

VALUE MODEL ONTOLOGY FOR SERVICE SYSTEMS

<Service Science, S-D Logic>

ABSTRACT (max 400 words)

Purpose – The semantic description and graphical representation of the proposal, creation, delivery, and transfer of value has been the subject of ‘value modeling’ research in the Enterprise/Information Systems Engineering discipline [1-4]. Enterprises form a major class of service system entities. From an S-D Logic [5-9] perspective, each enterprise is by definition a service system entity as all economic exchange is service exchange. There have been several calls in the Service Science literature for more research on vocabularies, conceptual abstractions and visual models to describe and represent service systems [10-13]. Given the object of study of Service Science, such artifacts should allow modeling and analyzing value co-creation phenomena [14]. However, current value modeling approaches assume a ‘goods-dominant’ worldview [15, 16]. They can therefore not readily be applied to service system modeling. To tackle this problem, we designed a value model ontology that offers generic constructs and rules for articulating and structuring value models that represent enterprises as service system entities that purposefully interact in mutually beneficial service exchanges.

Design/Methodology/approach – We employed the research process and adhered to the principles prescribed by the Design Science methodology [17-19]. The theoretical basis of our conceptual design research is the Resource-Event-Agent (REA) model of economic exchange [20, 21], which provides a theoretical foundation for (goods-dominant) value modeling.

Findings – First, we investigated the concepts, relations, and axioms of the REA ontology through the lens of S-D Logic. The results of this analysis then informed the design of a value model ontology that conforms to the S-D Logic view of economic exchange.

Research limitations/implications (if applicable) – An ontology is a specification of a shared conceptualization [22]. Sharedness is difficult to prove, though the ontology’s concepts and relations were defined in accordance with the service system worldview and ISPAR model of interaction outcomes proposed by Spohrer and colleagues [23-26]. Future research may wish to formalize the ontology (i.e., turn it into a computational ontology) and develop modeling notations, methods and tools to apply it.

Practical implications (if applicable) – Value models help revealing, analyzing and reasoning about the teleological and ontological nature (i.e., function and composition) of enterprise service system entities, their internal operations (i.e., resource allocation and orchestration of service processes), and their externalized behavior (i.e., choreography of service interactions), which may prove useful for supporting SSME [27] applications.

Originality/value – The contribution made to Service Science is the ontology for the value modeling of enterprises as service system entities. The proposed ontology is original in the sense that existing value modeling approaches do not ontologically commit to S-D Logic.

Key words (max 5) service system, model, ontology

Paper type – Conceptual Design Research paper

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