

# **2<sup>ND</sup> IFIP CONFERENCE ON INFORMATION TECHNOLOGY IN DISASTER RISK REDUCTION ITDRR 2017**

**UNIVERSITY OF NATIONAL AND WORLD ECONOMY  
SOFIA, BULGARIA  
OCTOBER 25 - 27<sup>TH</sup>, 2017**

[HTTP://ITDRR.UNWE.BG/](http://ITDRR.UNWE.BG/)

## **AGENDA**

IFIP, the International Federation for Information Processing, is the global professional federation of societies and associations for people working in Information and Communications Technologies and Sciences. Established under the auspices of UNESCO in 1960 and recognized by the United Nations, IFIP represents ICT professional associations from more than 50 countries and regions with a total membership of over half a million. It also brings together more than 3,500 scientists from industry and academia, organizing them into over 100 Working Groups and 13 Technical Committees to conduct research, develop standards and promote information sharing. Based in Austria, IFIP organizes and supports over 100 conferences each year, fostering the distribution of research and knowledge to academics and industry practitioners alike.

Website: <http://ifip.org>



The conference post proceedings will be published in IFIP AICT by Springer

# ITDRR-2017 AIM

The effects of disasters are very serious and the destruction caused may take a very long time to recover. Related damage is severe and it may cause relief expenses of billions of euros. With the increase of natural disasters that have occurred in the past years, it is expected their frequency will continue to increase in the coming years.

Due to disaster risk reductions multidisciplinary nature, people from various backgrounds, such as industry, diverse geographical and global settings, not-for-profit organization backgrounds, agriculture, marine life, welfare, risk management, safety engineering and social networking services will be included.

At present, at global and national levels, a wide range of multiple scientific and scientific-applied research activity in the area of disaster risk reduction concerning individual types of disasters is conducted. Modern information and communication technologies can facilitate significantly the decision-making processes from the point of view of disaster risk reduction.

ITDRR-2017 provides an international forum for researchers and practitioners to present their latest R&D findings and innovations. The conference is especially focused on the various IT aspects and challenges of coping with disaster risk reduction. ITDDR-2017 invites experts, researchers, academicians and all other who are interested to disseminate their work. The conference establishes an academic environment that fosters the dialogue and exchange of ideas between different levels of academic, research, business and public communities.

*Prof. Dr. Dimiter Velev  
Director of the Science Research Center for Disaster Risk Reduction  
University of National and World Economy  
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Sofia 1700, Bulgaria, Europe*

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## CALL FOR PAPERS

ITDRR-2017 will provide an open forum for the dissemination of the current research progress, innovative approaches and original research results on application of Information Technology for Disaster Risk Reduction. The conference will focus on, but will be not limited to the following topics:

- Advanced ICT and disasters
- Big Data and disasters
- Climate change and disaster risk
- Climate information management
- Climate information processing
- Cloud Computing in emergency management
- Communications in disasters
- Crowdsourcing and emergency management
- Disaster information processing
- Disaster prevention and mitigation
- Disaster relief, resilience and research
- Disaster risk management capability assessment
- Emergency preparedness
- Hazard, vulnerability and risk mapping
- ICT challenges in emergency management
- Integrated risk governance
- IoT and natural disasters
- Mobile computing and emergency management
- Disaster monitoring
- Disaster response management
- Disaster information management in response, recovery, preparedness, and mitigation
- Disaster risk assessment
- Disaster risk management
- Disaster risk reduction
- Disasters and security
- Hazard and vulnerability analysis
- Security and privacy issues in disaster management
- Simulation and gaming for disaster management
- Social media and disasters
- Socio-economic impacts of disasters
- State of the art of command and control room

## CONFERENCE COMMITTEES

### General Chairperson:

<b>Yuko Murayama</b> , Prof. Dr.	IFIP Vice President	<b>Japan</b>
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### Program Committee Co-Chairs:

<b>Dimiter Velez</b> , Prof. Dr.	University of National and World Economy (IFIP TC5)	<b>Bulgaria</b>
<b>Tilo Mentler</b> , Prof. Dr.	University of Luebeck	<b>Germany</b>

