Abstract The WEI-WUV algorithm purports to assess the effectiveness of a system of weapon systems based on a linear function of the quantities of each weapon type. The WEI-WUV algorithm has been widely criticized and indeed fallen into disrepute. The foremost limitations are (1) the need for subjective choice of numerical coefficients to represent complex and subtle situations, and (2) the linearity of the WEI/WUV function not accounting for synergy or competition between force elements. Is WEI-WUV really passé, out of date, of little or no use? In this paper we employ info-gap decision theory to model and manage the very real uncertainties that accompany a WEI-WUV assessment. We demonstrate how the impact of parameter and functional uncertainties can be assessed, and how the WEI-WUV algorithm can be used in supporting responsible decision making. We also explore the value of additional information when confronting dispute among experts about the values of WEI-WUV parameters.