



# Socio-Technical Design Approach for Crisis Management Information Systems

*Dan Harnesk, Lulea University of Technology, Sweden*

*John Lindström, Lulea University of Technology, Sweden*

*Sören Samuelsson, Lulea University of Technology, Sweden*

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## ABSTRACT

*This article describes research in progress of a design approach for crisis management information systems. A qualitative study was designed to gather data from four municipalities in northern Sweden, which all have responsibility for crisis management in each local environment. The purpose with the article is to discuss broad but strongly related information issues to crisis management and from that suggest a socio-technical oriented approach for crisis management information systems design. The preliminary design approach suggests that a network of knowledge, IT management and information integration is a promising base for design in the area. Considering that responsible actors in crisis environments have great knowledge in crisis planning and operation indicate that such an environment can be understood as a network of knowledge that account for both the social and technical dimension during crises. Theories from IT management and information integration provide input to the technical dimension of the suggested design approach. [Article copies are available for purchase from InfoSci-on-Demand.com]*

*Keywords: Information Systems; IS Integration; IT Management; Socio-Technical Approach*

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## INTRODUCTION

In organizations responsible for crisis management there is a growing need to develop deep understanding for the relationship between social and technical matters in

crisis management. In this article we argue that crisis management information systems need to be further conceptualized due to the growing need to enhance socio-technical capabilities in crisis management. Informed by a case study and theoretical perspectives,

our research is complementary to the many literatures that apply a formal approach to crisis management systems capability building on functional requirements for first responders. E.g., whilst considering the social context, Turoff et al., (2006) direct the focus on the software requirements for those planning and executing the emergency response management function. Following the formal approach track but on a management level, research also deals with issues in community preparedness and emergency planning, and their relationships with training, exercises and the written policy (Perry and Lindell, 2003). We position our study in relation to the epistemological strand that accounts for both technical excellence and social action. In the field of information systems research this is known as the socio-technical approach. In essence the socio-technical design premise is the recognition of the rationales in human activities that should be reflected in the logic of technical artifacts (Langefors, 1995).

We also realize that the terminology in crisis management could be confusing in the way that crisis management often becomes similar to response management, which is the operational side to crises (see e.g., Shaluf et al., 2003). In practice, there are a number of stakeholders in crisis management, ranging from the first responders to community decision makers, whom have to manage the uncertainty and complexity of crisis. Furthermore, Information and communication technology has become a necessity during crisis for actors at all levels, from first responders to second command line decision makers (Jennex, 2005). We argue that this kind of socio-technical context needs emphasis and clarification of its different IT-dimensions in order to understand crisis management information

systems. There are at least three dimensions we consider important:

- The infological dimension of information technology, which suggest that human actors can utilize IT to create and maintain knowledge in a human activity system, e.g., a network of knowledge.
- The management side to information technology. This means that organizations need to determine, plan and evaluate the choices they make for overall IT matters.
- The operational use of information technology. How is information shared between actors and why is information integration necessary?

We discuss in this article the design of crisis management information systems with a socio-technical approach, linking together the infological dimension of information technology, the management side of information technology, and the operational use of information technology. In the networked environment of crisis management the recognition of IT support is not entirely new for public agencies as a whole but it seems extremely difficult to implement. What does it mean from a design perspective? In order to reveal some of the design issues related to crisis management this article draws on ideas from three trajectories of information systems research; knowledge management, information management and information systems integration together with a collection of empirical data from interview studies in four municipalities in northern Sweden.

The article is structured as follows, after the introduction, the background to the study and methodological considerations are discussed. Next, the seminal literature

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