### Finance Chair:

<b>Eduard Dundler</b>	IFIP Secretary	<b>Austria</b>
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### Publicity Chair:

<b>Jun Sasaki</b> , Prof. Dr.	Iwate Prefectural University	<b>Japan</b>
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<b>Erich Neuhold</b> , Prof. Dr.	IFIP TC5 : Information Technology Application Chair	<b>Austria</b>
<b>Jose J. Gonzalez</b> , Prof. Dr.	University of Agder	<b>Norway</b>
<b>A Min Tjoa</b> , Prof. Dr.	IFIP Honoray Secretary	<b>Austria</b>
<b>Plamena Zlateva</b> , Assoc. Prof. Dr.	IR – Bulgarian Academy of Sciences	<b>Bulgaria</b>

### Local Arrangement Chair:

<b>Plamena Zlateva</b> , Assoc. Prof. Dr.	ISER – Bulgarian Academy of Sciences	<b>Bulgaria</b>
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### Program Committee:

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<b>Mariki Eloff</b> , Prof. Dr.	University of South Africa	<b>South Africa</b>
<b>Mariyana Nikolova</b> , Prof. Dr.	NIGGG - BAS	<b>Bulgaria</b>
<b>Michinori Hatayama</b> , Prof. Dr.	Disaster Prevention Research Institute, Kyoto University	<b>Japan</b>
<b>Mihoko Sakurai</b> , Dr.	University of Agder	<b>Norway</b>
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<b>Orhan Altan</b> , Prof. Dr.	Istanbul Technical University	<b>Turkey</b>
<b>Panagiotis Aposporis</b> , Col.	Crisis Management and Disaster Response Centre of Excellence	<b>Greece</b>
<b>Patrick Letouze</b> , Prof. Dr.	Universidade Federal do Tocantins	<b>Brazil</b>
<b>Rajan Raj Pant</b> , Dr.	Chairman of Information Technology Security Emergency Response Team	<b>Nepal</b>
<b>Saji Baby</b> , Dr.	GEO International Environmental Consultation Co.	<b>Kuwait</b>
<b>Sergei Kavun</b> , Prof. Dr.	University of Banking of the National Bank of Ukraine	<b>Ukraine</b>
<b>Sergei Ohrimenco</b> , Prof. Dr.	Laboratory of Information Security, AESM	<b>Moldova</b>
<b>Shi Yizhe</b> , Dr.	Shenyang University of Chemical Technology	<b>China</b>
<b>Shunsuke Fujieda</b> , Prof. Dr.	University of Tokyo	<b>Japan</b>
<b>Starr Roxanne Hiltz</b> , Prof. Dr.	New Jersey Institute of Technology	<b>USA</b>
<b>Stewart James Kowalski</b> , Prof. Dr.	Norwegian University of Science and Technology	<b>Norway</b>
<b>Tadeusz Czachorski</b> , Prof. Dr.	Institute of Theoretical and Applied Informatics – PAS	<b>Poland</b>
<b>Tao Bo</b> , Dr.	Earthquake Administration of Beijing Municipality	<b>China</b>
<b>Tetsuo Noda</b> , Prof. Dr.	Shimane University	<b>Japan</b>
<b>Tatsuya Yamazaki</b> , Prof. Dr.	Niigata University	<b>Japan</b>
<b>Tullio Tanzi</b> , Prof. Dr.	Institut Mines-Telecom - Telecom ParisTech	<b>France</b>
<b>Vassil Roussinov</b> , Col.	Crisis Management and Disaster Response Centre of Excellence	<b>Bulgaria</b>
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<b>Wolfgang Reinhardt</b> , Prof. Dr.-Ing.	Universität der Bundeswehr	<b>Germany</b>
<b>Youwei Sun</b> , Prof. Dr.	Earthquake Administration of Beijing Municipality	<b>China</b>
<b>Yoshitaka Shibata</b> , Prof. Dr., Vice President	Iwate Prefectural University	<b>Japan</b>
<b>Yutaka Kikuchi</b> , Prof. Dr.	Kochi University of Technology	<b>Japan</b>
<b>Zong Xuejun</b> , Prof. Dr.	Shenyang University of Chemical Technology	<b>China</b>

