



## Special Session Urban Sustainability

### **Description:**

Urban areas generate a slew of environmental issues as a result of the consumption of natural resources and the resulting accumulation of waste and pollution, all of which contribute to the growth of social and economic inequity. This special session aims to provide the participants with an insight on the current methodologies that address the area of sustainable urban development and the processes that increase urban resilience to natural and environmental hazards. This session will:

- Discuss a concrete review on the information and communication technologies used to apply risk management aiming the urban sustainability
- Show innovative circular economy schemes to enable urban resilience
- Provide an ontology-based systematic way to perform semantic modeling on urban sustainable Living Labs.
- Illustrate modern methodologies to create MCDM Decision Support Systems to optimize urban resilience.
- Identify the relevant competences to mitigate climate change and promote sustainability illustrating systematic bibliographic research to reflect on a variety of methods, tools and materials related to urban sustainability.

### **Session Moderator:**

- Dr. Konstantinos Kokkinos, Senior Lecture and Researcher, Energy Systems Dept., University of Thessaly, Greece.
- Prof. Dr.-Ing. Nicholas Samaras, Digital Systems Dept., University of Thessaly, Greece.

### **Topics and Presenters:**

The first mentioned person will be the presenter

#### **INVESTL<sup>2</sup> ontology: Semantic Modeling of Sustainable Living Labs**

- Omiros Iatrellis, Dept. of Digital Systems, University of Thessaly, Larissa, Greece
- Areti Bania, Dept. of Digital Systems, University of Thessaly, Larissa, Greece
- Rik Eweg, Van Hall University of Applied Sciences, The Netherlands
- Liisa Timonen, Head of Internationalisation, Karelia University of Applied Sciences, Joensuu, Finland
- Ekaterina Arabska, University of Agribusiness and Rural Development, Faculty of Economics and Management, Plovdiv, Bulgaria

#### **Evaluation of the current state and trends for the sustainable development of the agri-food sector of the South-Central Region of Bulgaria**

- Nazan Arifoglu Sen Dept. Food Sciences, Canakkale Onsekiz Mart University, Turkey
- Mariana Ivanova, University of Agribusiness and Rural Development in Plovdiv, Bulgaria
- Svetla Dimitrova, University of Agribusiness and Rural Development in Plovdiv, Bulgaria

#### **Information Communication Technologies and Disaster Risk Management: Systematic Literature Review**

- Areti Bania, Dept. of Digital Systems, University of Thessaly, Larissa, Greece
- Omiros Iatrellis, Dept. of Digital Systems, University of Thessaly, Larissa, Greece
- Nicholas Samaras, Dept. of Digital Systems, University of Thessaly, Larissa, Greece

## **Innovative Bio-based Circular Economy Schemes: The case of biomass and food waste utilization as an enabler of regional resilience**

- Maria Batsioulas, Institute for Bio-Economy and Agri-Technology, Center for Research and Technology–Hellas (CERTH), 6th km Charilaou-Thermi Rd., GR 57001, Thessaloniki, Greece
- Apostolos Malamakis, Institute for Bio-Economy and Agri-Technology, Center for Research and Technology–Hellas (CERTH), 6th km Charilaou-Thermi Rd., GR 57001, Thessaloniki, Greece
- Sotiris I. Patsios, Chemical Process and Energy Resources Institute, Centre for Research and Technology–Hellas (CERTH), 6th km Charilaou-Thermi Rd., GR 57001, Thessaloniki, Greece
- Dimitrios Geroliolios, Institute for Bio-Economy and Agri-Technology, Center for Research and Technology–Hellas (CERTH), 6th km Charilaou-Thermi Rd., GR 57001, Thessaloniki, Greece
- Stamatia Skoutida, Institute for Bio-Economy and Agri-Technology, Center for Research and Technology–Hellas (CERTH), 6th km Charilaou-Thermi Rd., GR 57001, Thessaloniki, Greece
- Lefteris Melas, Institute for Bio-Economy and Agri-Technology, Center for Research and Technology–Hellas (CERTH), 6th km Charilaou-Thermi Rd., GR 57001, Thessaloniki, Greece
- Georgios F. Baniyas, Institute for Bio-Economy and Agri-Technology, Center for Research and Technology–Hellas (CERTH), 6th km Charilaou-Thermi Rd., GR 57001, Thessaloniki, Greece

