**Project Summary**

***Keywords:*** Systematic Literature Reviews, Software Engineering, Web-based Infrastructure

The Systematic Literature Review (SLR) process is a means for analyzing published evidence to draw conclusions about a phenomenon of interest. The prevalence of empirical research in software engineering (SE) makes it a domain well-suited for the application of the SLR process. While the popularity of SLRs has been increasing within the SE community in recent years, there are still significant barriers to more widespread adoption. We propose to build an infrastructure to address those barriers.

* The proposed infrastructure will automate the SLR process. SE researchers will have the tools for identifying, extracting and compiling information from existing research. We will provide federated search for the SE literature databases. Likewise, automation will allow researchers to discover, backtrack and iterate among the SLR phases is needed.
* To reduce the effects of single-researcher bias in the SLR process, multiple researchers collaboratively execute an SLR. There are currently few tools to effectively support SLR collaboration. Therefore, there is a need to enable collaboration both among co-located teams (e.g. PhD students and their advisor) and among distributed teams (e.g. researchers from different countries).
* It is likely that an article may be relevant to multiple SLRs. Because there is no central repository to store extracted data, researchers must repeat the data extraction for each SLR. Persistent storage of extracted data will both reduce effort, by enabling a researcher to extract only the additional data relevant to the new research question(s), and facilitate collaboration by allowing researchers to identify others working on similar topics. In addition, central storage of data will facilitate the goal of making SLRs into “living” documents that can evolve as new research is published. Researchers can more easily integrate new findings with the existing results by taking advantage of the access to stored data.

The goal of this CI-NEW proposal is to build upon our CI-Pl results to implement an SLR support infrastructure for the SE domain that removes barriers and encourages more widespread adoption of the SLR approach. The proposed SLR infrastructure will reduce the resource impedance that exists today as SE researchers rely on a labor-intensive process to ensure the rigor required to conduct systematic, comprehensive, and reproducible literature reviews. SE researchers will benefit from the proposed SLR infrastructure because its tools enable free-standing, independent reviews that summarize and integrate existing evidence, identify gaps in current research and provide a framework for positioning new research. Moreover the proposed infrastructure will provide a common interchange of SLR metadata across tool smiths and a community around which a SE SLR ecosystem can advance.

This project’s ***intellectual merit*** is that high-quality literature reviews, whether systematic or *ad hoc* are an integral part of the research process. By enabling the execution of SLRs, the proposed infrastructure will help to ensure that researchers identify a complete and unbiased set of literature. Moreover, it will serve as a central repository that is easily updated, fosters additional research, and facilitates collaboration among geographically distributed researchers.

The ***broader impacts*** of this project stem from lowering the barrier to performing SLRs. By removing the barriers currently faced by SE researchers, the proposed infrastructure will allow a larger portion of the SE community to participate in the conduct of SLRs. The infrastructure will be especially helpful to PhD students who conduct a literature review as part of their thesis development. Furthermore, the infrastructure will increase the prevalence of summarized results that can inform research and practice. The infrastructure will also make those results more readily available to the wider audience. Finally, other research domains, such as healthcare, experience many of the same barriers as SE. Thus the proposed infrastructure potentially can address needs in other SLR communities.