# ITDRR-2017 AGENDA

Big Conference Hall

University of National and World Economy

October 24<sup>th</sup>, 2017

**17:00 – 18:00** – Registration

**18:30** – Welcome Reception

October 25<sup>th</sup>, 2017

**09:30 – 10:00 – Registration**

**10:00 – 12:30 – ITDRR-2017 Official Opening**

- **OPENING REMARKS BY PROF. DR. DIMITER VELEV, ITDRR-2017 CO-CHAIR**
- **GREETING ADDRESS**  
Prof. D.Sc. (Econ.) **Statty Stattev**  
*Rector of the University of National and World Economy (UNWE)*
- **GREETING ADDRESS**  
*General commissioner* **Nikolai Nikolov**  
*Director of DG Fire Safety and Civil Protection, Ministry of Interior, Bulgaria*
- **IFIP DOMAIN COMMITTEE ON INFORMATION TECHNOLOGY IN DISASTER RISK REDUCTION**  
Prof. Dr. **Yuko Murayama**  
*Vice President of the International Federation for Information Processing (IFIP)*  
*Chair of the IFIP Domain Committee on Information Technology in Disaster Risk Reduction, Tsuda University, Tokyo, Japan*
- **UNWE'S SCIENCE RESEARCH CENTER FOR DISASTER RISK REDUCTION (CDRR)**  
Prof. Dr. **Dimitar Velev**  
*Director of CDRR, University of National and World Economy, Sofia, Bulgaria*
- **INFORMATION TECHNOLOGY APPLICATIONS IN EDUCATION AND RESEARCH ON NUCLEAR SECURITY AND DISASTER MANAGEMENT**  
Assoc. Prof. Dr. **Georgi Penchev**  
*Department of National and Regional Security*  
*University of National and World Economy, Sofia, Bulgaria*
- **Keynote speech: FUTURE PERSPECTIVE OF ICT POLICY AND STRATEGY FOR DISASTER RISK REDUCTION WITH SMART DISASTER SAFETY SYSTEM**  
Prof. Dr. **JunSeok Hwang**  
*Seoul National University, Republic of Korea*  
*Professor, Technology Management, Economics and Policy Program (TEMPEP)*  
*Director, International IT Policy Program (ITPP)*
- **SOVEREIGN ORDER OF MALTA - DISASTER RELIEF & PREVENTION WORLDWIDE**  
**Bogdan Patashev**  
*Minister-Counsellor and Deputy Head of Mission*  
*Embassy of the Sovereign Order of Malta to Bulgaria*

• **Discussion**

**12:30 – 14:00 – Lunch**

## 14:00 – 15:40 – First Session

**Session Chair:** Prof. Dr. Yuko Murayama

*Tsuda University, Tokyo, Japan*

- **NATIONAL STRATEGY FOR DISASTER RISK REDUCTION**

*Senior commissioner **Alexandar Dzhartov***

*Director of Department "Critical Infrastructure, Prevention and Control"*

*DG Fire Safety and Civil Protection, Ministry of Interior, Bulgaria*

- **CONCEPT OF A REGIONAL INFORMATION-ANALYTICAL SYSTEM FOR EMERGENCY SITUATIONS**

**Igor Grebennik**, Oleksandr Khriapkin, Valentina Pisklakova, Inna Urniaieva

*Kharkiv National University of Radio Electronics, Ukraine*

- **PUBLIC EXPECTATIONS OF SOCIAL MEDIA USE BY CRITICAL INFRASTRUCTURE OPERATORS DURING CRISES: LESSONS LEARNED FROM FRANCE**

**Laura Petersen**<sup>1</sup>, Laure Fallou<sup>1</sup>, Paul Reilly<sup>2</sup> and Elisa Serafinelli<sup>2</sup>

<sup>1</sup>*Euro-Mediterranean Seismological Centre (EMSC), Arpajon, France*

<sup>2</sup>*University of Sheffield, UK*

- **CLIMATE CHANGE RISK FOR HIGH MOUNTAIN LAKES IN BULGARIA: A CASE STUDY FROM THE SEVEN RILA LAKES TOURIST AREA**

**Mariyana Nikolova**<sup>1</sup>, Valentin. Nikolov<sup>2</sup>

<sup>1</sup>*National Institute of Geophysics, Geodesy and Geography,  
Bulgarian Academy of Sciences, Sofia, Bulgaria*

