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IFIP was founded in 1960 under the auspices of UNESCO, following the first World Computer Congress held in Paris the previous year. A federation for societies working in information processing, IFIP's aim is two-fold: to support information processing in the countries of its members and to encourage technology transfer to developing nations. As its mission statement clearly states:

IFIP is the global non-profit federation of societies of ICT professionals that aims at achieving a worldwide professional and socially responsible development and application of information and communication technologies.

IFIP is a non-profit-making organization, run almost solely by 2500 volunteers. It operates through a number of technical committees and working groups, which organize events and publications. IFIP's events range from large international open conferences to working conferences and local seminars.

The flagship event is the IFIP World Computer Congress, at which both invited and contributed papers are presented. Contributed papers are rigorously refereed and the rejection rate is high.

As with the Congress, participation in the open conferences is open to all and papers may be invited or submitted. Again, submitted papers are stringently refereed.

The working conferences are structured differently. They are usually run by a working group and attendance is generally smaller and occasionally by invitation only. Their purpose is to create an atmosphere conducive to innovation and development. Refereeing is also rigorous and papers are subjected to extensive group discussion.

Publications arising from IFIP events vary. The papers presented at the IFIP World Computer Congress and at open conferences are published as conference proceedings, while the results of the working conferences are often published as collections of selected and edited papers.

IFIP distinguishes three types of institutional membership: Country Representative Members, Members at Large, and Associate Members. The type of organization that can apply for membership is a wide variety and includes national or international societies of individual computer scientists/ICT professionals, associations or federations of such societies, government institutions/government related organizations, national or international research institutes or consortia, universities, academies of sciences, companies, national or international associations or federations of companies.

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Jiří Hřebíček · Ralf Denzer
Gerald Schimak · Tomáš Pitner (Eds.)

Environmental Software Systems

Computer Science
for Environmental Protection

12th IFIP WG 5.11 International Symposium, ISESS 2017
Zadar, Croatia, May 10–12, 2017
Proceedings

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Jiří Hřebíček (1947–2017)

In Memory of Jiří Hřebíček

by Tomáš Pitner

Our dear colleague and friend, IFIP 5.11 member, co-author, and co-editor of ISESS proceedings, Prof. Dr. Jiří Hřebíček, PhD, passed away in autumn 2017. The following words and the 2017 proceedings of ISESS are dedicated to this exceptional colleague.

Jiří Hřebíček was a senior researcher and director at the Institute of Biostatistics and Analyses of Masaryk University. He was a professor at the Faculty of Science and Faculty of Informatics. He held an MSc in mathematics and informatics (1970) and a PhD in applied and numerical mathematics (1982). Since 1990, he had been working in the research of environmental informatics and modelling, computational science, and waste management.

In the mid-1990s, he became involved in the building of the newly established Faculty of Informatics under the leadership of Dean Zlatuška. He started to educate a new generation of experts in environmental informatics here. He established the Summer School of applied informatics, lasting two decades, which became an excellent working platform for joint meetings with colleagues from Masaryk and Mendel universities, Brno University of Technology, Ostrava University of Technology, and in recent years also numerous foreign guests.

His later career was tightly connected with the Institute of Biostatistics and Analyses and the Center for Research on Toxic Substances in the Environment, where he focused on eEnvironment services. He participated in numerous international projects, such as the FP6 Network of Excellence DEMO-net, eParticipation project FEED and FP7 projects ICT-ENSURE and TaToo. He had been the national representative of the Czech Republic at EIONET since 1996. The highlight of his career was the recurring appointment to the Scientific Advisory Board of the European Environmental Agency in Copenhagen in 2013.

Prof. Hřebíček authored more than 350 scientific publications. He wrote 17 books and one of them was translated into Portuguese, Chinese, and Russian.

