



THE INTERNATIONAL EMERGENCY MANAGEMENT SOCIETY - TIEMS

Proceedings of the International Emergency Management Society
(TIEMS)

20th Annual Conference

“Robotics in Emergency and Crisis Management”

Edited by: Snjezana Knezic, Meen Poudyal Chhetri, Jean-Paul Monet

Velaux, France, October 1-4, 2013

**Proceedings of the International Emergency Management Society
(TIEMS)
20th Annual Conference**

***“Robotics in Emergency and Crisis Management,
use of UGVs, from Military and EOD to Civil Protection”***

**October 1-4, 2013
Velaux, France**

Organised by:

TIEMS, The International Emergency Management Society
Address: Rue Des Deux Eglises 39, 1000 Brussels, Belgium.
Executive Office Postal Address: Østvangveien 29, 0588 Oslo, Norway

Bouches-du-Rhone Fire Department, Marseilles, France

French Competitiveness Risk Cluster, Aix en Provence, France

École des Mines, Alès, France

The Conference is organised under high patronage of the French Government

Editors:

Snjezana Knezic

Full professor at University of Split, Split, Croatia

Meen Poudyal Chhetri

President of Nepal Center for Disaster Management, Lalitpur, Nepal

Jean-Paul Monet,

CBRNe Regional Advisor, Bouches-du-Rhone Fire Department, France

Published by:

TIEMS, The International Emergency Management Society

Address: Rue Des Deux Eglises 39, 1000 Brussels, Belgium.

Executive Office Postal Address: Østvangveien 29, 0588 Oslo, Norway.

ISBN: 978-94-90297-09-1

Volume: 20

Year: 2013

Responsibility for the accuracy of all statements in each paper rests solely with the author(s). Statements contained in the papers are not necessarily representative of, nor endorsed by The International Emergency Management Society (TIEMS).

Permission is granted to copy portions of this publication for personal use and for the use of students provided credit is given to the authors, conference and publication. Permission does not extend to other types of reproduction nor to copying for incorporation into commercial advertising nor for any other profit making purpose.

© 2013 TIEMS (The International Emergency Management Society)

Designed by TIEMS

(EAN: 9789490297091)

Preface

The proceedings of the 20th Annual TIEMS Conference are the outcomes of the joint efforts of TIEMS International and Bouches-du-Rhone Fire Department, Marseilles, France. TIEMS always stays strongly on its main mission to bring both scientific findings and practical experience from global to local level emergency management communities. The Proceedings which is published electronically, contains abstracts, full papers and presentations. It is organised through menu-designed user interface. The full papers, presentations and abstracts are organised by topics and were reviewed by TIEMS International Scientific Committee. Most papers submitted for the presentation at the conference have been accepted. There are also keynotes which we found very interesting for the wider disaster and emergency management community. The authors and co-authors of the papers are from various universities and professional organisations related to the disaster risk management. The papers have been found highly useful and interesting to the DRR policy makers, professionals, academia, researchers and all others who are involved in DRR field or likely to be involved in the future.

We are very proud to note that the Conference attracted many researchers, professionals and practitioners from different countries of the world. The papers covered diverse DRR issues and concerns covering not only the main topic of the Conference i.e. robotics in disaster and emergency management.

The Editors of the proceedings would like to thank the members of the TIEMS International Scientific Committee for their assistance in reviewing the abstracts and full papers. Special thanks goes to the organizers, authors and all others who are directly and indirectly involved in making the Conference a success.

The Editors
Velaux, France
October 2013

Foreword from TIEMS President

In a time of increasing number and severity of disasters, global cooperation and coordination are more vital than ever before. By working together and sharing of experiences and exchange of views among the experts of different countries we can learn from each other to develop better methods and systems and advocate for better policies in emergency and disaster management to be standardized and implemented all over the world. TIEMS conferences are such platforms where all stakeholders can meet and exchange experience and views and focus on different globally important subjects in emergency and crisis management. TIEMS annual conference in Velaux, France 1st – 4th October 2013 is focusing on robotics and other important global issues in emergency and crisis management. This should give the attending international experts in emergency and crisis management the opportunity to meet and exchange experiences and hopefully find better solutions which can improve the international preparedness for disastrous events.

TIEMS is a Global Forum for Education, Certification and Policy in Emergency and Disaster Management and is dedicated to developing and bringing the benefits of modern emergency management tools and techniques and best practice to society for a safer world, through exchanging information of the use of innovative methods, technologies and operations to improve society's ability to avoid, mitigate, respond to and recover from natural and technological disasters. TIEMS provides a platform for all stakeholders within the global emergency and disaster management community to meet and network, learn about technologies and operational methods, and exchange experience on best practice, and influence policy makers worldwide to improve global cooperation and establish global standards within emergency and disaster management. TIEMS always cooperate locally when doing international events, and the Velaux local host, Jean-Paul Monet and the team of colonel Jorda, head of SDIS 13, Ecole des Mines and Pole Risques have done impressive preparations of the event together with TIEMS, and recruited sponsors, exhibitors and presentations of high quality, seeing to it that we have a high quality program with key international speakers and exhibitors. The two days pre-tours will also give the participants good insight into French disaster resilience work. Under the high patronage of the French Republic, this event is expected to be visited by around 150 participants from all over the world. The participants will be having a comprehensive program of around 45 important presentations and a live demonstration of newest robots in the field of emergency and crisis management. The above technical program integrated with relaxing social events, showing the French culture on its best, will certainly make the 4 days at TIEMS annual conference 2013 in Velaux a memorable event.