<sup>2</sup>*Geological Institute, Bulgarian Academy of Sciences, Sofia, Bulgaria*

- **Discussion**

## 15:40 – 16:00 – Coffee Break



## 16:00 – 18:00 – Second Session

**Session Chair:** Prof. Dr. **Mariyana Nikolova**

*National Institute of Geophysics, Geodesy and Geography,  
Bulgarian Academy of Sciences, Sofia, Bulgaria*

- **RESEARCH ON DISASTER COMMUNICATIONS**

**Yuko Murayama**<sup>1</sup>, Kayoko Yamamoto<sup>2</sup>

<sup>1</sup>*Tsuda University, Tokyo, Japan*

<sup>2</sup>*University of Electro Communications, Tokyo, Japan*

- **FORMAL METHODS FOR SAFE DESIGN AND VERIFICATION OF RAILWAY SIGNALING SYSTEMS**

**Lilia Belabed**<sup>1,2</sup>, Tullio Joseph Tanzi<sup>1</sup> and Sophie Coudert<sup>1</sup>

<sup>1</sup>*Institut Mines-Telecom, Telecom ParisTech, Paris, France*

<sup>2</sup>*ENGIE-INEO UTS, Montreuil, France*

- **UNIVERSAL DESIGN OF INFORMATION SHARING TOOLS FOR DISASTER RISK REDUCTION**

Jaziar Radianti<sup>1</sup>, **Terje Gjørseter**<sup>2</sup> and Weiqin Chen<sup>2</sup>

<sup>1</sup>*University of Agder, Norway*

<sup>2</sup>*Oslo and Akershus University College for Applied Sciences, Norway*

- **DATA PROCESSING FOR ASSESSMENT OF METEOROLOGICAL AND HYDROLOGICAL DROUGHT**

**Nina Nikolova**, Kalina Radeva

*Faculty of Geology and Geography, University of Sofia, Bulgaria*

- **Discussion**

## 18:30 Conference Banquet

October 26<sup>th</sup>, 2017

**09:30 – 10:00 – Morning Coffee**

**10:00 – 12:30 – First Session**

**Session Chair:** Assoc. Prof. Dr. **Sophie Coudert**

*Institut Mines-Telecom, Telecom ParisTech, Paris, France*

- **HOW ICT CHANGES THE LANDSCAPE OF DISASTER RISK MANAGEMENT**

**Wei-sen Li**

*National Science and Technology Center for Disaster Reduction (NCDR)*

*Taipei, Taiwan*

- **INITIAL USE BIG DATA AND OPEN DATA ON DISASTER FOR DISASTER MANAGEMENT**

**Wei-sen Li**

*National Science and Technology Center for Disaster Reduction (NCDR)*

*Taipei, Taiwan*

- **ENHANCING REGIONAL DISASTER RESILIENT TRADE AND INVESTMENT - BUSINESS CONTINUITY MANAGEMENT (BCM)**

**Wei-sen Li, Sophia Y.L. Lee**

*National Science and Technology Center for Disaster Reduction (NCDR)*

*Taipei, Taiwan*

- **ADAPTATION OF THE RULES OF THE MODELS OF GAMES WITH NATURE FOR THE DESIGN OF SAFETY SYSTEMS**

**Adrian Gill** and Piotr Smoczyński

*Poznan University of Technology, Poland*

- **ESTIMATING THE PROBABILITY OF EARTHQUAKE MAGNITUDE BETWEEN MW=4 AND MW=5 FOR TURKEY**

Türkay Dereli, Cihan Çetinkaya and **Nazmiye Çelik**

*Gaziantep University, Turkey*

- **Discussion**

**12:30 – 14:00 – Lunch**

## 14:00 – 15:40 – Second Session

**Session Chair:** Prof. Dr. Igor Grebennik

*Kharkiv National University of Radio Electronics, Ukraine*

- **GEOINFORMATION APPROACH IN SOIL EROSION SUSCEPTIBILITY ASSESSMENT – A TOOL FOR DECISION MAKING**

**Valentina Nikolova**<sup>1</sup>, Emil Dimitrov<sup>2</sup>, Plamena Zlateva<sup>3</sup>

<sup>1</sup> *Faculty of Geoexploration, University of Mining and Geology, Sofia, Bulgaria*

