

I T H E A

INFORMATION

International Journal
MODELS
&
ANALYSES

2014 Volume 3 Number 2

**International Journal
INFORMATION MODELS & ANALYSES
Volume 3 / 2014, Number 2**

EDITORIAL BOARD

Editor in chief: **Krassimir Markov** (Bulgaria)

Albert Voronin	(Ukraine)	Levon Aslanyan	(Armenia)
Aleksey Voloshin	(Ukraine)	Luis Fernando de Mingo	(Spain)
Alexander Palagin	(Ukraine)	Liudmila Cheremisinova	(Belarus)
Alexey Petrovskiy	(Russia)	Lyudmila Lyadova	(Russia)
Alfredo Milani	(Italy)	Martin P. Mintchev	(Canada)
Anatoliy Krissilov	(Ukraine)	Natalia Kussul	(Ukraine)
Avram Eskenazi	(Bulgaria)	Natalia Ivanova	(Russia)
Boris Tsankov	(Bulgaria)	Natalia Pankratova	(Ukraine)
Boris Sokolov	(Russia)	Nelly Maneva	(Bulgaria)
Diana Bogdanova	(Russia)	Olga Nevezorova	(Russia)
Ekaterina Detcheva	(Bulgaria)	Orly Yadid-Pecht	(Israel)
Ekaterina Solovyova	(Ukraine)	Pedro Marijan	(Spain)
Emilia Saranova	(Bulgaria)	Rafael Yusupov	(Russia)
Evgeniy Bodyansky	(Ukraine)	Sergey Krivii	(Ukraine)
Galyna Gayvoronska	(Ukraine)	Stoyan Poryazov	(Bulgaria)
Galina Setlac	(Poland)	Tatyana Gavrilova	(Russia)
George Totkov	(Bulgaria)	Valeria Gribova	(Russia)
Gurgen Khachatryan	(Armenia)	Vasil Sigurev	(Bulgaria)
Hasmik Sahakyan	(Armenia)	Vitalii Velychko	(Ukraine)
Ilia Mitov	(Bulgaria)	Vladimir Donchenko	(Ukraine)
Juan Castellanos	(Spain)	Vladimir Ryazanov	(Russia)
Koen Vanhoof	(Belgium)	Yordan Tabov	(Bulgaria)
Krassimira B. Ivanova	(Bulgaria)	Yuriy Zaichenko	(Ukraine)

**IJ IMA is official publisher of the scientific papers of the members of
the ITHEA® International Scientific Society**

IJ IMA rules for preparing the manuscripts are compulsory.

The rules for the papers for ITHEA International Journals are given on www.ithea.org.

The camera-ready copy of the paper should be received by ITHEA® Submission system <http://ij.ithea.org>.

Responsibility for papers published in IJ IMA belongs to authors.

International Journal "INFORMATION MODELS AND ANALYSES" Volume 3, Number 2, 2014

Edited by the Institute of Information Theories and Applications FOI ITHEA, Bulgaria, in collaboration with

Institute of Mathematics and Informatics, BAS, Bulgaria,

V.M.Glushkov Institute of Cybernetics of NAS, Ukraine,

Universidad Politechnica de Madrid, Spain,

Hasselt University, Belgium

Institute of Informatics Problems of the RAS, Russia,

St. Petersburg Institute of Informatics, RAS, Russia

Institute for Informatics and Automation Problems, NAS of the Republic of Armenia,

Publisher: **ITHEA®**

Sofia, 1000, P.O.B. 775, Bulgaria. www.ithea.org, e-mail: info@foibg.com

Technical editor: **Ina Markova**

Printed in Bulgaria

Copyright © 2012-2014 All rights reserved for the publisher and all authors.

© 2012-2014 "Information Models and Analyses" is a trademark of ITHEA®

© ITHEA is a registered trade mark of FOI-Commerce Co.

ISSN 1314-6416 (printed)

ISSN 1314-6432 (Online)