

# The Case For Maintaining Assurance Cases

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## Abstract

*When we build and maintain safety-, mission-, or security-critical systems, we are usually constrained by regulations or acquisition guidelines that require us to provide a documented body of evidence that the system satisfies specified critical properties. In other words, we must construct an “assurance case” to convince the purchaser or user of the system’s suitability or quality. However, in building such high-quality software and balancing many objectives, it has become painfully clear that the resulting software is brittle: small changes in the software itself, the hardware and software environment, or in its operational use, can have unexpected and significant (unwanted) effects. Unfortunately, assurance cases for software are often even more brittle than the software itself. This presentation will address the challenges we confront in preserving the quality of the assurance cases as we maintain the quality of the associated software. It is critical that we make progress in addressing these challenges as software continues to become a fundamental enabling technology for 21st-century society.*

**Biography** *Chuck Howell is Consulting Engineer for Software Assurance in the Center for Innovative Computing and Informatics at the MITRE Corporation in McLean, Virginia, USA. The Center focuses on exploring, evaluating, and applying advanced information technologies in critical systems for a wide range of government organizations. His current interests include techniques to calibrate and reduce residual doubt about the behavior of critical systems, and approaches to making software intensive systems more robust (i.e., less fragile). Howell is the author of the article on “Dependability” in John Wiley & Sons’ Second Edition of the Encyclopedia of Software Engineering, and is the coauthor (with Shari Lawrence Pfleeger and Les Hatton) of Solid Software (Prentice Hall, 2001). He is a Senior Member of the IEEE.*