive documentation/tutorials) and preferably being open source and supported by the community.)** |  |  |  |  |  |
| **CF11 - Usage of techniques that minimize the resources consumption (i.e., it prioritizes the use of techniques that require less effort to produce high-quality output (e.g., usage of snowballing to update SLR). While conducting/updating SLR, researchers should design SLR to comprise techniques that automate time-consuming tasks (e.g., using techniques like machine learning).** |  |  |  |  |  |
| **CF12 - Efficient management/usage of resources (i.e., "resources'' refer to (i) physical resources (e.g., computers, Internet access, access to bibliographic bases, office supplies, and space or tools to manage virtual meetings); and (ii) intellectual/human resources (how many and which researchers compose the review team). `"Efficient management'' means providing review teams with the necessary environment and resources (physical or intellectual) to execute tasks, which are according to the capacity of each researcher in the review team.)** |  |  |  |  |  |
| **CF13 - Usage of feasibility studies (``feasibility studies'' refer to a more complete version compared with ``pilot studies'' and should include other aspects (beyond the protocol) to appraise the viability of conducting an SLR. Feasibility studies should comprise a deeper investigation of: (i) the existence of previous SLR in the same area and the possibilities of reusing its data; (ii) the expected effects of results on the practitioner's decision-making process; (iii) the capability of SLR of identifying gaps and trends in the current evidence to underpin future research in the area; (iv) the availability of resources to support SLR from its conception to update.)** |  |  |  |  |  |
| **CF14 - Maintenance of SLR (i.e., before updating/reconducting SLR, researchers should check the relevancy of the topic and evaluate the impact of providing up-to-date information for readers. During the SLR update, researchers should reuse as much information as possible (such as protocol, data, etc) and minimize efforts to update it)** |  |  |  |  |  |
| **CF15 - Usage of iterative process (i.e., use iterations to comply with the need for changes, for instance, adjusting research questions as the knowledge of researchers about the area grows. Iterations lead the research team to revise the SLR protocol items multiple times before undertaking the full review; in addition, the iterative processes aid researchers in identifying new important studies in each iteration and collecting relevant information as much as the knowledge of the research team increases.)** |  |  |  |  |  |