



ISCRAM 2014 Conference Proceedings

Book of Papers

11th International Conference on Information Systems for Crisis Response and Management

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Penn State offers over 160 baccalaureate degree programs, 90+ associate degree programs, and more than 150 graduate degree programs, including doctorates and both academic and professional master's degrees.

Penn State has 24 campuses across the Commonwealth—a campus within practical commuting distance of virtually every Pennsylvanian. More than half of the undergraduates who complete their studies at University Park start at another Penn State campus. The University includes Penn State Great Valley School of Graduate Professional Studies, Penn State College of Medicine at The Milton S. Hershey Medical Center, The Dickinson School of Law in Carlisle and at University Park, World Campus (online programs), and the Pennsylvania College of Technology.

The College of Information Sciences and Technology

<http://www.ist.psu.edu>

The College of Information Sciences and Technology (IST), founded in 1997, prepares students for the digital 21st century and conducts research to address global and societal needs. It is where people, information, and technology meet. It is comprised of 154 faculty members across 19 campus locations, 2,100 resident undergraduate students and 120 resident graduate students at the University Park campus. An additional 500 degree-seeking undergraduate students and 400 degree-seeking graduate students matriculate via distance education.

The College offers several undergraduate degrees including a two-year Associate Degree, a Bachelor of Science (B.S.) degree in Information Sciences and Technology, a B.S. in Security and Risk Analysis, and a Bachelor of Arts (B.A.) degree in Information Sciences and Technology. IST offers both a resident academic Master of Science (M.S.) degree and one Ph.D. degree in Information Sciences and Technology. Non-resident MPS degrees are offered in Information Sciences and Technology (with an option in cybersecurity and information assurance), Homeland Security (with emphasis on information security and forensics), and Enterprise Architecture, available through Penn State's World Campus.

The GeoVISTA Center

<http://www.geovista.psu.edu/>

The Pennsylvania State University Geographic Visualization Science, Technology, and Applications Center (GeoVISTA) is based in the department of Geography but has faculty and graduate student affiliates in multiple colleges on campus. Its research is interdisciplinary and, over the past decade, emphasis has expanded from geovisualization to all aspects of GIScience and related information sciences. GeoVISTA's specific mission is to coordinate integrated and innovative research in Geographic Information Science (GIScience), with an emphasis on geovisualization. The focus is on developing powerful human-centered methods and technologies that allow scientists and decision makers to solve scientific, social, and environmental problems through computer-supported, visually-enabled analysis of the growing wealth of geospatial data. GeoVISTA conducts information and cognitive science research focused on six main themes: Geographic Representation, GeoVisual Analytics, Knowledge Management & Geocollaboration, Spatial Cognition & Human Factors, Risk Assessment & Spatial Decision Support, GeoSemantics.

ISCRAM 2014 Supporting Organizations



Virginia Tech, Global Forum on Urban and Regional Resilience

Message from the Conference program (Co-)Chairs

Dear ISCRAM 2014 Participants,

We are pleased to present the accepted papers for ISCRAM 2014, which represent excellent contributions to a wide range of topics related to the use of information for the full cycle of emergency management. We especially note the crucial contributions of the track chairs, who each year refine the description of their topic areas to reflect emerging research trends, solicit papers and reviewers, and oversee the whole process of review and recommendation of decisions for each paper to the Program Committee. The timely and thoughtful critiques of the reviewers of each paper are a crucial step in this process, and give authors of accepted papers the opportunity to improve the final versions. Special thanks also to Lily Yang, who handled the many papers in the “special track” for papers submitted by track chairs destined for their own tracks; and to Anthony Robinson, who served as a valued member of the Program Committee in the early months.

Types of ISCRAM Paper

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. They cover operational, emergency management, policy making, and similar matters.

Both types of papers may be submitted in *Full* or *Short* form. A *full* paper reports on a completed project or piece of work, including validation of the results. Full papers must include at least one member of the Scientific Committee among the reviewers. Only full papers may be candidates for selection for the Best Research Paper, Best Student Paper, and Best Insight Paper awards. For the first time, the best paper nominees are indicated in this Proceedings. 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, and the like.

Reviewing Criteria

The same five criteria (relevance, significance, originality, validity, and clarity) are 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, as shown in the table below. To select a score for each criterion, the reviewer uses the following 5-point scale: 1 = strongly disagree; 2 = disagree; 3 = neutral, neither agree nor disagree; 4 = agree; 5 = strongly agree.

Criterion	Research paper	Insight paper
Relevance	Relates <i>both</i> to information systems <i>and</i> the management of crises, emergencies or disasters. Relevance to the track for which it is submitted. Relevance to special theme of conference (if any) is nice to have.	
Significance	Presents knowledge about a way of designing, developing or deploying ISCRAM, about a way of managing crises, emergencies or disasters using information systems, or about the individual, organizational, or social consequences of ISCRAM that could open up or close off a line of academic research (for <i>Research</i> papers) or that improve the understanding or design of ISCRAM or ways of using ISCRAM by practitioners (for <i>Insight</i> papers).	
Originality	Ideas that are new to researchers, timely, non-trivial, and well-grounded in the existing academic body of knowledge.	Ideas that are new, timely, and non-trivial to those who design, implement, or use ISCRAM.
Validity	Research is based on appropriate theory, methods and approaches. References are suitable and relevant to content. Conclusions are reached by complete and logically correct argumentation.	Content is grounded in the actual experiences and realities of practitioners, professionals, experts, and/or policy makers.
Clarity	Paper is well structured, language is easy to read, figures and diagrams are easy to see, and any jargon and abbreviations used will be understandable by the audience at the ISCRAM event.	

