

ONLINE 5TH IFIP CONFERENCE ON INFORMATION TECHNOLOGY IN DISASTER RISK REDUCTION ITDRR 2020

SOFIA, BULGARIA
DECEMBER 3 - 4TH, 2020

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

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.

The **online** 5th IFIP Conference on Information Technology in Disaster Risk Reduction (ITDRR-2020) 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. ITDRR-2020 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.



All accepted papers will be published in [IFIP AICT](#) series by **Springer** as post-conference proceedings and they will be indexed by **Scopus**.

TOPICS

ITDRR-2020 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
- Artificial Intelligence for disasters
- Big Data and disasters
- Climate change and disaster risk
- Climate information management
- Climate information processing
- Cloud Computing in emergency management
- Communications in disasters
- COVID-19
- 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.

<i>Paper Submission Deadline</i>	October 4th, 2020
<i>Notification of acceptance</i>	November 1st, 2020
<i>Registration – Early Bird</i>	To November 20th, 2020
<i>Registration – Normal</i>	After November 20th, 2020
<i>ITDRR-2020</i>	December 3 - 4th, 2020
<i>Camera-Ready version</i>	January 15th, 2021

CONFERENCE COMMITTEES

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Eduard Dundler	IFIP Secretary	Austria
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Science Research Center for Disaster Risk Reduction
University of National and World Economy, Sofia, Bulgaria



ITDRR-2020 Opening

Opening remarks by **Prof. Dr. Dimiter Velev, UNWE**

Greetings to the ITDRR-2020 participants by **Prof. Dr. Yuko Murayama, Tsuda University, Tokyo, Japan, Chair of IFIP WG 5.15, Honorable Chair of ITDRR-2020**

Greetings to the ITDRR-2020 participants by **Prof. Dr. Dimitar Dimitrov, Rector of the University of National and World Economy (UNWE), Sofia, Bulgaria, Honorable Chair of ITDRR-2020**

2020.12.03 – 09:30 (CET) – 11:30 (CET)

Session #1

Session Chair Prof Dr. Sc. Igor Grebennik

S1.1

WEB PORTAL TO SUPPORT REMOTE ISLAND FOR SIGHTSEEING AND DISASTER MANAGEMENT

Kayoko Yamamoto¹ and Yuko Murayama²

¹ *The University of Electro-Communications, Chofugaoka, Chofu, Tokyo, Japan*

² *Tsuda University, Tsuda-Machi, Kodaira, Tokyo, Japan*

S1.2

DEVELOPMENT OF REAL-TIME EVACUATION SUPPORT SYSTEM (RESS) TO REDUCE HUMAN DAMAGE IN NATURAL DISASTERS

Makoto Kitsuya, Ryota Tsukahara and Jun Sasaki

Iwate Prefectural University, Takizawa, Iwate, Japan

S1.3

VISUALIZATION OF TWEETS AND RELATED IMAGES POSTED DURING DISASTERS

Sanetoshi Yamada¹, Keisuke Utsu² and Osamu Uchida³

¹ *Tokai University, Hiratsuka, Kanagawa, Japan*

² *Tokai University, Minato, Tokyo, Japan*

³ *Tokai University, Hiratsuka, Kanagawa, Japan*

S1.4

PRELIMINARY EVALUATION OF INFORMATION SHARING IN COACHES★

Chihiro Takada¹, Yurika Takeuchi¹, Mari Kinoshita² and Mikifumi Shikida¹

¹ *Kochi University of Technology, Kochi, Japan*

² *University of Kochi, Kochi, Japan*

S1.5

APPLICATION OF DISASTER MANAGEMENT INFORMATION FOR THE COVID-19 PANDEMIC

Wei-Sen Li, Ming-Wey Huang, Wen-ray Su, YanlingLee, Yi-Ching Liu, Ke-Hui Chen, Chi-Ling Chang

National Science and Technology Center for Disaster Reduction, Taipei, Taiwan

S1.6

APPLYING INFORMATION TECHNOLOGY FOR CROSS BORDER DISASTER RISK REDUCTION THROUGH PUBLIC PRIVATE PARTNERSHIP AMIDST COVID-19

Yanling Lee

APEC Emergency Preparedness Capacity Building Center, Taiwan

National Science and Technology Center for Disaster Reduction, Taipei, Taiwan

2020.12.03 – 12:00 (CET) – 14:30 (CET)

Session #2

Session Chair – Prof. Dr. Jun Sasaki

S2.1

TOWARDS SINGLE VALUE COORDINATE SYSTEM (SVCS) FOR EARTHQUAKE FORECASTING USING SINGLE LAYER HIERARCHICAL GRAPH NEURON (SLHGN)