He was an active member of the International Federation of Information Processing (IFIP) and secretary of WG 5.11 “Computer for Environment” of IFIP, member of the International Environmental Modelling and Software Society (iEMSS) and iEMSS board, the International Envirometrics Society (TIES), member of the Association and Mathematics of America, chairman of international conferences EnviroInfo 2005, ISESS 2007, 2011, vice-chairman of ISESS 2013, and held the Czech Presidency for the European conference Towards eEnvironment in 2009.

We miss him dearly.

Preface

The International Symposium on Environmental Software Systems (ISESS) is one of several overlapping forums discussing issues of environmental information and decision support systems.

ISESS was founded by Ralf Denzer and Gerald Schimak in 1995, with support from the German Informatics Society Working Group 4.6 “Computer Science for Environmental Protection,” the International Federation for Information Processing (IFIP) Working Group 5.11 “Computers and Environment,” and our friend David Russell at the Pennsylvania State University (PSU) campus in Malvern, PA. The first symposium received great support from PSU and turned out to be one of many success stories.

Since then, the symposium has been held in the following countries: the USA, Canada, Austria, New Zealand, Switzerland, Portugal, the Czech Republic, Italy, and Australia; over several years, joint sessions were held in conjunction with the biennial meeting of iEMSS (International Environmental Modelling and Software Society). ISESS has been an IFIP event since 1995 and is organized by WG 5.11.

Since its establishment, WG 5.11 has been led by Giorgio Guariso (1991–1999), Ralf Denzer (1999–2005), Dave Swayne (2005–2011), and Gerald Schimak (2011–2017). Since this conference was initiated, it has been in the hands of Ioannis Athanasiadis. Several individuals have served as vice-chairs and secretaries and many members of the WG have been active supporters for a long time without holding an official position.

For more than two decades, ISESS has brought together researchers dealing with environmental information challenges trying to provide solutions using forward-looking and leading-edge IT technology.

The 30-year anniversary of the EnviroInfo conference series (also called “Computer Science for Environmental Protection” at the beginning) was in 2017. To mark this occasion, we chose the subtitle “Computer Science for Environmental Protection.”

During the past 20 years we have seen the publisher of IFIP change several times and electronic publishing has become the most important medium for scientific publications. ISESS has followed this transition and therefore there is *no single place* where all ISESS proceedings can be accessed.

The first and second proceedings (ISESS 1995, ISESS 1997) were published by IFIP publisher Chapman & Hall:

- R. Denzer, D. Russell, G. Schimak (eds.), Environmental Software Systems, Chapman & Hall, 1996, ISBN 0 412 73730 2 (print)
- R. Denzer, D. A. Swayne, G. Schimak (eds.), Environmental Software Systems Vol. 2, Chapman & Hall, 1998, ISBN 0 412 81740 3 (print)

Then IFIP changed publisher and the third proceedings (ISESS 1999) were published by IFIP publisher Kluwer Academic Press:

- R. Denzer, D. A. Swayne, M. Purvis, G. Schimak (eds.), *Environmental Software Systems Vol. 3 — Environmental Information and Environmental Decision Support*, Kluwer Academic Publishers, 2000, ISBN 0 7923 7832 6 (print)

As print publications were becoming increasingly difficult (particularly their cost for smaller conferences), the fourth and fifth proceedings (ISESS 2001, ISESS 2003) were published by the organizers of the symposium under IFIP ISBN:

- D. A. Swayne, R. Denzer, G. Schimak (eds.), *Environmental Software Systems Vol. 4 — Environmental Information and Indicators*, International Federation for Information Processing, 2001, ISBN 3 901882 14 6 (print)
- G. Schimak, D. A. Swayne, N.T. Quinn, R. Denzer (eds.), *Environmental Software Systems Vol. 5 — Environmental Knowledge and Information Systems*, International Federation for Information Processing, 2003, ISBN 3 901882 16 2 (print)

The sixth and seventh proceedings (ISESS 2005, ISESS 2007) were published, but this time as electronic versions, under IFIP ISBN:

