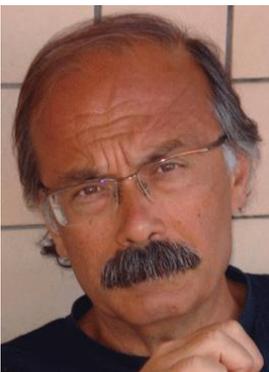


Evolving threats and vulnerability landscape: new challenges for the emergency management

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Nowadays, communities rely on services provided by technological infrastructures. These are modern “lifeline systems” physically tying together urban areas, communities, and neighborhoods, and facilitating the growth of local, regional, and national economies. These (inter)dependent systems work together to provide essential services to modern societies which are thus strictly dependent on the capability of exploiting the capacities provided by such technological resources and assets. The use of infrastructures contributes furthermore to reshape and improve relationships between communities, government, private sectors, non-profit communities and citizens. For that reason, citizens are more and more directly involved in supporting public services and infrastructure systems (e.g. transportation, energy, education, health and care, etc.) for example through so-called open data, living labs and tech hubs. These future developments will further improve the sustainability of our societies. On the other side, crises due to natural (or anthropic) related events might seriously endanger these infrastructures and weaken the fruitful feedbacks they supply. Disaster are thus dramatic events which, other than producing casualties, break the connections between citizens and between citizen and the community, thus producing relevant social damages.

The TIEMS Conference, organized by the TIEMS Chapter Italy and hosted by the Istituto Superiore Antincendio

(i.e. Italian Firefight Academia) has been aimed at investigating what are the new challenges in the field of risk and disaster management (also in relation to infrastructure integrity and service continuity) to face old and new type of threats by bring together leading researchers, practitioners and industries from all areas of emergency management to take advantage of the presented methodologies and practical applications. In particular the Conference aimed at evaluating gaps and the constraints that need to be overcome to improve the response capacities of first responders and the resilience of communities exposed to several type of hazards and threats. The Conference covered all aspects related to Emergency Management, Risk Analysis and Preparedness activities, either for predicting Critical Scenario or for managing hot phases. Presentation included aspects like:

- risk reduction and mitigation techniques,
- cyber-physical threats and vulnerability analysis,
- model-based and experimental assessment of safety, reliability and security;
- human and social aspects in emergency managements,
- management of complex emergency scenarios and epidemic spreading.

With more than 250 registered participants and 67 oral presentations, the organizer’s expectations were overcome. The

broad variety of topics is also reflected in the topics covered by keynote speeches and the related thematic sessions:

- Dr. Meen P. Chhetri (NCDM, Nepal) - “Nepal earthquake aftermaths”;
- Ing. M Dolce (General Director of Italian Department of Civil Protection, Italy), “The Italian Dept. of Civil Protection (DPC) and its role in the Emergency Management”;
- Dr. Kim, Jae-Kwon (Korean Society of Disaster & Security), “Sewol Ferry Disaster and Emergency Response Management in Korea”;
- prof. John Hamilton (Kestrel Group, New Zealand), “Emergency Management after the Christchurch earthquake” (video interview by dr. Sonia Giovinazzi, University of Canterbury in Christchurch, NZ);
- Prof. Dirk Helbing (ETH Zurich, Switzerland), “How to Increase Systemic Resilience in an Information Rich World”;
- Dr. Nicola Perra (University of London-Greenwich Business School), “Modelling and Forecast of epidemic events”
- Dr. Daniel Stevens, (Director of Emergency Management at City of Vancouver - Canada) “Emergency Management and Resilience in the metropolitan area of Vancouver”;
- Dr. David Bamaung, (Scottish Government, Scotland, UK), “Critical Infrastructure Resilience and Public Private Collaboration”;
- Ji Zhang, (Harmony Technologies Ltd, CHINA), “Ten years development in China Emergency Management 2006-2015”.

Besides many invited and contributed talks, the conference participants especially enjoyed a vivid roundtable discussion titled “Lesson Learnt from the Nepal Earthquake event: what still are the main challenges to improve the disaster management and the role of emerging technologies” with the main contribution of

- Prof. Dr. Meen B. Poudyal Chhetri - President, Nepal Centre for Disaster Management

- Dr. Guosheng Qu, Dep. General Team Leader of CISAR, China
- Dr. Kailash Gupta - Honorary Managing Trustee, TIEMS India Chapter
- Jaroslav Pejcoch, T-SOFT (Crisis management, Interoperability, Security), Czech Republic
- Prof. Carl W. Taylor, Fraser Institute for Health and Risks Analytics, Princeton
- Ing. Mauro Dolce, Italian Civil Protection, Italy

Due to the proximity of the Conference to the tremendous disaster hitting Nepal on April 25, 2015, the Conference has focused the first day around that event, by hosting a number of relations documenting the event (which produced over 8.000 casualties and more than 21.000 injured) and its aftermaths. An extensive report has been provided by prof. Meen Chhetri, President of the Nepal Center for Disaster Management through a clear exposition of the facts and the management actions of several international groups called to collaborate. A similar focus has been also provided on another recent disaster occurred in New Zealand in 2009 (Christchurch earthquake) provided by the keynote of prof. John Hamilton, former Director of New Zealand Civil Protection that, through a video interview recorded by dr. Sonia Giovinazzi of the University of Canterbury (NZ) has recalled the major problems arising in the Christchurch earthquake and the following lesson learnt incorporated into the NZ Disaster Management protocols.

The Conference also hosted a special workshop co-organized by Dennis Andersson (FOI), Josine van de Ven (TNO), Maciej Szulejewski (ITTI) on “Pan EU lesson sharing crisis management: DRIVER Project” which aimed to identify what types of methods and tools can support the lesson sharing process European Member states and how such lessons can be transferred to other organisations.

Large emphasis and interest has been triggered by prof. Helbing’s keynote on the revolutionary project of providing the planet of a “nervous system” made by open and shared data collected by mobile devices

which could contribute to build a digital democracy, also providing invaluable support to Emergency Management.

The main outcome of the Conference was that many approaches in the disaster risk management area are still mainly sector-specific. The concept of resilience is becoming a key reference in disaster risk management, acknowledging that arising awareness of experts and as well as laypeople that all social assets can be protected. The conference discussions also identified the strengthening of infrastructures as an important field for disaster risk reduction. Although the respective research is valuable in order to learn more about the system characteristics and potential disaster risk reduction measures, it remains often vague how society is or could be affected by their failure. In order to reduce societal effects, a broader perspective needs to be carefully evaluated since the CIs impact on the functioning of many societies are not yet fully understood. This aspect will increase its importance in the future when communities will become more “Smart” i.e. they will heavily rely on ICT technologies and other advance infrastructure services. If from one side the future development will link networks supporting and positively feeding off each other, from the other one such inter-dependency may be prone to failures that can be propagate through a number of systems and that may results in a more severe impact for the communities. In other terms, future communities will count on more efficient services but at the same time may become more vulnerable due to complexity of interconnection of sophisticated infrastructure and services. This implies the need to develop new approaches and strategies to cope with hazards and disasters.

The all TIEMS Chapter Italy would like to thank again all participants and speakers that contributed to make this event a success.