

MISQ Archivist

Data Model Development for Fire Related Extreme Events: An Activity Theory Approach

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Abstract

Post-analyses of major extreme events reveal that information sharing is critical for effective emergency response. The lack of consistent data standards for current emergency management practice, however, hinders efficient critical information flow among incident responders. In this paper, we adopt a third-generation activity theory guided approach to develop a data model that can be used in the response to fire-related extreme events. This data model prescribes the core data standards to reduce information interoperability barriers. The model is validated through a three-step approach including a request for comment (RFC) process, case application, and prototype system test. This study contributes to the literature in the area of interoperability and data modeling; it also informs practice in emergency response system design.

Keywords: Data model, extreme events, design science, activity theory