I strongly believe that the papers presented in the conference and incorporated in this proceedings give a broad international view of robotics and other important issues in emergency and crisis management in an international and local perspective. With these proceedings TIEMS likes to stimulate to a continuous on-going global dialogue on robotics and emergency and crisis management. Many thanks go to Meen B. Poudyal Chhetri, Chair of the Paper Review Committee, together with his Co-Chair Snjezana Knezic and their review team for doing an excellent job with reviewing the papers and preparing and being the co-editors of the proceedings together with the local host representatives.

TIEMS is an international non political and not for profit NGO. Hence, it has limited financial resources. TIEMS 2013 in Velaux, France would not have been possible without the support and co-organization of the event by French Fire Services (SDIS 13), École des Mines d'Alès and Pole Risques and the sponsors like: ECA Robotics, Cassidian and DOK – ING. TIEMS whole heartedly expresses its kind gratitude and sincere thanks to all of them.

I highly appreciate and wish to thank the intellectual Editorial Board members for their invaluable and tireless effort and contribution to make this document a worth. Their diverse and pervasive knowledge, rich experiences, and ideas in finalizing this report with high professionalism and technical standards are very much acknowledged.

I welcome all the participants of TIEMS Annual Conference 2013 in Velaux, France I sincerely hope that they will be enriched with added knowledge on DRR and extend their network with the participants and organizations present at the Conference.

Finally, once again, on behalf of myself and the whole TIEMS family I would like to express my sincere thanks and appreciation to the officials of Bouches-du-Rhone Fire Department, Marseilles, France; French Competitiveness Risk Centre and École des Mines d'Alès for their continuous efforts, dynamic and visionary leadership and support in organizing the great event at the beautiful city Velaux, France. We look forward to have their continued support in the days to come.

Thanking you all once again;

Oslo 18th September 2013
K. Harald Drager
TIEMS President

TIEMS International Scientific Committee

Meen Bahadur Poudyal Chhetri, President
Nepal Centre For Disaster Management &
Chairman Of Disaster Preparedness Network – Nepal
Gilles Dusserre, Co-President
École des Mines d'Alès, Institut des Sciences des Risques, France

Frank Kaemper, Nato Staff Officer, Dmw/Cbrn, Germany

Aurélia Bony-Dandrieux, École des Mines, d'Alès, France

Roberto Setola, Università Campus Bio-Medico, Roma, Italy

Nacer M'Sirdi, Aix-Marseilles University, France

Andre Samberg, Sec-Control Group, Finland

Snjezana Knezic, University of Split, Croatia

Organisation & International Program Committee

K. Harald Drager, Secretary, TIEMS President

Jean-Paul Monet, CBRNe Regional Advisor, Departmental Fire and
Emergency Brigade of Bouches-du-Rhone, France

Gilles Dusserre, École des Mines d'Alès, France

Sebastien Giraud, Head of French Competitiveness Risk Cluster, Aix, France

Papers

Keynotes

Eric RODRIGUEZ, Stephane MOZZICONACCI, Laurent VERNEUIL, Jean-Paul MONET

[*Needs and Constraints for Civil protection Robotic Solutions*](#) (full paper)

Audrey HEFFRON CASSERLEIGH, Jarrett BRODER

[*Using Psychosocial Attributes in Terrorist Profiling to Identifying Potential Security Threats*](#) (full paper)

Gilles HELSCHGER

[*A TOTAL Approach to Crisis: About an Industrial Common ICT Tool for Crisis Management*](#) (abstract)

Cybernetics and Crisis Management a New Paradigm?

Charles KELLY

[*Robotics and Humanitarian Interventions: Challenges of Challenging Environments*](#) (full paper)

Effie Makri, Philippe CHROBOCINSKI

[*The Use of UGVs in Earthquake Response Operations*](#) (full paper)

MOZZICONACCI, Stephane, Laurent VERNEUIL, Jean-Marc DENIS, Jean-Paul MONET

[*ECA robotics, projects for future*](#) (full paper)

Needs, Constraints and Capabilities

Filippo ARRICHIELLO, Federica PASCUCCI and Roberto SETOLA

[*Indoor Localization and Connectivity Maintenance in Rescue*](#) (full paper)

Stephane NORMAND, Karim BOUDERGUI, Frédérick CARREL, Romain COULON, Vladimir KONDRASOV, Jean-Michel BOURBOTTE, Romauld WOO, Guillaume SANNIE, Gwénéolé CORRE

[*About Embedded Sensors on Robotic Platforms, Technical Features*](#) (abstract)

Roland LENAIN, Mathieu RICHIER, Jean-Baptiste BRACONNIER, Christophe CARIOU, Benoit THUILOT