## **Relevant Research and Development Competences – Case INVEST4EXCELLENCE**

- Liisa Timonen, Karelia University of Applied Sciences, Tikkariinne 9, Joensuu, Finland
- Tiina Muhonen, Karelia University of Applied Sciences, Tikkariinne 9, Joensuu, Finland
- Helena Puhakka-Tarvainen, Karelia University of Applied Sciences, Tikkariinne 9, Joensuu, Finland

## **Optimizing Urban Resilience via FCM and Participatory Modeling: the case of Joensuu Finland**

- Konstantinos Kokkinos, Energy Systems Dept., University of Thessaly, Greece.
- Omiros Iatrellis, Dept. of Digital Systems, University of Thessaly, Larissa, Greece
- Liisa Timonen, Karelia University of Applied Sciences, Tikkariinne 9, Joensuu, Finland
- Nicholas Samaras, Dept. of Digital Systems, University of Thessaly, Larissa, Greece

## **Moderators.....**

### **Dr. Konstantinos Kokkinos**



Dr. Kokkinos holds a B.Sc. in Physics, from Univ. of Thessaloniki, Greece, a M.Sc. & PhD in Computer Science from UoM, WMU, U.S.A. (1995 and 2002 respectively). He is an IEEE member, an OpenMI-Assoc. member, and currently a senior lecturer in Energy Systems Dept. at Univ. of Thessaly, Greece, and a member of Center of Research and Technology Greece, (CERTH). His major research interests include Decision Support Systems, Fuzzy Logic and Soft Computing, Integrated Modelling and Simulation, Artificial Intelligence, and Environmental Software. Dr. Kokkinos has participated in 8 NSF, FP7 and Horizon 2020 funded projects and has published over 45 papers.

### **Dr. Nicholas S. Samaras**



Nicholas S. Samaras (IEEE SM) is a Professor at the Department of Digital Systems, at the University of Thessaly, in Larissa, Greece. Dr. Samaras received his Ph.D. degree from the University of Pittsburgh, in Pittsburgh, PA, USA, in electrical engineering. His current research interests include IoT Systems and Applications, Networked Control Systems and Industrial Automation. He has served in several organizing, Steering and/or Program Committees, for several international conferences and he is Associate Editor



and paper reviewer for various International Journals. He was a corecipient of the IEEE Industry Applications Society Prize Paper Award in 1998.

### ***INVESTL<sup>2</sup> ontology: Semantic Modeling of Sustainable Living Labs***



#### **Dr. Omiros G. Iatrellis**

Omiros G. Iatrellis is a Lecturer at the Department of Digital Systems, at the University of Thessaly, in Larissa, Greece. Dr. Iatrellis received his Ph.D. degree from the Hellenic Open University, in Greece, in Computer Science. His current research interests include Learning Analytics, Software engineering, Semantic Web Technologies and Educational Data Mining. He publishes regularly in peer reviewed international journals and he has served in several organizing and/or program committees for several international conferences. Also, he participated in various research projects of University of Thessaly.



#### **Areti Bania**

Areti Bania is a PhD candidate at the Department of Digital Systems of the University of Thessaly, in Larissa, Greece. She graduated from Aristotle University's Computer Science Department, and she holds a Master's degree in Information & Telecommunication Systems and a Master's degree in Agile Management. Her research interests focus on Disaster Risk Management, Web Semantics, Big Data, IoT, Decision Support Systems.



#### **Dr. Ekaterina Arabska**

Main research and educational work focused on approaches and instruments for sustainable development and digital transformation. Experience in national and international projects in the field of education and training, incl. curricula development in accordance to labor market requirements, university and other quality management systems, improvement of qualification and career development of university staff, as well as ecological food production and management.



#### **Dr. Liisa Timonen**

Dr. Timonen is responsible for the internationalisation, partnership development and global education at Karelia. She also contributes extensively into the international research, development and innovation processes and leadership. Her background is in education, social sciences and macro-economics.



