

Portfolio and Scenario Analysis in the Cost-Effectiveness Evaluation of Weapon Systems

Jussi Kangaspunta, Juuso Liesiö and Ahti Salo

Systems Analysis Laboratory

Helsinki University of Technology

P.O. Box 1100, 02015 TKK, Finland

jussi.kangaspunta@tkk.fi, juuso.liesio@tkk.fi, hti.salo@tkk.fi

Abstract: Cost-effectiveness analysis of weapon systems is challenging due to the presence of several impact objectives, interactions among weapon systems and the diversity of operating situations in which these systems may be used. We develop a portfolio model to identify cost-effective combinations of weapon systems at different budget levels in view of different impact criteria. The model – which builds on impact assessment results based on combat simulations and expert judgements – also admits incomplete information about the importance of these criteria and the relevance of alternative operating situations.

Keywords: *multiple-criteria decision making, decision support systems, portfolio analysis, scenario analysis, expert evaluations.*