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Using the Business Ontology to Develop Enterprise Standards

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ABSTRACT

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.

KEYWORDS

Business Ontology, Enterprise Layers, Enterprise Standards, Folksonomy, Industry Standards, Meta-Objects, Structured Way of Working, Taxonomy

INTRODUCTION

Standards bodies (e.g., ISO, CEN, LEADing Practice, OMG) and other practitioner organisations have documented vast amounts of business knowledge as frameworks (e.g., TOGAF, ITIL, and COBIT), methods and or approaches (e.g. LEAN, Six Sigma, BPR, TQM, Zero Defect, BPMN, BPMS). Each of these standards, frameworks, methods and approaches have their own vocabulary and concepts, and hence definition of terms like business process, process step, process activity, events, role, owner, measure or even rule. This semantic heterogeneity clearly hampers mutual understanding, communication and artefact integration between the various frameworks, methods and approaches, even within and across the standards bodies and organizations applying their standards. (Jung, 2009) What is needed is a unified ontology and vocabulary for business that is rigorously built according to academic and industry standards and at the same time sufficiently detailed to be immediately applicable by practitioners.

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This paper introduces a business domain ontology which from now on will be referred to as the 'business ontology', and incorporates all constructs that can be found in the most popular business standards and frameworks. It builds on the paper entitled "An Introduction to the Business Ontology" (von Rosing & Laurier, 2015) as well as the paper "Using a Business Ontology for Structuring Artefacts: Example - Northern Health" (von Rosing, Urquhart & Zachman, 2015). Both published in the June 2015, IJCSSA publication. This publication should therefore be seen as a more detailed specification of the business ontology. The content will be presented in the following way; Firstly, this publication will discuss the enterprise layers. Then we discuss how the most common identified meta-objects used within business concepts fits to the discussed enterprise layers, followed by a clear set of definitions of the mentioned meta-objects. We will also discuss how semantic concepts were used to capture and define the most common structure and relationships within artefacts i.e. maps, matrices and models. This includes the illustration where the objects and the specific relations appear in various artefacts. This is seen as a major benefit as the business ontology concepts can then be applied back to various enterprise modelling concepts such as business model, process modelling, value modelling, risk modelling as well as enterprise architecture concepts such as business architecture, information architecture and technology architecture.

THE IMPORTANCE OF UNDERSTANDING THE STRUCTURES OF THE ENTERPRISE LAYERS

An *ontology* is an intentional semantic structure that encodes the set of objects and terms that are presumed to exist in some area of interest (i.e. the universe of discourse or semantic domain), the relationships that is between them and the implicit rules constraining the structure of this (piece of) reality.(Genesereth & Nilsson, 1987; Nicola Guarino & Giaretta, 1995) In this definition, intentional refers to a structure describing various possible states of affairs, as opposed to extensional, which would refer to a structure describing a particular state of affairs. The word semantic indicates that the structure has meaning, which is defined as the relationship between (a structure of) symbols and a mental model of the intentional structure in the mind of the observer. This mental model is often called a conceptualization (Gruber, 1993). Semantics are an aspect of semiotics, like syntax, which distinguishes valid from invalid symbol structures, and like pragmatics, which relates symbols to their meaning within a context (e.g., the community in which they are shared). (Cordeiro & Filipe, 2004) The structures and context in the organizations should be considered as a whole (von Rosing, Zachman, von Scheel, 2015) which subsequently includes the views and models that capture the:

- **Business Perspective:** Such as the purpose and goal, competencies, processes, and services aspects;
- **Information Perspective:** Such as the application systems, as well as the data components;
- **Technology Perspective:** Such as the platform and infrastructure components

The mentioned layers are an abstraction that represents and considers the enterprise as a whole. (von Rosing, Zachman, von Scheel, 2015) For example, a policy, act, regulation or even a strategy is a part of the business layer, while the application systems and data aspects is a part of the Information layer. From the research and analysis done by the Global University Alliance (GUA), the most common identified structures and context in the organizations were spread across the business, information and technology layers.