Acceptance Rates

The chart below shows the numbers of long and short papers submitted, and their eventual disposition.

Full Research Papers	Full Insight Papers	Short Research Papers	Short Insight Papers	Totals
80 submitted	10 submitted	89 submitted	13 submitted	192 submitted
37 accepted	5 accepted	50 accepted	6 accepted	98 accepted
14 suggested as Short	1 suggested as Short			15 Full accepted as Short
7 suggested as poster	2 suggested as poster	20 suggested as posters	3 suggested as posters	
17 withdrawn	2 withdrawn	12 withdrawn	3 withdrawn	
5 rejected directly	0 rejected directly	7 rejected directly	1 rejected directly	
Acceptance rate of Full Research papers 46%	Acceptance rate of Full Insight papers: 50%	Acceptance rate of Short Research Papers: 56%	Accepted rate of Short Insight Papers: 46%	Overall Acceptance Rate: 51%

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Acknowledgements

There are a huge number of people who have helped in producing this conference. First of all the members of the Conference and Program Committee and representatives of the ISCRAM board and their helpers. But we want to thank all the (c Track Chairs, Track Co-Chairs and reviewers, as well as all the member of the Scientific Committee for their help in the review process and organizing the tracks and special sessions.

We thank everyone for their hard work and dedication to this conference, and we look forward to the latest installment of the ISCRAM tradition.

Starr Roxanne Hiltz, Mark S. Pfaff, Linda Plotnick, and Patrick C. Shih
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Marian Zulean

ISCRAM 2014 Keynote Speakers

Dr. Leysia Palen

Leysia Palen is an Associate Professor of Computer Science at the University of Colorado Boulder, USA. She is a faculty fellow with the ATLAS Institute and the Institute of Cognitive Science. She is also a Full Adjunct Professor at the University of Agder in Norway. At the University of Colorado, Prof. Palen directs the Project EPIC (Empowering the Public with Information during Crisis) research effort, and co-directs the Center for Software & Society.

Prof. Palen is a leader in the area of crisis informatics, an area she forged with her graduate students and colleagues at Colorado. With over 70 research publications, she brings her training in human-computer interaction (HCI), computer-supported cooperative work and social computing to bear on understanding and advancing socio-technical issues of societal import. She conducts empirical research in the interpretivist tradition. However, in the advancing arena of large-scale on-line interaction (the "big data" of crisis response), she adapts quantitative techniques that then allow the application of qualitative methods and the "ethnographic eye" to closely observe and describe social structures in such technology-mediated situations.

Dr. Patrick Meier

Serves as Director of Innovation at the Qatar Computing Research Institute (QCRI). Prior to QCRI, co-founded and co-directed the Harvard Humanitarian Initiative's (HHI) Program on Crisis Mapping & Early Warning. He served as Director of Crisis Mapping at Ushahidi & co-founded CrisisMappers, Digital Humanitarians and the award-winning Standby Task Force.

Edward G. Happ

Edward G. Happ is the CIO of the International Red Cross and Red Crescent Societies (IFRC), based in Geneva, Switzerland, and Chairman of NetHope (www.nethope.org), a U.S. based consortium of 33 leading international relief, development and conservation nonprofits focused on information and communications technology (ICT) and collaboration. He is the former Chief Information Officer at Save the Children (www.savethechildren.org), in Westport, CT, where he worked for the past decade.

ISCRAM 2014 Tracks Chairs

Analytic Modeling and Simulation

Christopher W. Zobel, Kash Barker, and Josey Chacko

Command and Control Studies

Peter Berggren, Björn JE Johansson, Jonas Landgren, and Markus Rester

Community Engagement in Crisis Informatics Research

Christine Adler, Zeno Franco, Paul Biedrzycki, Tracey O'Sullivan, Syed Ahmed, and Vitaveska Lanfranchi

Disaster Relief Supply Chain Management

Tina Comes, Marianne Jahre, and Christopher W. Zobel

Decision Support Systems

Tina Comes, Valentin Bertsch, Marcus Vogt, Niek Wijngaards, and Irène Abi-Zeid

Ethical, Legal and Social Issues of IT Supported Emergency Response

Monika Buscher, Catherine Easton, Michael Liegl, Caroline Rizza, Hayley Watson, and Zeno Franco