<sup>2</sup> *Institute of Soil Science, Agrotechnology and Plant Protection, Agricultural Academy, Sofia, Bulgaria*

<sup>3</sup> *Institute of Robotics, Bulgarian Academy of Sciences, Sofia, Bulgaria*

- **GIS APPLICATION FOR ECONOMIC ASSESSMENT OF DISASTERS' LOSSES**

Dimitar Dimitrov, **Georgi Penchev**

*University of National and World Economy, Sofia, Bulgaria*

- **EVACUATION PLANNING FOR DISASTER MANAGEMENT BY USING THE RELAXTION BASED ALGORITHM AND ROUTE CHOICE MODEL**

Dedy Hartama<sup>1</sup>, Sumarno<sup>1</sup>, Indra Gunawan<sup>1</sup>, Heru Satria Tambunan<sup>1</sup>, Anjar Wanto<sup>1</sup>, Suhada<sup>1</sup>, M Safii<sup>1</sup> Eka Irawan<sup>1</sup>, Agus Perdana<sup>1</sup>, Saifullah<sup>1</sup>, Irphan Sudahri Damanik<sup>1</sup>, **Benny Benyamin Nasution**<sup>2</sup>

<sup>1</sup> *STIKOM dan AMIK Tunas Bangsa Pematangsiantar, Indonesia*

<sup>2</sup> *Politeknik Negeri Medan, Medan, Indonesia*

- **WEATHER DATA HANDLINGS FOR TORNADO RECOGNITION USING MHGN**

**Benny Benyamin Nasution**, Rahmat Widia Sembiring, Muhammad Syahrudin, Nursiah Mustari, Abdul Rahman Dalimunthe, Nisfan Bahri, Bertha br Ginting, Zulkifli Lubis

*Politeknik Negeri Medan, Medan, Indonesia*

- **IMPLEMENTATION OF DATA MINING CLUSTER REGION TO OPTIMIZE THE RELOCATION OF REFUGEES IN ERUPTION MOUNT SINABUNG**

**Benny Benyamin Nasution**, Rahmat Widia Sembiring

*Politeknik Negeri Medan, Medan, Indonesia*

- **Discussion**

## 15:40 – 16:00 – Coffee Break

## 16:00 – 18:00 – Third Session

**Session Chair:** Prof. Dr. **Dimiter Velev**

*Director of CDRR*

*University of National and World Economy, Sofia, Bulgaria*

- **SUPPORTING DECISION MAKING IN DISASTERS: THE DIMAS TOOL**

Eran Lederman<sup>1</sup>, **Luisa Chimenz**<sup>2</sup>

<sup>1</sup> *Bezalel Academy of Arts and Design, Jerusalem, Israel,*

<sup>2</sup> *Department Architecture and Design, University of Genoa, Italy*

- **GIS BASED ICT APPLICATION FOR DISASTER RISK REDUCTION THROUGH COMMUNITY PARTICIPATION IN EMERGENCY RESPONSE (CASE STUDY : BANGLADESH)**

Waji Ullah, Motaleb Hossain

*Center for Environmental and Geographic Information Services (CEGIS), Bangladesh*

- **BIG DATA AGGREGATION IN DISASTERS RISK MANAGEMENT SYSTEMS**

Oleksiy Kovalenko<sup>1</sup>, **Dimiter Velev**<sup>2</sup>

<sup>1</sup> *Institute Mathematical Machines and Systems NASU, Kiev, Ukraine*

<sup>2</sup> *University of National and World Economy, Sofia, Bulgaria*

- **Discussion and Closing Conference Remarks**

## 18:30 – Dinner

**October 27<sup>th</sup>, 2017**

- **SOCIAL PROGRAM**

## 18:30 – Goodbye Dinner