Benny Benyamin Nasution, Rahmat Widia Sembiring, Indra Siregar, Ermyna Seri and Rina Walmiaty Mardi

Politeknik Negeri Medan, Kampus USU, Medan, Indonesia

S2.2

THE MUDDY PRACTICE OF SOCIAL MEDIA CROWDSOURCING IN BANDUNG CITY

Muhammad Akram Mansyur^{1,2}, V.M.F. Homburg² and J.F.M. Koppenjan²

¹ *University of Gunadarma, Depok 16424, Indonesia*

² *Erasmus University Rotterdam, 3062 PA, Rotterdam, The Netherlands*

S2.3

BUMIKITA MOBILE APPLICATION: THE STARTING POINT OF A CHILDREN-CENTRED - MULTI HAZARD EARLY WARNING SYSTEM IN INDONESIA

Mujiburrahman Thontowi

Charles Darwin University, Darwin, Northern Territory, Australia

S2.4

GENERAL KNOWLEDGE REPRESENTATION AND SHARING FOR DISASTER MANAGEMENT

Philippe A. Martin¹ and Tullio J. Tanzi²

¹ *EA2525 LIM, University of La Réunion, F-97490 Sainte Clotilde, France*

² *LTCl, Télécom Paris, Institut Polytechnique de Paris, Paris, France*

S2.5

INFORMATION TECHNOLOGY BASED ON QUALITATIVE METHODS IN CYBER-PHYSICAL SYSTEMS OF SITUATIONAL DISASTER RISK MANAGEMENT

Igor Grebennik¹, Oleh Hutsa², Roksana Petrova¹, Dmytro Yelchaninov³ and Anna Morozova¹

¹ *Kharkov National University of Radio Electronics, Kharkiv, Ukraine*

² *Education and research institute Karazin business school, Kharkiv, Ukraine*

³ *National Technical University "Kharkov Polytechnic Institute", Kharkiv, Ukraine*

S2.6

CREATING A LIST OF WORKS ON RECONSTRUCTION OF INFRASTRUCTURE ELEMENTS IN NATURAL DISASTERS BASED ON INFORMATION TECHNOLOGIES

Igor Grebennik, Valerii Semenets, Yevhen Hubarenko, Maryna Hubarenko and Maksym Spasybin

Kharkiv National University of Radio Electronics, Kharkiv, Ukraine

S2.7

THE IANOS CYCLONE (SEPTEMBER 2020, GREECE) FROM PERSPECTIVE OF UTILIZING SOCIAL NETWORKS FOR DM

Stathis G. Arapostathis

Harokopio University, Kallithea – Athens, Greece

2020.12.04 – 09:00 (CET) – 11:30 (CET)

Session #3

Session Chair – Assoc. prof. Dr. Terje Gjøsæter

S3.1

CYBER-SECURITY IN DIGITAL METERING VALUE CHAIN FOR MOUNTAIN LANDSLIDE WARNING

Mari Aarland¹, Jaziar Radianti² and Terje Gjøsæter²

¹ *NC-Spectrum, Kviteseid, Norway*

² *CIEM, University of Agder, Kristiansand, Norway*

S3.2

DISASTER RISK REDUCTION FOR ALL? UNDERSTANDING INTERSECTIONALITY IN DISASTER SITUATIONS

Cristina Paupini¹ and Terje Gjøsæter²

¹ *Oslo Metropolitan University, Oslo, Norway*

² *CIEM, University of Agder, Kristiansand, Norway*

S3.3

OPPORTUNITIES AND CHALLENGES OF ICT IN EMERGENCY PROCESSES

Bettina Pospisil and Walter Seböck

Danube University Krems, Krems, Austria

S3.4

INTEGRATION IN AND BETWEEN EARTH OBSERVATION RESEARCH CENTERS FOR ACHIEVING SUSTAINABLE DEVELOPMENT

Todor Branzov, Krassimira Ivanova and Velichka Milousheva

Institute of Mathematics and Informatics, Bulgarian Academy of Sciences, Sofia, Bulgaria

S3.5

TOWARDS SAFETY AND SECURITY-RELATED TESTING OF CRISIS MANAGEMENT SOLUTIONS

Todor Tagarev¹, Petya Ivanova², Laurent Dubost³ and Cyril Dangerville³

¹ *Institute of Information and Communication TechnologiesT, Bulgarian Academy of Sciences, Sofia, Bulgaria*

