

Editorial Preface

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Welcome to Issue 3, being the first regular edition of the *International Journal of Conceptual Structures and Smart Applications* (IJCSSA). Issue 1 was the inaugural edition of the journal, and Issue 2 was the journal's first Special Edition that covered Persuasive Design in Teaching and Learning as a specific topic within the realm of the journal.

As a reminder about the journal, Conceptual Structures (CS) harmonises the creativity of humans with the productivity of computers. CS recognise that organisations work with concepts whereas machines work with structures. CS advances the theory and practice in connecting the user's conceptual approach to problem solving with the formal structures that computer applications need to bring their productivity to bear in solving these problems. CS includes a wide range of theories and practices. Amongst these are Conceptual Graphs, Formal Concept Analysis, Description Logics, the Semantic Web, the Pragmatic Web, Ontologies, Multi-agent Systems, Concept Mapping, and more. CS thus represents a family of approaches that builds on the successes of artificial intelligence, business intelligence, data mining, computational linguistics, conceptual modelling, information and web technologies, user modelling, and knowledge management to name but a few.

CS support the development of Smart Applications (SA) that allow enterprises to share meaning with its interconnected computing

resources, and realise transactions that would otherwise remain as lost business opportunities. SA will equally promote key developments in science, engineering, social science, humanities and the arts. This is because CS and SA integrate the creativity of individuals and organisations with the productivity of computers in a meaningful digital future.

The journal is fortunate in having an internationally respected Editorial Board bringing their wide-ranging and influential wisdom. As leaders in their respective areas, some of them kindly provided articles for the inaugural edition. Those articles contributed to our vision of the journal, and its latest continuation is the content of this current issue. We are most grateful to all of our board for kindly agreeing to support the journal and for their help, to ensure that submissions are rigorously double-blind reviewed. As well as ensuring that the reader benefits from this assurance, we encourage high-quality submissions from prospective authors in the knowledge that their work will be aired through this respected journal.

The current issue consists of five learned research articles. The first is on *Understanding and Modelling Context for Data Integration* by William T. Sabados, and Harry S. Delugach of The University of Alabama in Huntsville, USA. Their article addresses the pragmatic context of information and the challenges of modelling the multiple contexts at play in data integration.

They provide a simple data integration context modelling framework to address important issues in representing a pragmatic context. Using an example, their approach supports integration efforts that allows for multiple data sources from similar domains to be brought together without having to designate one as the “true” semantics.

The second article is an *Enterprise Ontology Based Conceptual Modelling Grammar for Representing Value Chain and Supply Chain Scripts* by Wim Laurier, Université Saint-Louis, Belgium and Geert Poels, Ghent University, Belgium. Their article addresses the need for increased system interoperability and information sharing amongst business partners (such as the enterprise itself, supplier, customer, customer’s customer, supplier’s supplier) and a completely neutral third party (such as government), in a business context where the focus is shifting from individual enterprises to their supply chains. Their approach to this end is grounded in the mature Resource-Event-Agent model and shown to represent information about business phenomena of diverse supply chain partners across enterprise boundaries from the perspective of business partners and neutral parties.

Next is the third article, an *Implementation of JDL Model for multidimensional measurements processing in the environment of intelligent GIS* by Alexander Vodyaho, Saint-Petersburg State Electrotechnical University, Russia and Nataly Zhukova, Saint-Petersburg Institute for Informatics and Automation, Russian Academy of Sciences. They describe the American Joint Directors of Laboratories (JDL) model, oriented on solving tasks of multidimensional measurements processing in various subject domains. The results are represented in a form that is interpretable by both computers and common users thus can be used for solving a wide range of applied tasks. Referring to intelligent geo information systems (GIS) technologies, they show an efficient way to solve a number of complicated

tasks of measuring dynamic objects parameters processing and analyses.

This is followed by the fourth article, *On the Computational Character of Semantic Structures* by Prakash Mondal, Indian Institute of Technology, Delhi, India. He sets out that logical form in logic and Logical Form (LF) in the Minimalist architecture of language are two different forms of representational models of semantic facts, and how they represent certain natural language phenomena. He argues that the differences between logical form and LF have profound implications for the question about the nature of semantic interpretation. This extends to the feasibility of semantic interpretation being computational and the ontology of semantic interpretation, with consequent repercussions for reasoning in natural language.

The final and fifth article is *Visualising Inconsistency and Incompleteness in RDF Gene Expression Data using FCA* by Honour Chika Nwagwu, Sheffield Hallam University, UK. The integration of data from different data sources can result in the existence of Inconsistent or Incomplete Data (IID), thus undermining the validity of information retrieved from an integrated dataset. This concern is demonstrated through Semantic Web technologies, namely SPARQL queries of RDF data from the representative Edinburgh Mouse Atlas of Gene Expression (EMAGE) dataset. It is then followed by Formal Concept Analysis (FCA) of the data to identify and visualise inconsistencies and incompleteness.

We thank you for reading this issue of the journal, and encourage you to read the previous and forthcoming issues in the pursuit of CS and SA.

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