Geographic Information Science

Christoph Aubrecht, Sérgio Freire, and Andrew Curtis

Humanitarian Information Systems

Jennifer Chan, Gisli Olafsson, and Bartel Van de Walle

Intelligent Systems

Gerhard Wickler, Julie Dugdale, Serge Stinckwich, and Felix Wex

Planning, Foresight and Risk Analysis

Murray Turoff and Victor A. Bañuls

Practitioner Cases and Practitioner-Centered Research

Mark Haselkorn, Bernd Hellingrath, and Robin Mays

Serious Games for Crisis Management

Paloma Diaz, David Thornton, and Theo van Ruijven

Social Media in Crisis Response and Management

Linda Plotnick, Roxanne Hiltz, Volkmar Pipek, Kate Starbird, and Amanda Hughes

Visual Analytics for Crisis Management

Vitaveska Lanfranchi, Suvodeep Mazumdar, Tomi Kauppinen, and Justine Blanford

ISCRAM 2014 Tutorials and Workshops

Delphi and Cross Impact Analysis for Generating Dynamic Emergency Scenarios

Tutors: Murray Turoff, Victor Banuls, and Linda Plotnick

Explanation of the combined use of the Delphi Method, Cross Impact Analysis, and Interpretive Structural Modeling to create Dynamic Emergency Scenarios by soliciting subjective estimates from professionals; capable of being used for planning, foresight, and/or training.

Delphi and Cross Impact Analysis for Generating Dynamic Emergency Scenarios

Chairpersons: Murray Turoff, Victor Banuls, and Linda Plotnick

After explanations of two examples of the combined use of Delphi, Cross-Impact, and Interpretive Structural Modeling to produce dynamic scenarios for use in emergency management, participants will be shown how to set up and analyze an online survey instrument to collect the data; take the sample survey based on their inputs; and then break into small groups to generate examples of types of scenarios they would like to generate and preliminary ideas for doing so.

Visual Analytics with Social Media for Crisis Management

Tutors: Vitaveska Lanfranchi, and Suvodeep Mazumdar

A full-day hands-on tutorial that will explore freely available open source tools to extract, organize and visualize social media data for crisis management. Participants will be provided with coding material in advance and will be required to have appropriate software and API keys available before joining the tutorial.

Educational Games for Crisis Response and Management

Chairpersons: David Thornton, and Guillermo Francia III

This workshop will demonstrate how to convert educational objectives related to crisis response and management into educational video games, focusing on game development and instructional design.

Designing for Humanitarians—Valuing Uncertainty, Empowerment and Human Rights

Chairpersons: Robin Mays, and Mark Haselkorn

This workshop will provide training and discussion around the foundational principles that drive the design of humanitarian preparedness and response operations and the implications they hold for effective research and design of ICT support systems to these operations. In addition to human rights law, ICRC code of conduct, and other agreed upon standards of operating, sessions will include the sharing examples of the leading responding agencies such as Red Cross, USAID, and international NGOs. Instruction will include experienced, well-respected operational leaders and experts within the humanitarian community.

ISCRAM 2014 Panels

Doing IT Right: Ethical, Legal, and Social Issues of IT-Supported Emergency Response

Moderator: Monika Buscher

Panelists: Michael Liegl, Caroline Rizza, Hayley Watson, Heiko Werner, Leysia Palen, Zeno Franco, and Kush Wadhwa

This panel will discuss ethical, legal and social issues arising specifically in relation to the conference theme of Empowering Citizens and Communities through Information Systems for Crisis Response and Management. Topics will include empowerment, digital divide, transformations of professional accountability, and issues of social justice.

Super Typhoon: The Information Management Disaster?

Moderator: Bartel Van de Walle

Panelists: Gisli Olafson, Tina Comes, and Dennis King

The focus of this panel will be on the role of information products and systems in the response and early recovery efforts in the Philippines following the passage of the devastating Typhoon Haiyan. Panelist Gisli Olafsson (Nethope) will report on his experiences during the very early response phase when adequate information was hardly available and communication infrastructures destroyed.

Crowdsourcing Crisis Response: The Boston Marathon Bombing

Moderator: Andrea Tapia

Panelists: Jeannette Sutton, Sean Goggins, Elizabeth Thiry, Nicolas J. Lalone, and Kristene Unsworth

The marathon bombing in April 2013 put the nascent but real surveillance infrastructure in US cities and on Internet channels like Twitter and REDDIT into full action. This panel is focused on the events that occurred as a part of the Boston Marathon bombing and the ensuing manhunt. Active participation by the general public is reaching new levels and the need to understand how 'the public' can shape the event, new, emergency response and even the outcome of the event needs to be investigated.

Creating a Common Operational Picture (COP) with the Crowd

Moderator: Erik Borglund

Panelists: Mike McNeese, Jonas Landgren, Lena-Maria Öberg, Kees Boersma, Patrick P Meier, and Jeroen Wolbers

Organizations involved in crisis response and management strive to establish a common operational picture (COP) to achieve a better basis for decisions. A COP can be seen as a process, product, or operating environment, but originates predominantly from inter-organizational collaboration in crisis response and management. This panel aims to present challenges and opportunities related to COP, when citizens and other communities becomes more involved in the crisis and response management system.

