

Business Service Modeling for the Service-Oriented Enterprise ¹(Extended Abstract)

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Keywords: Business Services, REA, Service-Oriented Design

Service-oriented architectures are the upcoming business standard for realizing enterprise information systems, thus creating a need for analysis and design methods that are truly service-oriented. Most research on this topic so far takes a strict software engineering perspective. For a proper alignment between the business and the IT, a service perspective at the business level is needed as well. Although few researchers realized the importance of business thinking at service design, notation for service design is still lacking.

Using an MDA approach, [1] introduces a new business service and resource modeling language - BSRM based on the Resource-Event-Agent (REA) business ontology. The constructs of the BSRM language and their relationships are grounded in a meta-model which provides comprehensive specification using UML notation. Following the REA, we defined the service as a specialization of economic resource in the meta-model. As the resources are first class citizen of REA, BSRM gives a better insight to the value co-creation which is the main focus of services. Further, we distinguish two service specializations: exchange service and conversion service, corresponding to the two basic REA dualities. Each of them corresponds to a group of decrement and increment economic events in REA. The service classification model developed in [2], categorizes services into several categories. Among these service categories enhancing services and the sub-services which have part of relationship to the core services are special types of services that play a major role in service modeling at business level. These service categories correspond to different roles of the service type in our model.

The concept of enhancing services which adds value to the any other service, is introduced as another service category in our model. Considering the situation where core-service realization involves multiple value activities and it makes sense to view these value activities as independent services that are shared by different contexts, we identified the forth category of services as sub-services. Sub- service can be a part-of

¹ Jayasinghe Arachchige J., Weigand, H., and Jeusfeld, M.: Business Service Modeling for the Service-Oriented Enterprise. International Journal of Information System Modeling and Design, Vol. 3(1) - 2012, (accepted).

service of core service which is called core sub-service, or enhancing sub-service which is called coordination service. [3] extended the basic REA stockflow concept by adding specialization to the stockflow relationship as inflow and outflow. We adopt this specialization into our model as a relationship between Economic Resource Type and Service Type.

All these concepts which are defined in the meta-model, are denoted with a simple modeling notation called -BSRM in [1]. A major difference of BSRM with other service modeling approaches is the resource perspective of services. We have included resources not only because they are needed to describe service effects, but also since resources play a prominent role in new service design [4]. Secondly, in contrast to most other approaches that only consider one type of relationship between services, we identify many service linkages, in order to catch more semantics, keeping in mind the tenet that meaning is captured in structural relationships. The BSRM design steps provide a simple direction to a designer to use this modeling language at CIM level in any real situation.

As it is not feasible to grasp all relevant concerns to a single model, we mapped the service modeling language with complimentary models, in particular value network (e3value), data model (ER) and process models (BPMN). By mapping the meta-model with other model types at CIM and PIM level, we have shown how it can support truly service-oriented IS development.

BSRM is not only guided by meta-model, it has been formalized using the meta-modeling facilities of Conceptbase[5]. This does not only ensure formal validation but has also provided us immediately with a workable BSRM modeling tool. Further, we evaluated the viability of BSRM by feature comparison and applying to a real world case study in the logistic domain.

BSRM is not only a vehicle for communication with business analysts but also a basis for service-oriented value analysis. All in all, we have described and evaluated BSRM that we claim to be the first specific service modeling language at CIM level.

References

1. Jayasinghe Arachchige J., Weigand, H., and Jeusfeld, M. (2012): Business Service Modeling for the Service-Oriented Enterprise. *International Journal of Information System Modeling and Design*, Vol. 3(1), (accepted).
2. Weigand H., Johannesson, P., Andersson, B., & Bergholtz, M. (2009). Value-based Service Modeling and Design: Toward a Unified View of Services. In *Proc. of CAiSE '09*, Springer, 410-424.
3. Gailly, F., Laurier, W., Poels, G. (2008). Positioning and Formalizing the REA enterprise ontology, *International Journal of Information Systems* 22, 219-248.
4. Froehle, C.M., Roth, A.V. (2007). A Resource-Process Framework of New Service Development, *Production and Operations Management*, 16(2), 169-181,183-188.
5. Jeusfeld, M.A., Jarke, M., & Mylopoulos, J. (2009). *Metamodeling for Method Engineering*. MIT Press.