**Dr. Rik Eweg**

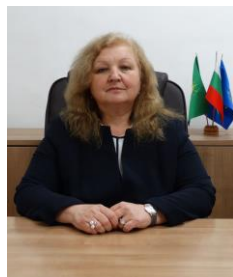
Rik Eweg is professor in Regional Transitions to Circular Farming since January 2021. Before that he was eight years professor of Sustainable Agribusiness in Metropolitan Areas, both at VHL-UAS. In his research projects in the Netherlands, India, Africa and various European countries, he aims on integrating expert's and tacit knowledge to develop transitions of farming systems and (regional) governance towards regenerative agriculture. In his Living labs, applied research and education are integrated. Previously, he worked as project director in the Dutch innovation program TransForum, in municipal government and as post-doc at Wageningen-UR. Rik holds a PhD in agricultural sciences/physical planning.

***Evaluation of the current state and trends for the sustainable development of the agri-food sector of the South-Central Region of Bulgaria***



**Dr. Nazan Arifoglu Sen**

Lecturer in food sciences at the Canakkale Onsekiz Mart University, Turkey spending sabbatical period at UARD, Plovdiv in 2021 - 2022. Teaching in food and nutrition management sciences for more than 15 years. Previously worked as quality control manager in feed and cereal products processing facilities. Involved in strategic partnership projects and projects on development and evaluation of food wastes, traditional food products and characterization of product bioactive compounds.



**Dr. Mariana Ivanova**

Rector of the University of Agribusiness and Rural Development in Plovdiv, Bulgaria since 2019. In the period of 2008 - 2019 Vice Rector of Academic Affairs and International Cooperation. Her research interests are in the field of plant protection, entomology, agroecology, organic farming, environmental management. Author of more than 100 scientific publications, more than 30 of which are abroad from participation in international forums in Germany, Greece, Italy, Slovakia, Romania, Turkey, etc.



**Dr. Svetla Dimitrova**

President of the University of Agribusiness and Rural Development in Plovdiv, Bulgaria since 2020. Vice Rector in the period of 2019 – 2020, and Director of the Department of Agribusiness in period of 2015 – 2019. Her research interests are in the field of land reclamation, soil science and crop production. Author of 60 publications in the field of land reclamation, soil science, crop production, water resources, plant technologies, etc. Co-author of the original “Galatea” rice variety.

### ***Information Communication Technologies and Disaster Risk Management: Systematic Literature Review***



#### **Areti Bania**

Areti Bania is a PhD candidate at the Department of Digital Systems of the University of Thessaly, in Larissa, Greece. She graduated from Aristotle University's Computer Science Department, and she holds a Master's degree in Information & Telecommunication Systems and a Master's degree in Agile Management. Her research interests focus on Disaster Risk Management, Web Semantics, Big Data, IoT, Decision Support Systems.



#### **Dr. Omiros G. Iatrellis**

Omiros G. Iatrellis is a Lecturer at the Department of Digital Systems, at the University of Thessaly, in Larissa, Greece. Dr. Iatrellis received his Ph.D. degree from the Hellenic Open University, in Greece, in Computer Science. His current research interests include Learning Analytics, Software engineering, Semantic Web Technologies and Educational Data Mining. He publishes regularly in peer reviewed international journals and he has served in several organizing and/or program committees for several international conferences. Also, he participated in various research projects of University of Thessaly.



#### **Dr. Nicholas S. Samaras**

Nicholas S. Samaras (IEEE SM) is a Professor at the Department of Digital Systems, at the University of Thessaly, in Larissa, Greece. Dr. Samaras received his Ph.D. degree from the University of Pittsburgh, in Pittsburgh, PA, USA, in electrical engineering. His current research interests include IoT Systems and Applications, Networked Control Systems and Industrial Automation. He has served in several organizing, Steering and/or Program Committees, for several international conferences and he is Associate Editor and paper reviewer for various International Journals. He was a corecipient of the IEEE Industry Applications Society Prize Paper Award in 1998.

### ***Innovative Bio-based Circular Economy Schemes: The case of biomass and food waste utilization as an enabler of regional resilience***



#### **Maria Batsioula**

Maria Batsioula is a research associate at the CERTH/iBO. She graduated from AUTH's Civil Engineering Department, and she also holds a MSc in Environmental Management & Sustainable Development. She is currently a PhD Candidate in the field of the optimal biowaste management and circular bioeconomy. Her research interests focus on Life Cycle Analysis, Waste management, Environmental Impact Assessment, Circular Economy and Sustainability.