ISCRAM 2014 Best Paper Award Winners and Nominees

Best Research Paper Award Winner

Alert Networks of ICTs and Sources in Campus Emergencies

Keri K. Stephens, Jessica Ford, Ashley Barrett, Michael J. Mahometa
The University of Texas at Austin, USA

Best Research Paper Award Nominees

Integration of Volunteer and Technical Communities into the Humanitarian Aid Sector: Barriers to Collaboration

Annemijn van Gorp
The Hague University of Applied Sciences, The Netherlands

Supporting Disaster Reconnaissance with Social Media Data: A Design-Oriented Case Study of the 2013 Colorado Floods

Shideh Dashti¹, Leysia Palen¹, Mehdi Heris¹, Kenneth Mark Anderson¹, Scott Anderson², T. Jennings Anderson¹
¹University of Colorado Boulder, USA; ²Department of Transportation, USA

Crowdsourcing Rare Events: Using Curiosity to Draw Participants into Science and Early Warning Systems

Andrea Tapia¹, Nicolas Lalone¹, Elizabeth MacDonald², Reid Priedhorsky⁴, Michelle Hall³
¹The Pennsylvania State University, USA; ²New Mexico Consortium, USA; ³Science Education Solutions, Inc.;
⁴Los Alamos National Laboratory, New Mexico, USA

Development of a Dynamic Scenario Model for the Interaction of Critical Infrastructures

Murray Turoff¹, Victor Bañuls², Linda Plotnick³, Roxanne Hiltz¹
¹New Jersey Institute of Technology, USA; ²Universidad Pablo de Olavide, Sevilla, Spain; ³Jacksonville State University, USA

Improving Network Connectivity in Emergency Ad Hoc Wireless Networks

Abdullah Konak
Penn State Berks, USA

Best Insight Paper Award Winner

Community Crisis Management Lessons from Philadelphia's 1793 Epidemic

Edward Glantz
The Pennsylvania State University, USA

Best Insight Paper Award Nominees

Measuring Disaster Resilience: The Impact of Hurricane Sandy on Critical Infrastructure Systems

Tina Comes¹, Bartel Van de Walle²
¹University of Agder, Norway; ²University of Tilburg, The Netherlands

Best Student Paper Award Winner

Resilience-Building and the Crisis Informatics Agenda: Lessons Learned from Open Cities Kathmandu

Robert John Soden¹, Nama Budhathoki², Leysia Palen¹
¹University of Colorado Boulder, USA; ²Kathmandu Living Labs, Nepal

Best Student Paper Award Nominees

Probing PROBE: A field study of an advanced decision support prototype for managing Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) events

Milica Stojmenovic^{1,2}, Gitte Lindgaard^{1,2}

¹Swinburne University of Technology, Australia; ²Carleton University, Canada

LITMUS: Landslide Detection by Integrating Multiple Sources

Aibek Musaev, De Wang, Calton Pu
Georgia Institute of Technology, USA

Mastering Social Media: An Analysis of Jefferson County's Communications during the 2013 Colorado Floods

Lise Ann St. Denis, Leysia Palen, Ken Anderson
University of Colorado at Boulder, USA

List of ISCRAM 2014 Academic Papers

01-Analytic Modeling and Simulation

ID: 39

Full Research paper

Improving Network Connectivity in Emergency Ad Hoc Wireless Networks

Abdullah Konak

Penn State Berks, USA

ID: 50

Full Research paper

A Strategy Evaluation Framework Based on Dynamic Vulnerability Assessments

Thomas Münzberg, Marcus Wiens, Frank Schultmann

Karlsruhe Institute of Technology, Germany

ID: 102

Short Research Paper

A Portable Base Station Optimization Model for Wireless Infrastructure Deployment in Disaster Planning and Management

Michael R. Bartolacci¹, Christoph Aubrecht², Dilek Ozceylan Aubrecht³

¹Penn State Berks, USA; ²AIT Austrian Institute of Technology and the World Bank; ³Sakarya University

ID: 141

Short Research Paper

Exploring the Prescriptive Modeling of Fire Situation Assessment

Yixing Shan, Lili Yang, Roy Kalawsky

Loughborough University, United Kingdom

ID: 147

Short Research Paper

A Tool for the Simulation of Alert Message Propagation in the General Population

Janine Hellriegel¹, Michael Klafft^{1,2}

¹Fraunhofer FOKUS; ²FOM University of Applied Sciences

ID: 158

Short Research Paper

A dynamic-data-driven driving variability modeling and simulation for emergency evacuation

Shengcheng Yuan, Yi Liu, Gangqiao Wang, Hongshen Sun, Hui Zhang

Tsinghua University, China

ID: 183

Short Research Paper

A simulation-based approach to quantifying resilience indicators in a mass transportation system

Kpotissan Adjetey-Bahun^{1,2}, Babiga Birregah¹, Eric Châtelet¹, Jean-Luc Planchet², Edgar Laurens-Fonseca²

¹UMR CNRS 6281 - University of Technology of Troyes, France; ²Régie autonome des transports parisiens (RATP), France

