



## ISCRAM2016 Conference Proceedings

*13<sup>th</sup> International Conference on Information  
Systems for Crisis Response and Management*

### Editors

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# ISCRAM 2016

The 13th International Conference on Information Systems for Crisis Response and Management

Welcome to ISCRAM  
22-25 May  
Rio de Janeiro  
Brazil

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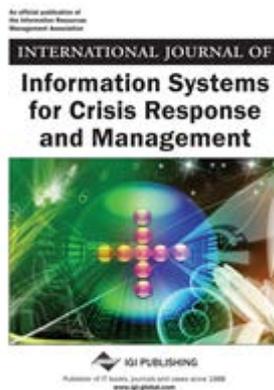
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Therese Friberg, University of Paderborn

### **Intelligent Decision Support in the Networked Society**

Tina Comes, Centre for Integrated Emergency Management, University of Agder

Matthieu Lauras, Industrial Engineering Department, University Toulouse – Mines Albi

### **Planning, Foresight and Risk Analysis**

Victor A. Bañuls, Pablo de Olavide University

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### **Social Media Studies**

Amanda Hughes, Utah State University

Imran Muhammad, Qatar Computing Research Institute

### **Emerging Topics**

Vita Lanfranchi, University of Sheffield, UK

Caroline Rizza, Institut Mines Telecom, Paris, France

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## **ISCRAM2016: Resilience by all means**

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The theme of ISCRAM 2016 is Resilience. Resilience has become a popular topic in emergency response and crisis management. This edition will highlight the exploration of the various facets of resilience when applied to Crisis and Emergency Management. The purpose of ISCRAM 2016 is to stimulate discussions that enable the design of resilient systems in the domain of crisis management.

This year we also demonstrate the resilience of the ISCRAM Community in carrying on with the 2016 conference despite a growing threat from the Zika virus. The ISCRAM Community showed compassion and responsiveness in creating a venue for virtual participation at this year conference to enable the world to participate without the potential risks of travel.

As anchors to this year's program we have three keynote speakers, (1) Dr. José Holguín-Veras, William H. Hart Professor at the Rensselaer Polytechnic Institute who will present "The Top Ten Lessons from Large Disasters and Catastrophes: Implications for Resiliency and the ISCRAM Community", (2) Dr. Mario Jorge Freitas, of Santa Catarina State University, who will present, "The Failures In Preparation And Response In Mariana's Mining Waste Disaster: Some Lessons For The Future" and (3) Dr. Muhammad Imran, with the Qatar Computing Research Institute and Hamad bin Khalifa University who will present, "The Role of Social Media and Artificial Intelligence for Disaster Response."

In addition to these focal points we also have a panel on Technologies for Resilience in Developing Countries and two new "Hot Topic Sessions" the first on the Zika Virus and the second on the Refugee Crisis.

We are pleased to present the accepted papers for ISCRAM 2016, which represent excellent contributions to a wide range of topics related to the use of information for the full cycle of emergency management.

The overall acceptance rate for the conference was 49%.

- 46 long research papers were submitted 19 of which were accepted—41% acceptance rate
- 8 long insight papers were submitted 3 of which were accepted. ---37% acceptance rate
- 97 short research papers were submitted, 59 of which we accepted. ---60% acceptance rate
- 22 short insight papers were submitted, 13 of which were accepted. -59% acceptance rate
- 17 posters were accepted.

For this year, ISCRAM defined two types of paper: Research and Insight. Research papers are intended to meet the needs of researchers by being peer reviewed to the highest academic standards. The primary aim of an academic paper is to make a contribution to the scientific body of knowledge. By contrast, Insight papers are intended to meet the needs of practitioners, managers, professionals, experts, and policy makers by being peer reviewed to high practical standards. The primary aim is to

give an insight into what real-world problems arise during emergencies, disasters, and crises, and how such problems can be solved with the help of information systems.

The same five criteria (relevance, significance, originality, validity, and clarity) were used to judge all types of ISCRAM papers whether the paper is Research or Insight, Full or Short. However, some of these criteria are defined differently between Research and Insight papers.

Researchers and practitioners submitted to a range of topic areas including: Intelligent Decision Support in a Networked Society; Analytical Modeling and Simulation; Planning, Foresight, and Risk Analysis; Ethical, Legal, and Social Issues; Geospatial Data and Geographical Information Sciences; Command and Control Studies; Human Centered Design and Evaluation; Social Media Studies; and Community Engagement and Practitioner Studies. Research that did not fall under these specific areas were applied broadly to Emerging Topics

Both types of papers were submitted in Full or Short form. A full paper reports on a completed project or piece of work, including validation of the results. Only full papers may be candidates for selection for the Best Research Paper, Best Student Paper, and Best Insight Paper awards.

By contrast, a short paper is intended for the reporting of part of a complete project or piece of work. For example, a short paper may describe a project or research plan, a literature survey, the design of an information system, the development and testing of software, user evaluation of developed software, deployment, a real incident, a proposed new policy.

