

Abstract

Assurance cases are a series of arguments used to ensure that a system meets security, safety, and reliability requirements. Assurance cases have been widely employed by industries and are currently part of the curriculum at Telkom University's Software Engineering undergraduate program. Visual modeling of assurance cases using graphical notations provides greater clarity and structure compared to textual or tabular approaches. However, currently, there is a lack of web-based graphical editors that support GSN (Goal Structuring Notation) and SACM (Structured Assurance Case Metamodel) notations. Existing applications tend to be desktop-based, requiring complex downloads and installations, with some being paid. These limitations make it challenging for users to efficiently create assurance cases using GSN and SACM notations. This research responds to this need by developing a Web-based Graphic Editor that enables users to intuitively and easily create assurance cases using GSN and SACM notations. The application development adheres to software development standards and is evaluated through a case study of modeling assurance cases to assess whether the application achieves its objective of modeling with GSN and SACM. Additionally, the application is evaluated using usability testing and the System Usability Scale measurement. This study describes the stages of development and evaluation of WEBACE: A Web-based Graphic Editor for Assurance Cases Modeling. It is relevant to undergraduate students majoring in Software Engineering who are interested in the fields of system security, safety, reliability, and software development using GSN and SACM notations.

Keywords: *assurance cases, GSN, SACM, web-based modeling tool*