ID: 204

Short Research Paper

Estimating the Impacts Associated with the Detonation of an Improvised Nuclear Device

Theresa Jefferson¹, John Harrald²

¹Loyola University of Maryland, USA; ²Virginia Tech, USA

ID: 206

Short Research Paper

Improving Resource Allocation for Disaster Operations Management in a Multi-Hazard Context

Josey Chacko, Loren Rees, Christopher Zobel

Virginia Tech, USA

02-Command and Control Studies

ID: 12

Full Research paper

Probing PROBE: A field study of an advanced decision support prototype for managing Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) events

Milica Stojmenovic^{1,2}, Gitte Lindgaard^{1,2}

¹Swinburne University of Technology, Australia; ²Carleton University, Canada

ID: 53

Full Research paper

Rio de Janeiro C2 Center dealing with the unexpected: resilience and brittleness during FIFA Confederation Cup

Jose Orlando Gomes, Paulo Victor Rodrigues Carvalho, André Luiz Avelino Sobral, Avelino Ferreira Gomes Filho, Claudio Azevedo Passos, Diana Arce, Gustavo de Azevedo Bianco, Julio Cesar Rodrigues dos Santos
Universidade Federal do Rio de Janeiro (UFRJ), Brazil

ID: 84

Full Research paper

Finding the best devices for emergency responders in Norway – an empirical study

Linda Katrine Andresen², Erik G. Nilsson¹

¹SINTEF ICT, Norway; ²University of Oslo

ID: 111

Short Research Paper

Governance of occasional multi-sector networks

Willem Treurniet¹, Rozemarijn Logtenberg², Peter Groenewegen³

¹TNO, The Netherlands; ²Leiden University, The Netherlands; ³VU University, The Netherlands

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Short Insights Paper

Beyond the Myth of Control: toward network switching in disaster management

Kees Boersma, Julie Ferguson, Peter Groenewegen, Jeroen Wolbers

VU University Amsterdam, The Netherlands

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Short Research Paper

Assessing team focused behaviors in emergency response teams using the shared priorities measure

Peter Berggren¹, Nicoletta Baroutsi², Björn Johansson², Isabelle Turcotte³, Sébastien Tremblay³

¹FOI, Sweden; ²Linköping University, Sweden; ³Laval University, Canada

03-Community Engagement in Crisis Informatics Research

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Full Research paper

Crowdsourcing Rare Events: Using Curiosity to Draw Participants into Science and Early Warning Systems

Andrea Tapia¹, Nicolas Lalone¹, Elizabeth MacDonald², Reid Priedhorsky⁴, Michelle Hall³

¹The Pennsylvania State University, USA; ²New Mexico Consortium, USA; ³Science Education Solutions, Inc.;

⁴Los Alamos National Laboratory, New Mexico, USA

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Full Research paper

Citizens' Observatories for Situation Awareness in Flooding

Vitaveska Lanfranchi¹, Stuart Wrigley¹, Neil Ireson¹, Fabio Ciravegna¹, Uta Wehn²

¹University of Sheffield, United Kingdom; ²UNESCO-IHE

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Short Research paper

Towards a General System Design for Community-Centered Crisis and Emergency Warning Systems

Ulrich Meissen¹, Markus Hardt¹, Agnès Voisard²

¹Fraunhofer FOKUS, Berlin, Germany; ²Freie Universität Berlin, Germany

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The Source of the Story: Evaluating the Credibility of Crisis Information Sources

Tristan C. Endsley, Yu Wu, James A. Reep

The Pennsylvania State University, USA

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Marco Romano, Teresa Onorati, Paloma Diaz, Ignacio Aedo

Universidad Carlos III de Madrid, Spain

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Torbjørn Træland Meum

University of Agder, Norway

04-Disaster Relief Supply Chain Management

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Designing Realistic Scenarios for Disaster Management Quantitative Models

Jorge Vargas¹, Matthieu Lauras^{3,4}, Aurelie Charles², Lionel Dupont³

¹PUCP, Peru; ²Université de Lyon 2; ³Université de Toulouse, Mines Albi; ⁴Toulouse Business School

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Methodological toolkit for humanitarian logistics

Henning Gössling, Jutta Geldermann

University of Göttingen, Germany

05-Decision Support Systems

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Tina Comes¹, Bartel Van de Walle²

¹University of Agder, Norway; ²University of Tilburg, The Netherlands

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Ana C. Calderon, Joanne Hinds, Peter Johnson

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Stella Moehrle

Karlsruhe Institute of Technology, Germany

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Sen Zhou¹, Bartel Van de Walle²

¹Harbing Engineering University, China; ²Tilburg University, The Netherlands

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Kelli de Faria Cordeiro, Maria Luiza Machado Campos, Marcos Roberto da Silva Borges

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Managing Information Processes in Disaster Events: The Impact of Superstorm Sandy on Business Organizations

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University of Pittsburgh, USA

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Emergency Decision Making: A Dynamic Approach

Zhenyu Yu¹, Chuanfeng Han¹, Yefeng Ma²

¹Tongji University, China; ²Tsinghua University, China

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A model driven system to support optimal collaborative processes design in crisis management