² *Procon Ltd., Sofia, Bulgaria*

³ *Thales Communications & Security S.A., Vélizy, France*

S3.6

MATHEMATICAL MODEL OF MANAGEMENT OF THE INTEGRAL FIRE RISK

Svitlana Bordyuzhenko, Oleksandr Sobol, Yuriy Uvarov, Oleh Stelmah, Oleksandr Danilin and Serhiy Shevchenko

National University of Civil Defence of Ukraine, Kharkiv, Ukraine

S3.7

MATHEMATICAL AND COMPUTER MODELING OF ACTIVE MOVEMENT OF PEOPLE DURING EVACUATION FROM BUILDINGS

Valentyna Komyak¹, Aleksandr Pankratov², Vladimer Komyak¹ and Kyazim Kyazimov³

¹ *National University of Civil Defence of Ukraine, Kharkiv, Ukraine*

² *A.M. Pidgorny Institute for Mechanical Engineering Problems NAS of Ukraine, Kharkiv, Ukraine*

³ *Academy of the Ministry of Emergency Situations of the Republic of Azerbaijan, Baku, Azerbaijan*

2020.12.04 – 12:00 (CET) – 14:30 (CET)

Session #4

Session Chair – Prof. Dr. Dimiter Velev

S4.1

CYBER RESILIENCE STRATEGIC PLANNING AND SELF-ASSESSMENT TOOL FOR OPERATIONALIZATION IN SMEs

Juan Francisco Carías¹, Saioa Arrizabalaga^{1,2} and Josune Hernantes¹

¹ *University of Navarra, TECNUN, School of Engineering, San Sebastian, Spain*

² *CEIT-BRTA, San Sebastian, Spain*

S4.2

MONITORING THE HEALTH SYSTEM SATURATION RISK DURING COVID-19 PANDEMICS

Sofia García, Leire Labaka, Josune Hernantes, Marcos R. S. Borges

TECNUN – University of Navarra, Donostia, Guipúzcoa, Spain

S4.3

EMERGENCY RESPONSE SUPPORTED BY DRONES AND EXPERTS PERCEPTIONS

Henrique Romano Correia¹, Ivison da Costa Rubim¹, Angélica Fonseca da Silva Dias¹, Juliana Baptista dos Santos França^{1,2}, Marcos Roberto da Silva Borges^{1,3}

¹ *Federal University of Rio de Janeiro, Rio de Janeiro, Brazil*

² *Federal Rural University of Rio de Janeiro (UFRRJ), Seropédica, Brazil*

³ *TECNUN, University of Navarra, Donostia/San Sebastián, Spain*

S4.4

FUZZY LOGIC APPROACH FOR COMPLEX DROUGHT ASSESSMENT

Nina Nikolova¹, Plamena Zlateva², Leonid Todorov¹

¹ *Faculty of Geology and Geography, Sofia University "St. Kliment Ohridski", Bulgaria*

² *Institute of Robotics –BAS and University of National and World Economy, Sofia, Bulgaria*

S4.5

ANALYSIS OF SCENARIO-BASED TRAINING WITH VR FOR DISASTER RISK REDUCTION

Plamena Zlateva¹, Liudmila Steshina², Vladimir Velev³, Igor Petukhov², Dimiter Velev⁴

¹ *Institute of Robotics –BAS and University of National and World Economy, Sofia, Bulgaria*

² *Volga State University of Technology, Yoshkar-Ola, the Republic of Mari El, Russia*

³ *Independent ITC consultant, Sofia, Bulgaria*

⁴ *University of National and World Economy, Sofia, Bulgaria*

2020.12.04 – 15:00 (CET) – 16:00 (CET)

Session #5

Discussion and Wrap-up

Dear ITDRR-2020 participants,

The conference will be conducted through **Microsoft Teams**, <https://www.microsoft.com/en-us/microsoft-365/microsoft-teams/group-chat-software>, the official video-conferencing system of the University of National and World Economy, which hosts online the ITDRR-2020 conference.

You can join the conference through the link you should have received in your e-mail.

Or you can use directly the link:

<https://teams.microsoft.com/l/team/19%3a9bbb8181763445bd9a7734d6c3112dec%40thread.tacv2/conversations?groupId=d2bf148b-de54-4e47-8406-b39c61aa71e9&tenantId=ebc7c086-c350-4453-911a-3b740f8d6dad>

Recommended browsers: Microsoft Edge, Google Chrome

The sessions time is given in **CET** (Central European Time, <https://www.timeanddate.com/time/zones/cet>)

Suggested duration of a presentation: 15-20 minutes.