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From: S.Andrews at shu.ac.uk (Andrews, Simon)

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# ARTICLE 1

Comparision Between Features of CbO based Algorithms for Generating Formal Concepts

Nuwan Kodagoda (Sri Lanka Institute of Information Technology, Malabe, Sri Lanka), Koliya Pulasinghe (Sri Lanka Institute of Information Technology, Malabe, Sri Lanka)

Formal Concept Analysis provides the mathematical notations for representing concepts and concept hierarchies making use of order and lattice theory. This has now been used in numerous applications which include software engineering, linguistics, sociology, information sciences, information technology, genetics, biology and in engineering. The algorithms derived from Kustenskov's CbO were found to provide the most efficient means of computing formal concepts in several research papers. In this paper key enhancements to the original CbO algorithms are discussed in detail. The effects of these key features are presented in both isolation and combination. Eight different variations of the CbO algorithms highlighting the key features were compared in a level playing field by presenting them using the same notation and implementing them from the notation in the same way. The three main enhancements considered are the partial closure with incremental closure of intents, inherited canonicity test failures and using a combined depth first and breadth first search. The algorithms were implemented in an un-optimized way to focus on the comparison on the algorithms themselves and not on any efficiencies provided by optimizing code. The main contribution of this paper is the complete comparison of the three main enhancements used in recent variations of the CbO based algorithms. The main findings were that there is a significant performance improvement partial closure with incremental closure of intents is used in isolation. However, there is no significant performance improvement when the depth and breadth first search or the inherited canonicity test failure feature is used in isolation. The inherited canonicity test failure needs to be combined with the combined depth and breadth first feature to obtain a performance increase. Combining all the three enhancements brought the best performance.

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# ARTICLE 2

Capturing the Context of Concepts using the Transaction Graph through a Mobile NHS Case Study

Ivan Launders (Sheffield Hallam University, Sheffield, UK)

This paper reports the use of Conceptual Graphs and Peirce Logic by enterprise architects, who need to capture conceptual context represented in business terms, which differ conceptually from the same terms used in the medical context. For example, in a UK Mobile NHS case study the medical context drug-drug refers to interactions in a health treatment regime of two or more drugs, where the effects of one drug on another can be increased or decreased, or can produce a new effect that neither produces alone. In a business context drug-drug refers to an economic event and resource impact alert in a patient record database that suggests a new or replacement drug that changes the cost of treatment. The paper explains how TrAM automation can capture typical (canonical) use, focused on economic events and associated resource impacts, and can provide exploration of the Resource, Events, and Agents of the Transaction Model through use of Transaction Graph ontology.

To obtain a copy of the entire article, click on the link below.

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# ARTICLE 3

Using the Business Ontology to Develop Enterprise Standards

Mark von Rosing (Global University Alliance, Chateau Du Grand Perray, La Bruere-Loir, France), Henrik von Scheel (LEADing Practice, Ottawa, Canada)

The Business Ontology presented in this publication has taken the Global University Alliance's members over a decade to research and develop, spending hundreds of 'man years' to create. One of the major challenges facing practitioners and their interactions with academia is overcoming a presently fragmented way of thinking, working and modelling around enterprise concepts. Business frameworks, methods, approaches and concepts currently have their own vocabulary. Each of these vocabularies has its own definition of terms, including conflicting visual representations. (Moody, 2009) This paper therefore elaborates on how the academics have created a rich business taxonomy, defined enterprise meta objects, semantics, enterprise layers as well as the related artefacts. These artefacts have been constructed rigorously to meet up to academic standards and need to be relevant for practitioners as well. (Sein, Henfridsson, Purao, Rossi, & Lindgren, 2011) The objectives are therefore to share the business ontology and elaborate on its research and development journey, and how the business ontology helps to remedy the inconsistent use of business relevant terms and the semantic relations between them to create the basis for enterprise relevant models and meta-models. In addition to that, it provides practitioners with the ability to map them to their various ways of thinking, working and modelling. The business ontology will be introduced as a domain ontology and the paper shows how it can be used to develop enterprise standards and industry standards.