Loïc Bidoux^{1,2}, Jean-Paul Pignon¹, Frédérick Bénaben²

¹Thales Communications & Security, France; ²Mines Albi - Université de Toulouse, France

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Agility of crisis response: gathering and analyzing data through an event-driven platform

Anne-Marie Barthe-Delanoë, Sébastien Truptil, Frédérick Bénaben

Ecole des Mines d'Albi-Carmaux, France

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SUCRE: Supporting Users, Controllers and Responders in Emergencies

Angel Ruiz-Zafra², Ana-Gabriela Núñez¹, M. Carmen Penadés¹, José H. Canós-Cerdá¹, Marcos Borges³

¹Universitat Politècnica de València, Spain; ²Universidad de Granada, Spain; ³Universidade Federal do Rio de Janeiro, Brazil

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Marie Bartels

Technische Universität Berlin, Germany

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Building a resilient community through social network: ethical considerations about the 2011 Genoa floods

Caroline Rizza¹, Ângela Guimarães Pereira²

¹Institut Mines Telecom - Telecom ParisTech, Paris, France; ²European Commission - Joint Research Centre, Italy

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Citizen (in)security?: social media, citizen journalism and crisis response

Hayley Watson¹, Lemi Baruh², Rachel Finn¹, Salvatore Scifo³

¹Trilateral Research and Consulting, United Kingdom; ²Koç University, Turkey; ³Maltepe University, Turkey

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Gabriel Bartl, Lars Gerhold, Matthias Wählisch

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07-Geographic Information Science

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Flávio Horita¹, Maria Clara Fava¹, Jairo Rotava¹, Jó Ueyama¹, João Porto de Albuquerque¹, Vladimir Souza², Eduardo Mario Mendiondo¹

¹University of São Paulo, Brazil; ²Federal University of Alagoas

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Christoph Aubrecht¹, Klaus Steinnocher¹, Hermann Huber²

¹Austrian Institute of Technology, Austria; ²Austrian Institute of Technology, Austria

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Tweeting and Tornadoes

Justine I Blanford¹, Jase Bernhardt¹, Alexander Savelyev¹, Gabrielle Wong-Parodi², Andrew M Carleton¹, David W Titley¹, Alan M MacEachren¹

¹The Pennsylvania State University, USA; ²Carnegie-Mellon University, USA

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Sergio C. Freire, Daniele Ehrlich, Stefano Ferri

Institute for the Protection and Security of the Citizen, European Commission, Joint Research Centre

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Ulrich Meissen

Fraunhofer FOKUS, Germany

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Robert John Soden¹, Nama Budhathoki², Leysia Palen¹

¹University of Colorado Boulder, USA; ²Kathmandu Living Labs, Nepal

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Dick M. Ooms

Netherlands Defence Academy, The Netherlands

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Zahra Ashktorab¹, Christopher Brown², Manojit Nandi³, Aron Culotta⁴

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Leon Rothkrantz, Krispijn Scholte

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Fiona Jennet McNeill¹, Andriana Gkaniatsou²

¹Heriot-Watt University, United Kingdom; ²University of Edinburgh, United Kingdom

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Jens Pottebaum, Robin Marterer, Steffen Schneider

University of Paderborn, Germany

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Jaziar Radianti¹, Julie Dugdale^{1,2}, Jose J. Gonzalez¹, Ole-Christoffer Granmo¹

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Murali Raman, Magiswary Dorasamy, Saravanan Muthaiyah, Maniam Kaliannan

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Heng Li, Tao Chen

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Development of a Dynamic Scenario Model for the Interaction of Critical Infrastructures

Murray Turoff¹, Victor Bañuls², Linda Plotnick³, Roxanne Hiltz¹

¹New Jersey Institute of Technology, USA; ²Universidad Pablo de Olavide, Sevilla, Spain; ³Jacksonville State University, USA

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Leire Labaka¹, Josune Hernantes¹, Tina Comes², Jose Mari Sarriegi¹

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Towards an Economic Assessment Approach for Early Warning Systems: Improving Cost-Avoidance Calculations with Regard to Private Households

Simone Wurster¹, Ulrich Meissen²

¹Technische Universität Berlin, Germany; ²Fraunhofer-Institut für Offene Kommunikationssysteme FOKUS, Berlin, Germany

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Magiswary Dorasamy¹, Murali Raman¹, Maniam Kaliannan²

¹Multimedia University, Malaysia; ²Nottingham University, Malaysia

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José Orlando Gomes, Paulo Victor Rodrigues Carvalho

Federal University of Rio de Janeiro, Brazil

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Steven R. Haynes¹, Mark J. Jermusyk², Thomas E. Winkler³, Frank E. Ritter¹

¹The Pennsylvania State University, USA; ²Centre LifeLink EMS; ³Pennsylvania Emergency Health Services Council

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Yuanyuan LI, Wenguo WENG, Tao Chen, Hongyong Yuan

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José H. Canós-Cerdá¹, Juan Sánchez-Díaz¹, Vicent Orts¹, M. Carmen Penadés¹, Abel Gómez¹, Marcos Borges²

