Project Title: Integrated Framework for the Application of Probabilistic Optimization Technology (POTECH) to Weapons with Emphasis on Modeling and Simulation: Phases 1 & 2 (2012 - 2014)

In order to accurately model any engineering system, it is necessary to consider the effect of uncertainties. The limitations encountered in deterministic modeling can be resolved by employing a probabilistic approach as well as introducing optimization procedures. These two tools guarantee rational and efficient assessment and design in terms of both performance and economics. The overall aim of this work is to develop an integrated framework for the application of probabilistic optimization technology to weapons. The systematic use of the POTech (probabilistic optimization technology) framework will lead to cost reduction in regards to the lifetime management of weapon systems. The project is performed by Lehigh University in collaboration with the Armament Research, Development, and Engineering Center (ARDEC) through the Pennsylvania Innovation and Advanced Technology Association (PIATA).

Most representative publication:

Dan M. Frangopol, Paolo Bocchini, Samantha Sabatino, Vasileios Christou, Stephanie Snipes.
Probabilistic Performance Assessment Based Upon Experimental Data and Optimal Planning of Maintenance on Weapon Systems.
Technical Report, of the Armament Research, Development, and Engineering Center (ARDEC), submitted for review.