- D. A. Swayne, T. Jakeman (eds.), *Environmental Software Systems, Vol. 6 — Environmental Risk Assessment Systems*, International Federation for Information Processing, 2005, ISBN 3-901882-21-9 (CDROM)
- D. A. Swayne, J. Hřebíček (eds.), *Environmental Software Systems, Vol. 7 — Dimensions of Environmental Informatics*, International Federation for Information Processing, 2007, ISBN 978-3-901882-22-7 (USB)

The eighth proceedings (ISESS 2009) were again published electronically, but not under IFIP ISBN:

- D. A. Swayne, R. Soncini-Sessa (eds.), *Environmental Software Systems, Vol. 8*, 2009, University of Guelph, ISBN 978-3-901882-364 (USB)

Today, Springer is the official IFIP publisher and ISESS is published by Springer in the IFIP *Advances in Information and Communication Technology* (AICT) series¹. Proceedings number nine and ten were published as follows:

- J. Hřebíček, G. Schimak, R. Denzer (eds.), *Environmental Software Systems, Vol. 9 — Frameworks of eEnvironment*, IFIP AICT 359, 2011; ISBN 978-3-642-22285-6 (eBook), ISBN 978-3-642-22284-9 (hard cover), ISBN 978-3-642-26878-6 (soft cover)
- J. Hřebíček, G. Schimak, M. Kubásek, A.E. Rizzoli (eds.), *Environmental Software Systems, Vol. 10 — Fostering Information Sharing*, IFIP AICT 413, 2013; ISBN 978-3-642-41151-9 (eBook); ISBN 978-3-642-41150-2 (hard cover)
- Denzer, R., Argent, R.M., Schimak, G., Hřebíček, J. (Eds.), *Environmental Software Systems. Infrastructures, Services and Applications*, IFIP AICT 448, ISBN 978-3-319-15994-2 (eBook), ISBN 978-3-319-15994-2 (hard cover)

¹ <http://www.springer.com/series/6102>.

Today Springer also has the rights of the early Kluwer and Chapman & Hall books (ISESS 1995, ISESS 1997, ISESS 1999), as Kluwer merged with Springer in 2004 and Chapman & Hall had been bought by Kluwer in 1997. Therefore, all proceedings that were published by a publishing house are in one place today and can be accessed through Springer. They are available as hard cover and/or soft cover, as eBooks and (most of them) as individual articles.

The proceedings which were self-published under the copyright of IFIP have been made available since 2015 at www.enviromatics.org by Ralf Denzer. Particular ISESS sessions at IEMSS are available through the IEMSS website². The 2015 proceedings contain an overview article that gives a complete history of what ISESS has contributed to the research community in the past 22 years³.

The ISESS conferences have always had a high standard of peer reviewing. For ISESS 2017, we summarize the reviewing process here:

As in 2015, we used extended abstracts of 3 to 4 pages, a strategy which we had applied in many early conferences but not in recent years. This year we only received 46 abstracts but they were, compared with 2015, of much higher initial quality. Logically, most of these abstracts made it into final papers, and therefore the rejection rate was only around 10%. Each extended abstract was assigned for review by three independent reviewers in the first stage. For stage 2, the review of the full papers, two independent reviewers were assigned to each full paper, and in many cases at least one individual was a different person than the reviewers in the first stage, which means that many papers had a total of at least three reviewers.

January 2018

Ralf Denzer
Gerald Schimak
Tomáš Pitner

² www.iemss.org.

³ See: Ralf Denzer, Topics in Environmental Software Systems, ISESS 2015.

