

Popular Scientific Summary

DRMCCA Master's Thesis

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IDCA: Improving Emergency Management Decision Support Systems

Floods, hurricanes, heat, wildfire. As climate variability increases the risk of new, severe, or cascading hazards, the practice of emergency management is more complex than ever before.

Maintaining *situation awareness* in real-time is critical, given this dynamic risk landscape and a decreasing ability to rely on historic data for planning and analysis functions.

Decision support systems for the emergency management sector include a wide range of technologies to inform situation awareness, such as geospatial platforms, data aggregation streams, and analytical aids to assess risk and vulnerability. However, little research is found in the literature to inform their design, from a whole-system perspective tailored to the needs of these professionals.

Requirements elicitation is the process by which such parameters are defined, across an established range of methods to inform both system and interface design. The *user interview* is a key preliminary step in this process, to deeply listen and contextualize important tasks which may be supported through the use of well-considered technology.

The *Information-Decision-Collaboration Assessment*, or IDCA, is an elicitation method and means of approaching this inquiry, through an integrated systems-focused approach which considers user tasks from the perspective of information, decision-making, and collaboration needs.

This pilot study has produced a preliminary methodology for this assessment, tested through in-depth interviews with subject matter experts possessing >10 years of experience at the local, regional, and national level. The results of this study provided a richly contextualized body of information, depicting key tasks as well as directly stated requirements for the design of decision support systems to support the work of these individuals. Further, important insights were derived regarding social and organizational dynamics, to inform further study and adaptation of the method.

In summary, the IDCA may be seen as a suitable starting point to develop a well-rounded elicitation framework for decision support systems in the emergency management setting, as supported by this pilot study and the presentation of its outcomes.