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Lastly, the program co-chairs wish to thank the local chairs, the track chairs, the reviewers and the ISCRAM board for offering their full participation in the body of this work.

We hope that you enjoy what we expect to be a lively conference!

## *ISCRAM2016 Scientific Program and Conference Chairs*

### *Introduction*

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## ISCRAM2016 Best Paper Awards

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The Best Paper Award honors the author(s) of a paper of exceptional merit dealing with a subject related to the ISCRAM. We have three categories: best research, insight and student paper. Here we specify the criteria for eligibility in each category:

### Long Research papers

- Significance of the paper to the field of ISCRAM
- Contribution to ISCRAM academic community
- Use of appropriate methodological rigor
- Clarity of writing

### Long Insight papers

- Significance of the paper to the field of ISCRAM
- Contribution to ISCRAM practitioners community
- Novelty and innovation
- Practical relevance and applicability
- Clarity of writing

### Long Student papers (Research or Insight)

- Significance of the paper to the field of ISCRAM
- Level of contribution of the student in the paper
- Theoretical/Practical contribution to ISCRAM community
- Use of appropriate methodological rigor
- Clarity of writing

### Process

A first set of candidate papers in each category has been proposed by the attending to the reviewers/track chairs ratings and recommendations. This first selection of the candidate papers has been made by the Papers and Conference Chairs. Then, the ISCRAM Publication and Standards Committee (PASC) takes the lead and proposes a committee for each category. The committee is mostly drawn from PASC, with one Program Committee representative. The review process is blind. After receiving their feedback, The Best Paper Committee decides which paper will receive the award. The rest of the papers can be recognized as finalists in the ISCRAM2016 Conference Proceedings.

### **Best Research Paper Committee**

Chair: Victor A. Bañuls

Committee: Jose H. Canós, Amanda Hugues and Ioannis Dokas

### **Best Research Papers Nominations (4 papers)**

Title: Wide-area Evacuation Difficulty in Densely-built Wooden Residential Areas

Author(s): Oki, Takuya; Osaragi, Toshihiro

Title: Cross-Language Domain Adaptation for Classifying Crisis-Related Short Messages

Author(s): Imran, Muhammad; Mitra, Prasenjit; Srivastava, Jaideep

Title: Estimation of Transient Occupants on Weekdays and Holidays for Risk Exposure Analysis

Author(s): Osaragi, Toshihiro

Title: Collaborative Preparation and Assessment of Building Security

Author(s): Ahmad, Alexandre; Balet, Olivier; Boin, Arjen; Castet, Julien; Donnelley, Maureen; Ganovelli, Fabio; George, Kokkinis, Pintore, Giovanni

### **Best Insight Paper Committee**

Chair: Radmila Juric

Committee: Alvaro Pemartin, Reza Nourjou, Gabriela Prelipcean

### **Best Insight Papers Nominations (3 papers)**

Title: Curriculum Guidelines for Master's Level Programs in Information Systems for Emergency Management

Author(s): Plotnick, Linda; Turoff, Murray; Hiltz, Starr Roxanne; Yang, Lili; Bañuls, Victor

Title: A study on the sub-regionalization of Humanitarian Supply Chain: the IFRC case

Author(s): Laguna Salvadó, Laura; Lauras, Matthieu; Comes, Tina; Grenade, Mathieu

Title: QuEP: Building a Continuous Improvement of Emergency Plans Management

Author(s): Núñez Avila, Ana Gabriela; Penadés Gramaje, M<sup>ª</sup> Carmen; Canós Cerdá, José H.

### **Best Student Paper Committee**

Chair: Victor A. Bañuls

Committee: Murray Turoff, Miguel Ramírez-De la Hueriga, Magiswary Dorasamy

### **Best Student Papers Nominations (4 papers)**

Title: Online Mentioning Behavior during Hurricane Sandy: References, Recommendations, and Rebroadcasts

Author(s): Chauhan, Apoorva; Hughes, Amanda Lee

Title: Crowdsourced Validation and Updating of Dynamic OSM Features: A Nepal Earthquake Case Study

Author(s): Anhorn, Johannes; Herfort, Benjamin; Porto de Albuquerque, João

Title: Risk Awareness Maps of Urban Flooding via OSM Field Papers- Case Study Santiago de Chile

Author(s): Klonner, Carolin; Marx, Sabrina; Usón, Tomás; Höfle, Bernhard

Title: Early-Warning System Perception: a Case Study on Fire Safety

Author(s): Arru, Maude; Mayag, Brice; Negre, Elsa

## **ISCRAM2016 Book of papers**

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All ISCRAM2016 papers and posters are available at the ISCRAM Digital Library

<http://idl.iscram.org/>

All presented papers will be submitted for indexing in:

- Scopus
- Compendex
- DBLP
- Google Scholar