

Risk Assessment Method—Property Analysis and Ranking Tool:
Risk Analysis Software for the Non-Risk-Analyst

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Abstract

RAMPART (Risk Assessment Method—Property Analysis and Ranking Tool) is a risk-based decision-support tool that requires no risk-analysis expertise on the part of the user. Risk analysts often use computer software as a tool in determining the probabilities and consequences—i.e., the risk—of future events. Typically such software requires substantial expertise from the analyst in many areas, for example, in scenario development, data quality assessment, determination of boundary conditions, and interpretation of results. Indeed, in many cases the analyst must develop, or at least help to design, software appropriate for the analysis of the problem at hand. In the wake of several recent catastrophic events, the U.S. General Services Administration (GSA) decided to expand the use of risk-based software in property analysis; however, few well developed methods, let alone software, are available for the analysis of risks to buildings. Furthermore, most GSA users of the software would not be risk analysts, but rather property managers, architect-engineers, or security personnel. The development of risk software for use by non-risk-analysts in the GSA thus entails a number of separate problems: (1) developing methods for the analysis of overall risk to GSA buildings; (2) eliciting GSA corporate knowledge about contributors to risk (which they may not view in that way); (3) embodying the methods and knowledge in a suite of equations that can be implemented as a computer code; and (4) creating a computer application that allows the non-risk-analyst to generate the same result as a risk analyst. RAMPART is a screening-level risk-analysis tool that can support GSA decision making about property management. RAMPART is a new type of computer application for the assessment of risk to buildings. It encompasses a user interface, an expert system, and a database. The interface elicits information from the user about the building. The expert system is a set of rules that embody GSA corporate knowledge as well as expert knowledge about risk analysis. The database contains both data entered by the user during an analysis session and a much larger data set on natural hazards and crime. The results of each analysis are presented graphically on screen and in a written report. The GSA property manager can use the results of the screening-level risk analysis to determine where more-detailed analysis is available and to inform property-management decisions directly.