¹Universitat Politècnica de València, Spain; ²Universidade Federal do Rio de Janeiro, Brazil

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Local-specific resource planning for mass casualty incidents

Johannes Sautter¹, Janina Hofer¹, Sven Wirth¹, Wolf Engelbach¹, Matthias Max², Tanel Tenso³, Holger Bracker⁴

¹Fraunhofer IAO, Germany; ²German Red Cross; ³Tallinn University of Technology; ⁴Airbus Defence & Space

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Identifying Elements at Risk from OpenStreetMap: The Case of Flooding

Svend-Jonas Schelhorn¹, Joao Porto de Albuquerque¹, Alexander Zipf¹, Richard Leiner², Benjamin Herfort¹

¹Ruprecht-Karls-University, Heidelberg, Germany; ²Leiner & Wolff GmbH, Heidelberg, Germany

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EU Emergency Preparedness: Foresight and Strategic Planning between the Global Ambition and Citizens Participation

Marian Zulean¹, Gabriela Prelipcean²

¹University of Bucharest, Romania; ²University Stefan cel Mare Suceava

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Matthias Max², Sigmund Kluckner¹, Susann Jentsch²

¹Austrian Institute of Technology, Austria; ²German Red Cross

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Designing for the User: Tailoring a Simulation Software Interface to the Needs of Crisis Managers

Sigmund Kluckner¹, Katrin Ellice Heintze², Willi Wendt²

¹Austrian Institute of Technology, Austria; ²University of Stuttgart IAT, Germany

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Murray Turoff

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James Fielding Smith, Teo A. Babun Jr.

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Edward Glantz

The Pennsylvania State University, USA

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Nicklaus Giacobe, Pamela Soule

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Anja van der Hulst, Rudy Boonekamp, Marc van den Homberg

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Soraia Pacheco de Almeida Silva Felicio, Viviane Silva, Andre Dargains, Paulo Souza, Felipe Sampaio, Paulo Victor Rodrigues de Carvalho, José Orlando Gomes, Marcos Roberto da Silva Borges

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Reference Task-based Design of Crisis Management Games

Daniel Link², Kenny Meesters¹, Bernd Hellingrath², Bartel Van de Walle¹

¹Tilburg University, The Netherlands; ²University of Münster, Germany

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A Scenario-Based Virtual Environment for Supporting Emergency Training

Telmo Zarraonandia¹, Victor Bañuls², Ignacio Aedo¹, Murray Turoff³, Díaz Paloma¹

¹Universidad Carlos III de Madrid, Spain; ²Universidad Pablo de Olavide, Spain; ³New Jersey Institute of Technology, USA

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Use of Social Media by U.S. Public Sector Emergency Managers: Barriers and Wish Lists

Starr Roxanne Hiltz², Jane A. Kushma¹, Linda Plotnick¹

¹Jacksonville State University, USA; ²New Jersey Institute of Technology, USA

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Online Message Amplification in the Boston Bombing Response

Jeannette Sutton¹, Emma Spiro², Sean Fitzhugh³, Britta Johnson¹, Ben Gibson³, Carter T. Butts³

¹University of Colorado Colorado Springs, USA; ²University of Washington, USA; ³University of California, Irvine, USA

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Integration of Volunteer and Technical Communities into the Humanitarian Aid Sector: Barriers to Collaboration

Annemijn van Gorp

The Hague University of Applied Sciences, The Netherlands

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Supporting Disaster Reconnaissance with Social Media Data: A Design-Oriented Case Study of the 2013 Colorado Floods

Shideh Dashti¹, Leysia Palen¹, Mehdi Heris¹, Kenneth Mark Anderson¹, Scott Anderson², T. Jennings Anderson¹

¹University of Colorado Boulder, USA; ²Department of Transportation, USA

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Mapping Moods: Geo-Mapped Sentiment Analysis During Hurricane Sandy

Cornelia Caragea², Squicciarini Anna¹, Stehle Sam¹, Kishore Neppalli², Andrea Tapia¹

¹The Pennsylvania State University, USA; ²University of North Texas, USA

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Keri K. Stephens, Jessica Ford, Ashley Barrett, Michael J. Mahometa

The University of Texas at Austin, USA

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Tweeting 'When Online is Off'? Opportunistically Creating Mobile Ad-hoc Networks in Response to Disrupted Infrastructure

Amro Al-Akkad¹, Christian Raffelsberger², Alexander Boden¹, Leonardo Ramirez³, Andreas Zimmermann¹

¹Fraunhofer FIT, St. Augustin, Germany; ²University of Klagenfurt, Austria; ³Fraunhofer Society - Headquarters, Berlin, Germany

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An Approach to Selecting Keywords to Track on Twitter during a Disaster

Kenneth Andrew Joseph, Peter M. Landwehr, Kathleen M. Carley
Carnegie Mellon University, USA

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Aibek Musaev, De Wang, Calton Pu
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Sherri L. Condon, Jason R. Robinson
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Hiroko Wilensky
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Adam Dawid Flizikowski, Anna Stachowicz
ITTI Ltd., Poland

