

Assessing the Impacts of Uncertainty Propagation to System Requirements by Evaluating Requirement Connectivity

Alejandro Salado (Stevens Institute of Technology) - asaladod@stevens.edu

Roshanak Nilchiani (Stevens Institute of Technology) - rnilchia@stevens.edu

Copyright © 2013 by Salado, Nilchiani. Published and used by INCOSE with permission

Abstract. Although theoretically independent, requirements within a decomposition level of a system architecture are not isolated elements. For an existing design, a change of a requirement may endanger or facilitate fulfillment of other requirements within the same level of the decomposition. The present research suggests a requirement connectivity metric to evaluate the potential consequences that changing a requirement may have on a system with respect to fulfillment of other requirements. A particular aspect of the present research is the assumption that connectivity accounts only for requirements within the same decomposition level of an architecture, not for those flowing up or down the decomposition. The metric is used to evaluate different cases in which requirements are changed due to triggering of uncertain events during a project life-cycle.