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Contents

Keynote Lectures

Real-Time Web-Based Decision Support for Stakeholder Implementation of Basin-Scale Salinity Management	3
<i>Nigel W. T. Quinn, Brian Hughes, Amye Osti, Joel Herr, Elwood Raley, and Jun Wang</i>	
Trends in Policy Relevant European Environmental Information Systems.	19
<i>Stefan Jensen</i>	
Big Data Storage and Management: Challenges and Opportunities	28
<i>Jaroslav Pokorný</i>	
Environmental Software Systems in National Park Monitoring and Management.	39
<i>Peter A. Fischer-Stabel</i>	

Air and Climate

Hough-Transform-Based Interpolation Scheme for Generating Accurate Dense Spatial Maps of Air Pollutants from Sparse Sensing.	51
<i>Asaf Nebenzal and Barak Fishbain</i>	
A New Feature Selection Methodology for Environmental Modelling Support: The Case of Thessaloniki Air Quality.	61
<i>Nikos Katsifarakis and Kostas Karatzas</i>	
Approaches to Fuse Fixed and Mobile Air Quality Sensors	71
<i>Gerhard Dünnebeil, Martina Marjanović, and Ivana Podnar Žarko</i>	
EO Big Data Connectors and Analytics for Understanding the Effects of Climate Change on Migratory Trends of Marine Wildlife.	85
<i>Z. A. Sabeur, G. Correndo, G. Veres, B. Arbab-Zavar, J. Lorenzo, T. Habib, A. Haugomard, F. Martin, J.-M. Zigna, and G. Weller</i>	

Water and Hydrosphere

Quick Scan Tool for Water Allocation in the Netherlands	97
<i>P. J. A. Gijbers, J. H. Baayen, and G. J. ter Maat</i>	

Information System as a Tool for Marine Spatial Planning: The SmartSea Vision and Prototype	110
<i>Ari Jolma, Ville Karvinen, Markku Viitasalo, Riikka Venesjärvi, and Jari Haapala</i>	
Mobile Crowd Sensing of Water Level to Improve Flood Forecasting in Small Drainage Areas	124
<i>Simon Burkard, Frank Fuchs-Kittowski, and Anna O’Faolain de Bhroithe</i>	
Flood Modelling and Visualizations of Floods Through 3D Open Data	139
<i>Lukáš Herman, Jan Russnák, and Tomáš Řezník</i>	
Use of the Hydro-Salinity, Crop Production Optimization Model APSIDE to Validate Results from an Updated Regional Flow Model of the San Joaquin River Basin	150
<i>Nigel W. T. Quinn and John Cronin</i>	
Business Intelligence and Geographic Information System for Hydrogeology	163
<i>Kamil Nešetřil and Jan Šembera</i>	
Health and Biosphere	
A Pilot Interactive Data Viewer for Cancer Screening	173
<i>Ladislav Dušek, Jan Mužík, Matěj Karolyi, Michal Šalko, Denisa Malúšková, and Martin Komenda</i>	
GMP Data Warehouse – a Supporting Tool of Effectiveness Evaluation of the Stockholm Convention on Persistent Organic Pollutants	184
<i>Jakub Gregor, Jana Borůvková, Richard Hůlek, Jiří Kalina, Kateřina Šebková, Jiří Jarkovský, Ladislav Dušek, and Jana Klánová</i>	
A Variable Length Chromosome Genetic Algorithm Approach to Identify Species Distribution Models Useful for Freshwater Ecosystem Management.	196
<i>Sacha Gobeyn and Peter L. M. Goethals</i>	
Conceptual Design of a Software Tool for Management of Biological Invasion	209
<i>Peter A. Khaïter and Marina G. Erehtchoukova</i>	
Open Farm Management Information System Supporting Ecological and Economical Tasks	221
<i>Tomáš Řezník, Karel Charvát, Vojtěch Lukas, Karel Charvát Junior, Michal Kepka, Šárka Horáková, Zbyněk Krivánek, and Helena Řezníková</i>	

Risk and Disaster Management

Large Scale Surveillance, Detection and Alerts Information Management System for Critical Infrastructure. 237
Z. Sabeur, Z. Zlatev, P. Melas, G. Veres, B. Arbab-Zavar, L. Middleton, and N. Museux

