

**Asimakopoulou, Eleana  
and Nik Bessis (eds.,)  
(2010), *Advanced ICTs  
for Disaster Management  
and Threat Detection:  
Collaborative and  
Distributive Frameworks,*  
Hershey: Information  
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The World Health Organisation (WHO) defines disaster as “any occurrence that causes damage, ecological disruption, loss of human life, deterioration of health and health services, on a scale sufficient to warrant an extraordinary response from outside the affected community or area.” The recurring occurrence of various natural and man made disasters in recent decades have drawn the states’ focus towards ensuring the safety of life, as well as preparedness and mitigation measures; hence disaster management. At the same time, disaster management is much more than mere response and relief and can be defined as a systematic process of organising and managing resources and responsibilities to deal with emergencies in order to lessen the impact of disasters. In this background, the *Advanced ICTs for Disaster Management and Threat Detection: Collaborative and Distributive Frameworks* is timely as it elucidates the various aspects of disaster management and threat detection in three broad sections. As stated by the publisher, “the book offers state-of-the-art information and references for work undertaken in the challenging area of collaborative and distributed ICT to advance disaster management as a discipline to cope with current as well as future unforeseen threats.”

The first section discusses the “Current Approaches in Disaster Management” and consists of six chapters. It begins with the Systemic Disaster Management System (SDMS) model that is intended to provide a suitable structure for effective disaster management. The authors claim that the model can be applied proactively, to design a new disaster management system, as well as reactively, to analyse past disasters for comparison and lessons. It may also be used to modify an existing system in order to make it more effective. Regarding public awareness, education and training, and community resilience for disaster management, the book argues

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that in an interconnected world, where disasters have the potential to cause huge damage, heightened public awareness is essential as this enhances community resilience. Information and communication technologies play a vital role in creating such public awareness by educating and training vulnerable communities. Further, the 21st century innovations in educational technology should be suitably incorporated into the curriculum at various educational levels which will sensitise community members in both urban and rural areas to strengthen their preventive culture for disaster risk reduction. At the same time, the growing importance of mass media in today's "information society", combined with society's increased dependence on electronic modes of information is crucial for the proper perception, regulation, and management of risk at different levels. However, there are both opportunities and limitations in the use of digital, internet-based ICTs for disaster communication. When people are under threat, information-seeking is intensified and passing of unqualified information leads to increased ambiguities. This is because journalists can choose among many sources for their reports while official and expert sources hold powerful positions serving to reassure or warn the public, or feeding into an ongoing debate. Again, media organisations can have their own logic and goals in disseminating the information that need not necessarily be compatible with the logic and goals of disaster planning and assistance agencies. Hence, there is need for the successful adaptation of risk communication in an increasingly commercialised media environment. As noted earlier, the effective use of information in terms of managing the information, translating it into comprehensive knowledge for decision making, and disseminating it to the communities at risk for action is instrumental in reducing the impact of disasters. The advancements in information technology and its reach into grassroots levels have increased the effectiveness of disaster risk management by making optimum use of disaster informatics.

The second section discusses the various "Advanced Collaborative Technologies for Disaster Management" in six chapters. This section emphasises the fact that efficient integration of various ICTs in disaster management can help mitigate the impact of disasters on people and the environment. The deployment of Early Warning Systems (EWS) and Alerting Technologies (AT) are considered to be the best means for better disaster prevention and mitigation. Starting with definitions and classifications, this section goes on to describe the general approaches, representative systems, and interoperability aspects of EWS. However, as the authors mention, the deployment of an operational EWS is still a complex challenge and remains a potential field of research. Separately, the Medical Information System (MedISys) is a fully automatic 24/7 public health surveillance system that monitors infectious diseases and CBRN threats in open-source media. Given its importance, the book explains the technology behind the MedISys and traces the processing chain up to the display of results. Further, social media technologies such as blogs,

social networking sites, social bookmarking, image/video sharing, virtual worlds and Internet forums have been identified as playing a role in crisis information. Hence, an attempt was made in the book to study the background and history of social media in crisis contexts to examine how social media technologies interact with formal and informal crises communication and information management, and how they have brought about a paradigm shift in crisis information management. The principles of social media such as transparency, security, community, usability and availability are well suited to assist in the effective management of the effects of a disaster. As these technologies rely on social collaboration, they are based on robust communication channels. This existing framework can be utilised to create software systems that can help in the efficient management of disasters. Furthermore, progress in incident and disaster management training has led to improved multi-modal learning frameworks. As asserted by authors, virtual reality technology—specifically multi-user virtual environment (MUVES) such as virtual worlds (VWs)—has the potential for increased collaboration, and for enhancing the leadership and decision-making skills of diverse learners. Nonetheless, additional research is recommended to demonstrate the utility of virtual world learning.

The final section of the book focuses on “Next Generation Approaches and Distributed Frameworks for Disaster Management” in five chapters. Firstly, it begins by describing decisions support systems (DSS) that could be suitably used in the event of a catastrophe to minimise its impact in different stages. As it is necessary to construct mathematical models to support the development of these systems, the authors present some of these models and their applications in DSS. Secondly, multi-criteria decision analysis (MCDA) is a technique used for decision-making among numerous alternatives to provide clear and rational decision support in complex situations with conflicting objectives. Contrary to this is scenario-based reasoning that allows the assessment of various possible future developments of the situation, thus incorporating uncertainties into the reasoning process. Thirdly, numerical modelling offers the option of applying scenarios to a given situation, thus helping in the better understanding of the processes leading to disasters. The authors believe that a possible evolution in High Performance Computing (HPC) would be to move away from the Single Programme, Multi Data (SPMD) approach towards an Object Oriented approach. The POP parallel programming model as well as its C++ implementation are considered to be part of this evolution. Fourthly, the Sensor and Computing Infrastructure for Environmental Risks (SCI ER) is an integrated system of networked sensors and scattered computing facilities, for detecting and monitoring hazards in a Wildlife Urban Interface (WUI) area, for predicting its evolution, and for assisting the authorities in crisis management for protecting lives and property in the area. For this, SCI ER combines and adapts various technologies and this section focuses on some of the key software components of the SCI ER architecture. Finally, as forest fires have caused enormous destruction and a number of fatalities, the effective and efficient preparation of forest fire evacuation plans requires decisions based

on data incorporated from heterogeneous and distributed sources. But recent ICT advances suggest the need for further work in the field of advanced evacuation systems. This section also describes the various concepts, architecture, and implementation of the Personalised Forest Fire Evacuation Data Grid Push Service using data push and next generation grid technologies.

There have been several natural or man made disasters which have caused huge loss to life and property and have disrupted normal life. This book contributes to the better understanding of the subject. It would also be helpful for preparing an appropriate disaster management plan and also educate the reader on various safety measures that needs to be taken for better disaster management.