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# ARTICLE 4

Using the Business Ontology and Enterprise Standards to Transform Three Leading Organizations

Mark von Rosing (Global University Alliance, Chateau Du Grand Perray, La Bruere-Loir, France), Nathan Fullington (ConnectWise Inc., Tampa, FL, USA), John Walker (ConnectWise Inc., Tampa, FL, USA)

This case story covers the exciting journey of three growth organizations and how they applied the Global University Alliance developed Business Ontology and various enterprise standards to innovate and transform their organization. The paper does so by firstly elaborating on the theory, then it introduces the three organizations, discussed the challenges and issues at hand. Followed by a discussion of their journey and the solution description. Various details about the journey and how enterprise standards where used will be shared, including how these standards assisted these organizations in rethinking their business model, the operating model which effected both the value, revenue and service model as well as the performance and cost model. The case concludes with detailed lessons learned and how the business ontology and standards helped the organizations changed.

To obtain a copy of the entire article, click on the link below.

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# CALL FOR PAPERS

## Mission of IJCSSA:

The mission of the International Journal of Conceptual Structures and Smart Applications (IJCSSA) is to harmonize the creativity of humans with the productivity of computers. CS recognizes that organizations work with concepts. The journal 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. The goal of the journal is to bring together the world's best minds in information technology, arts, humanities, and social science to explore novel ways that information technologies can be used to leverage tangible business and social benefits. The journal thus integrates the creativity of individuals and organizations with the productivity of computers for a meaningful digital future.

## Indices of IJCSSA:

\* Cabell's Directories

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## Coverage of IJCSSA:

Topics to be discussed in this journal include (but are not limited to) the following:

Conceptual Structures: Theory, Applications, and Practices

\* Conceptual graphs

\* Formal concept analysis

\* ISO common logic

Knowledge Architectures

\* Enterprise knowledge systems

\* Mobile, ubiquitous, or embedded systems

\* Metaphoric, cultural or semiotic considerations

\* Multi-agent systems

\* Ontologies and the their effective implementation

\* Post-syntactic, semantic, or pragmatic interoperability

\* Requirements engineering

\* Security and trust

\* Standards and recommendations

\* Transaction-oriented architectures

Smart Applications: Science, Technology and Systems

\* e-Science

\* e-Medicine

\* Forensic computing

\* Grid computing

\* Natural language systems

\* Robotics

\* Semantic web

\* Pragmatic web

\* Topic maps

\* Web 2.0

Smart Applications: Enterprise, Education, Society and Government

\* Augmenting collective intelligence

\* Business intelligence

\* Discovering misuse and fraud

\* e-Learning, smart VLEs (Virtual Learning Environments)

\* e-Social science

\* Folksonomies

\* Government accountability and e-democracy

\* Intellectual property management

\* Legal analysis

\* Healthcare management

\* Knowledge discovery

\* Knowledge management

\* Managing ambiguity, nonsense or contradictions

\* Teaching and learning of logic

\* Supporting social action

Interaction Design, Visualization, Creative Industries

\* Cultural, localization and internationalization

\* Entertainment

\* Linguistics

\* Peirce's extential graphs logic

\* Portal development

\* Semiotics, signs and meaning making

\* Supporting sensory disabilities, dyslexia or other differently abled

\* Supporting alternative (e.g., lateral) thinking

\* Thinking with diagrams

\* User modeling

\* User personalization

\* Visual analytics

Interested authors should consult the journal's manuscript submission guidelines www.igi-global.com/calls-for-papers/international-journal-conceptual-structures-smart/54917<http://www.igi-global.com/calls-for-papers/international-journal-conceptual-structures-smart/54917>

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Dr. Simon Polovina

Reader in Business Computing, Department of Computing

Conceptual Structures Research Group, Communication and Computing Research Centre

Sheffield Hallam University, Cantor Building, 153 Arundel St, Sheffield, UK S1 2NU

Tel: +44 (0)114 225 6825; Web: www.polovina.me.uk<http://www.polovina.me.uk>

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