[*High Speed and Safe Mobile Robot Control in Unstructured Environments*](#) (full paper)

Ante MILICEVIC

[*Multifunctional Robotic System for CBRNE Application*](#) (abstract)

Lessons Learned and Ongoing Projects

Vincent HONORE, Stephane MOZZICONACCI, Michel-Ange DOMINGO, Jean-Paul MONET

[*Robots Cooperation Managing Radioactive Source Recovery*](#) (abstract)

Mike Berry EDIS

[*iRobot at Fukushima accident*](#) (presentation)

Thomas ERIKSSON, Bo BJÖRKLUND, Dan HALLMAN, Kristina LINDFELDT, Stefan SÄRDQVIST, Erik JOHANSSON

[*FUMO™ - the Fire-fighting Robot*](#) (abstract)

Nacer KOUIDER M'SIRDI

[*Driving Simulator of All-Terrain Vehicles using SCANeR-Studio*](#) (abstract)

Disaster management: Response and resilience

Nina FROLOVA, Jean BONNIN, Valery LARIONOV, and Aleksander UGAROV

[*Uncertainties Of Earthquake Loss Estimation At Global Scale In Emergency Mode*](#) (full paper)

Guosheng QU, Baokun NING, Meiyong CHONG and Wenlong YANG

[*Capacity Building for National-wide Search and Rescue Team and Preparedness of Earthquake Catastrophe*](#) (presentation)

Haiying WANG, Guosheng QU, Gang SUN and Chun OUYANG

[*Phases of Earthquake Emergency Response Period*](#) (abstract)

Norio MAKI

[*How Resilient is Japan? - Response and Recovery Lessons from the 1995 Kobe and 2011 Tohoku Disasters*](#) (abstract)

Mann FANG and Zihan WEI

[*Comparative Study on Beijing Residents' Risk Perception on Incidents of Pandemic Influenza, Subway Terrorist Scenario and Torrential Rain*](#) (abstract)

Ranko BRITVIC and Ana MIKACIC

[*IF REACT – Innovative First Responder Ensembles Against CBRN Terrorism*](#) (presentation)

Meen CHHETRI

[*Significance of Cooperation and Coordination in International Disaster Management System*](#) (full paper)

Takahiro ONO

[*Business Continuity Planning Status of the Private Sector and DRR Capacity of the Public Sector in the Asia Pacific Region*](#) (full paper)

Security and Safety Technologies

Yasutake SAYANAGI

[*RTO and Recovery Location Strategy in the Financial Industry*](#) (full paper)

Jaroslav PEJCOCH

[*The Vulnerability and Resiliency in our Globalized and Virtualized World*](#) (abstract)

Young-Jai LEE

[*Developing a Platform for Disaster Risk Reduction Technology Dealings*](#) (abstract)

Susan MADISON SMITH and Theresa HUNTER

[*Training & Preparedness: Preparing Healthcare Facilities to Effectively Respond to a Disaster*](#) (full paper)

Frank HOEN

[*Child Alerts: Mobilizing the Masses with Zero Marketing Budget - AMBER Alert Europe: a Crowd-sourcing Case Study*](#) (abstract)

Neil DUFTY

[*Recent Research in Community Disaster Education and its Implications for Emergency Management*](#) (full paper)

Mi-yun PARK, Hee-sub OH, Byeong-bay CHOI and Mi-na KIM

[*The Development of Safety Standard in Law System using the Accident Cause-result Relational Approach Method*](#) (full paper)

Preparedness, ICT and new Crisis Management

Mohamed SEDIRI, Nada MATTA, Sophie LORIETTE and Alain HUGEROT

[*Decision Support Through the Experience Feedback of Crisis Management*](#) (full paper)

Snjezana KNEZIC and Roko ANDRICEVIC

[*Development of a Sustainable Flood Disaster Management Plan for Trans-boundary River Basins*](#) (full paper)

Theresa HUNTER and Susan MADISON SMITH

[*Preventing or Responding to Violent Attacks in Schools: Education, Training and Facility Improvement Strategies*](#) (full paper)

C. di MAURO, S. BOLOGNA, M. BULDRINI, A. LAZARI, C. LEONE, V. ROSATO, L. TIRONE and P. TRUCCO

[*TIEMS Italian Chapter – National Emergency Management Experience and Future Challenges*](#) (abstract)

Dan MANASTIREANU and Stela PETRESCU

[*Medical Management in Disasters*](#) (full paper)

Posters

Samantha UENO

[*UAV's for Hazard Monitoring and Disaster Recovery Earth Observation Data*](#) (abstract)

Kenji WATANABE

[*Conceptual Design of Supply Chain Management Coding Scheme for Foods and Beverages in large-area Disasters based on PPP \(Public-Private Partnership\)*](#) (abstract)

Gilles FOURNIER

[*AIRBEAM: AIRborne Information for Emergency Situation Awareness and Monitoring "UGV Sispeo project, a French R&D consortium*](#) (abstract)

Sponsored & Supported by:



Région



Provence-Alpes-Côte d'Azur