

A systematic literature review of green software development in collaborative knowledge management environment

ABSTRACT

Background: Main asset in software industry is knowledge of employees who work in software development. Knowledge is main asset to succeed in green sustainable development. There is no research about to implement techniques of Knowledge Management (KM) in order to help in managing knowledge of Green Software Development (GSD). This is the research gap.

Aims: This paper assesses literature on GSD in regards to the evolution of green computing, and discusses about how KM comes in to assist in managing the knowledge of GSD.

Method: This study reviews current status of GSD by using tertiary study to review articles. A standard systematic literature review method is carried out to employ a manual search. Focus domains, knowledge areas and measurements of GSD will be identified so that can distill a common understanding of the state of the art GSD. Then, discussion about how KM comes in to assist CoP in managing their knowledge of GSD will be carried out in detailed.

Results: 37 articles are chosen as primary studies. Among all focus domains, GSD life cycle gains highest interest. Knowledge area of energy efficiency receives the highest attention. Measurement for power consumption obtains the greatest priority to measure “greenness” of software developed.

Conclusion: Focuses covered by GSD are limited. Researchers are encouraged to study about diverse areas of GSD. Our future work is to develop model of GSD which involving KM process to ensure members of CoP in software environment able to manage their knowledge and sustain best practices of GSD for the future.

Keywords: Green software development; Knowledge management; Collaborative environment; Software development; Community of practice