

Proceedings of the 8th Annual World Conference
of the Society for Industrial and Systems Engineering,
Baltimore, MD, USA
October 17-18, 2019

Network Structure and the Effectiveness of Crowd-Based Requirements Processes

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Abstract: Proponents argue that crowd-based requirements processes enable project managers to generate better requirements by eliciting feedback from a broader range of stakeholders. However, crowd-sourcing requirements may reduce the ability of systems engineers to respond to stakeholder needs in a timely manner. The inability to address requirements results in unsatisfied stakeholders. It also burdens systems engineers, who need to contend with an unwieldy backlog. This paper tests the hypothesis that crowd sourcing increases the expected close out time for requirements, and the effect of crowd sourcing changes with the structure of the project's stakeholder network. Regression analysis suggests that increasing the proportion of crowd sourced requirements increases the expected close out time for requirements, except for networks with a low degree of localized clustering. The effect of crowd sourcing requirements does not change with network concentration or dispersal. Based on these findings, systems engineers should consider using crowd-based requirements processes for systems with a low degree of localized clustering and apply traditional stakeholder analysis techniques for systems with a high degree of localized clustering.

Keywords: Stakeholder Analysis, Requirements Engineering, Network Analysis, Crowd-Based Requirements Engineering