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Coordinating Human and Machine Intelligence to Classify Microblog Communications in Crises

Muhammad Imran¹, Carlos Castillo¹, Ji Lucas¹, Patrick Meier¹, Jakob Rogstadius²
¹Qatar Computing Research Institute; ²University of Madeira

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Detecting Public Sentiment Over PM2.5 Pollution Hazards through analysis of Chinese Microblog

YongZhong Sha¹, JinSong Yan^{1,2}, Guoray Cai³
¹Lanzhou University, China; ²Anhui University, China; ³The Pennsylvania State University, USA

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Participatory Design for the Social Media Needs of Emergency Public Information Officers

Amanda Lee Hughes
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Lise Ann St. Denis, Leysia Palen, Ken Anderson
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Does the spatiotemporal distribution of tweets match the spatiotemporal distribution of flood phenomena? A study about the River Elbe Flood in June 2013

Benjamin Herfort¹, Svend-Jonas Schelhorn¹, João Porto de Albuquerque², Alexander Zipf¹

¹University of Heidelberg, Germany; ²University of Sao Paulo, Brazil

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Sentiment Analysis of German Social Media Data for Natural Disasters

Gayane Shalunts, Gerhard Backfried, Katja Prinz

Sail Labs Technology AG, Austria

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Hayley Watson, Rachel Finn

Trilateral Research and Consulting, United Kingdom

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Fusing Non-Authoritative Data to Improve Situational Awareness in Emergencies

Chris Oxendine¹, Emily Schnebele², Guido Cervone³, Nigel Waters²

¹United States Military Academy; ²George Mason University; ³The Pennsylvania State University

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Jesse Blum, Genovefa Kefalidou, Robert Houghton, Martin Flintham, Unna Arunachalam, Murray Goulden

University of Nottingham

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Patrick C. Shih, Kyungsik Han, John M. Carroll

The Pennsylvania State University, USA

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Dharma Dailey, Kate Starbird

University of Washington, USA

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Yefeng Ma, Hui Zhang, Yi Liu

Tsinghua University, China

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Hemant Purohit, Shreyansh Bhatt, Andrew Hampton, Valerie Shalin, Amit Sheth, John Flach

Wright State University, USA

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Vitaveska Lanfranchi, Suvodeep Mazumdar, Fabio Ciravegna

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Oleg Aulov, Adam Price, Milton Halem

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Jorge Vargas^{1,2,3}, Lionel Dupont^{2,3}, Matthieu Lauras^{2,3}, Aurélie Charles⁴

¹Pontificia Universidad Católica del Perú, Peru; ²Université de Toulouse; ³Ecole de Mines d'Albi; ⁴Université Lumière Lyon 2

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¹Virginia Tech, United States of America; ²Alexandria University; ³Arab Academy of Science and Technology

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Nicolas LaLone

The Pennsylvania State University, USA

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Juliana Baptista dos Santos França, Danilo Pestana Freitas, Flavio Duarte, Roberto Ferreira Júnior, Lucas da Silva Azevedo, Marcos Roberto da Silva Borges, Jose Orlando Gomes, and Paulo Victor Rodrigues Carvalho

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Katja-Alexandra Prinz

Sail Labs Technology AG and Sigmund Freud University, Austria

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Baptism by Fire: The Use of Social Media in the Kenya #Westgate Terror Attack

Tomer Simon^{1,2,3}, Avishay Goldberg¹, Limor Aharonson-Daniel^{1,3}, Bruria Adini^{1,3}

¹Ben-Gurion University of the Negev, Israel; ²Ready.org.il – Emergency readiness and preparedness in Israel;

³PREPARED Center for Emergency Response Research

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The Global Human Settlement Layer (GHSL) – New Tools and Geodatasets for Improving Disaster Risk Assessment and Crisis Management

Martino Pesaresi, Ehrlich Daniele, and Sergio C. Freire

Institute for the Protection and Security of the Citizen, European Commission, Joint Research Centre, Italy

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Daniel Abt

University of Hawaii at Manoa, USA

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Christoph Sebald¹, Georg Neubauer¹, Gerry Foitik², Christian Flachberger³, Georg Lankmayr⁴, Hilda Tellioglu⁵, Denis Havlik¹, and Sigmund Kluckner¹

¹AIT Austrian Institute of Technology GmbH, Austria; ²Austrian Red Cross; ³Frequentis AG; ⁴INSET Research & Advisory; ⁵Vienna University of Technology, Faculty of Informatics

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Humanitarian Decision-Making: Questions to be addressed

Dennis King

U.S. Department of State, USA

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Cross-media, Multimedia, Multilingual Communication in Open Sources During Crises and Disasters

Gerhard Backfried^{1,2}, Katja Prinz¹, Gerald Quirchmayr², Johannes Göllner³, and Gerald Czech⁴

¹Sail Labs Technology AG, Austria; ²University of Vienna, Austria; ³National Defence Academy, Dept. of Central Documentation, Austrian MoD, Vienna, Austria; ⁴Austrian Red Cross

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