



WINNER

2005 R&D 100 Awards Winner

NESSUS: Probabilistic and Uncertainty Analysis for Large Scale Complex Systems

NESSUS is a general-purpose tool for computing the reliability of engineered systems. It was originally developed by a team led by Southwest Research Institute (SwRI) as part of a 10-year NASA project to develop a probabilistic design tool for the space shuttle main engine. Recently, a team consisting of members from Los Alamos National Laboratory and SwRI enhanced and applied NESSUS to the Laboratory's weapon reliability assessments for Stockpile Stewardship Program. New features include support for extremely large multi-physics models, a sophisticated Java-based graphical user interface, three-dimensional probability contouring and results visualization, advanced design of experiment and sensitivity analysis, probabilistic input database, and interfaces to ABAQUS, ANSYS, LS-DYNA, MSC.NASTRAN and ParaDyn.