ENSURE - Integration of Volunteers in Disaster Management 247
Frank Fuchs-Kittowski, Michael Jendreck, Ulrich Meissen, Michel Rösler, Eridy Lukau, Stefan Pfennigschmidt, and Markus Hardt

C2-SENSE – Pilot Scenario for Interoperability Testing in Command & Control Systems for Crises and Disaster Management: Apulia Example . . . 263
Marco Di Ciano, Agostino Palmitessa, Domenico Morgese, Denis Havlik, and Gerald Schimak

Achieving Semantic Interoperability in Emergency Management Domain. . . . 279
Mert Gençtürk, Enver Evcı, Arda Guney, Yildiray Kabak, and Gokce B. Laleci Erturkmen

Framework for Enabling Technical and Organizational Interoperability in the Management of Environmental Crises and Disasters 290
Refiz Duro, Mert Gençtürk, Gerald Schimak, Peter Kutschera, Denis Havlik, and Katharina Kutschera

An Integrated Decision-Support Information System on the Impact of Extreme Natural Hazards on Critical Infrastructure 302
Z. A. Sabeur, P. Melas, K. Meacham, R. Corbally, D. D'Ayala, and B. Adey

UNISDR Global Assessment Report - Current and Emerging Data and Compute Challenges 315
Nils gentschen Felde, Mabel Cristina Marulanda Fraume, Matti Heikkurinen, Dieter Kranzlmüller, and Julio Serje

Information Systems

netCDF-LD SKOS: Demonstrating Linked Data Vocabulary Use Within netCDF-Compliant Files 329
Nicholas J. Car, Alex Ip, and Kelsey Druken

Evolution of Environmental Information Models: Reusable Properties Bound to a Persistent URI. 338
Katharina Schleidt

Semantic BMS: Ontology for Analysis of Building Operation Efficiency 349
Adam Kučera and Tomáš Pitner

A Generic Web Cache Infrastructure for the Provision of Multifarious Environmental Data.	360
<i>Thorsten Schlachter, Eric Braun, Clemens Döpmeier, Christian Schmitt, and Wolfgang Schillinger</i>	
The SensLog Platform – A Solution for Sensors and Citizen Observatories.	372
<i>Michal Kepka, Karel Charvát, Marek Šplíchal, Zbyněk Křivánek, Marek Musil, Šimon Leitgeb, Dmitrij Kožuch, and Raitis Bērziņš</i>	
A Generic Microservice Architecture for Environmental Data Management.	383
<i>Eric Braun, Thorsten Schlachter, Clemens Döpmeier, Karl-Uwe Stucky, and Wolfgang Suess</i>	
How to Start an Environmental Software Project.	395
<i>Ioannis N. Athanasiadis</i>	
Modelling, Visualization and Decision Support	
Environmental Modelling with Reverse Combinatorial Auctions: CRAB Software Modification for Sensitivity Analysis.	411
<i>Petr Fiala and Petr Šauer</i>	
A Domain Specific Language to Simplify the Creation of Large Scale Federated Model Sets	420
<i>Zachary T. Reinhart, Sunil Suram, and Kenneth M. Bryden</i>	
Modelling and Forecasting Waste Generation – DECWASTE Information System.	433
<i>Jiří Hřebíček, Jiří Kalina, Jana Soukopová, Eva Horáková, Jan Prášek, and Jiří Valta</i>	
Planning and Scheduling for Optimizing Communication in Smart Grids	446
<i>Miroslav Kadlec, Barbora Buhnova, and Tomas Pitner</i>	
3D Volume Visualization of Environmental Data in the Web	457
<i>Eric Braun, Clemens Döpmeier, Stefan Mirbach, and Ulrich Lang</i>	
Mobile Location-Based Augmented Reality Framework	470
<i>Simon Burkard, Frank Fuchs-Kittowski, Sebastian Himberger, Fabian Fischer, and Stefan Pfennigschmidt</i>	
Author Index	485