#### **Dr Apostolos Malamakis**

Dr. Apostolos Malamakis is a Dr. Mechanical Engineer with main research themes including zero-waste strategies, material flow analysis, environmental sustainability, renewable energy from biowaste and circular economy models and good practices for biological streams. He is a member of the Sectorial Scientific Council on Agrotechnology and Nutrition (TES/ESETEK) of the National Council for Research, Technology and Innovation and member of the JRC Expert Panel on Separate Waste Collection.



#### **Dr Sotiris Patsios**

Sotiris I. Patsios holds a Dipl. Ing. in Chemical Engineering with highest honors, and a PhD in Chemical Engineering from Aristotle University of Thessaloniki (2011). He is working as a postdoc Research Associate at CERRT and its main research activities comprise: hybrid biotechnological/membrane separation (MBR) processes, valorisation of agro-industrial waste and by-product streams, advanced wastewater treatment & water reuse, and building sustainable circular economy value chains.



#### **Dimitris Geroliolios**

Dimitris Geroliolios graduated from the Faculty of Engineering, Aristotle University of Thessaloniki with a diploma in Mechanical Engineering. He has been involved in a number of technical and research projects, regarding energy systems, waste and environmental management. His research interests focus on Circular Economy, Energy Systems and Sustainability. He is a member of the Technical Chamber of Greece and an Energy Inspector.



#### **Stamatia Skoutida**

Stamatia Skoutida graduated from the Faculty of Engineering of Aristotle University of Thessaloniki and holds a Diploma in Chemical Engineering. Her diploma thesis focused on the pharmaceutical technology domain and was conducted in partnership with the department of Pharmacy of Aristotle University of Thessaloniki. Currently, she participates in research projects. Her research interests include waste management, circular economy and sustainability.



#### **Lefteris Melas**

Lefteris Melas holds a Diploma in Chemical Engineering (AUTH) and a master's degree in Sustainable Energy, study line: Hydrogen and Fuel Cells from the DTU. He is a Research Associate in the iBO/CERRT. He has participated in H2020 and Nationally funded research projects, gaining expertise on the application of Life Cycle Assessment in Agri-Food Supply Chains and alternatives for increasing sustainability in food production.



### **Dr Georgios F. Baniyas**

Dr. Georgios F. Baniyas is a Senior Researcher (Grade B) in Centre for Research and Technology Hellas - CERTH/iBO. He graduated from Aristotle University's Mechanical Engineering Department and in 2009, he was granted with a PhD in Mechanical Engineering in the field of the optimal Construction and Demolition Waste Management. His research interests focus on the area of Circular Economy and Sustainability, Environmental Impact Assessment, Life Cycle Analysis, Environmental Informatics and Decision Support Systems, Environmental Management Systems, Waste Management and Bio-economy. He is the author of more than 70 scientific publications, and he has participated in 24 funded research projects.

## ***Relevant Research and Development Competences – Case INVEST4EXCELLENCE***



### **Dr. Liisa Timonen, PhD (Education), Ms.Sc (social sciences)**

Dr. Liisa Timonen is the Head of International Affairs at Karelia University of Applied Sciences, Joensuu, Finland. Dr. Timonen is responsible for the internationalisation, partnership development and global education at Karelia. She also contributes extensively into the international research, development and innovation processes and leadership. Her background is in education, social sciences and macro-economics.



### **Tiina Muhonen (M.A.)**

Mrs Tiina Muhonen works a Project Specialist with the Karelia University of Applied Sciences, Joensuu, Finland and currently participates in Horizon 2020 program INVEST4EXCELLENCE. Her education includes linguistics, pedagogy, special education and psychology.



### **Helena Puhakka-Tarvainen (M.Sc.(Biol.))**

Ms. Puhakka-Tarvainen is an experienced project manager of EU funded projects. She is currently works as a senior Project Manager at Karelia University of Applied Sciences, Joensuu, Finland. Her background is in bioeconomy, sustainable development and entrepreneurship, but recently she has been developing also the process and practices of Open Science and Research at universities of applied sciences

## ***Optimizing Urban Resilience via FCM and Participatory Modeling: the case of Joensuu Finland***



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