Managing Changes in Service Oriented Virtual Organizations: 
A Structural and Procedural Framework to Facilitate the Process of Change

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ABSTRACT

Virtual Organizations in a dynamic environment need efficient methods of change management to initiate changes to partners’ services. In this paper, the authors present a structural and a procedural framework for change management in Service-Oriented Virtual Organizations. The structural framework categorizes changes into three layers of change and identifies triggers of changes. The procedural framework incorporates various components including the six layers of change processes, change control, change actors, and related management processes. A prototype with different scenarios of change is developed to validate the change management process in a collaborative environment. The authors employ the functionalities of the IBM Business Process Manager, including its recent Web 2.0 capabilities, to enhance collaboration between partners in the process of change. They demonstrate that the proposed solutions facilitate and enhance the process of change by effectively engaging all partners in a dynamic and collaborative way.

KEYWORDS
Change Collaboration, Change Management, Change Processes, Change Triggers, Service-Oriented Virtual Organization, Virtual Organization

INTRODUCTION

The evolution of web technologies and services allows businesses from different locations to share information, costs, and resources, and to improve collaboration and mitigate risks by forming Collaborative Networked Organizations (Rabelo, Costa, & Romero, 2014). The result is the emergence of the Virtual Organization (VO). The VO is a dynamic, temporal consortium of autonomous, legally independent organizations that collaborate with each other in order to achieve certain objectives and meet business needs (Camarinha-Matos, Afsarmanesh, & Ollus, 2008). A general and broader definition of VO provided by (Shekhar, 2016) as “any organization with non-collocated organizational entities and resources, necessitating the use of virtual space for interaction between the people in these entities to achieve organizational objectives”. VO is allowing the use of business processes and services from different geographically dispersed competences from different organizations in a collaborative way (Shekhar, 2016). The idea of aligning VOs with service-oriented architecture (SOA) is potentially one of the best ways to implement and manage dynamic business processes that will actualize the concept of a service-oriented virtual organization (SOVO) (Danesh, Raahemi, &
Kamali, 2011). This will increase the flexibility and agility that enable the SOVO to improve and change business processes and services (Bloor, Hurwitz, Kaufman, & Halper, 2009). VO participating organizations must evolve by changing their business processes and services to meet market and customer demands. Thus, partners in an SOVO environment need processes and procedures to facilitate and manage change (W. J. Obidallah, Raahemi, & Alaieri, 2014). The process of changing VO shared business processes and services is one of the challenges facing SOVOs that we investigated and considered. It is difficult to initiate and implement changes to shared processes and services in SOVOs without affecting the performance and operations of value creation. However, partners can minimize the negative impact of change by using a series of processes to facilitate and manage the change process (Dumitraș, Roșu, Dan, & Narasimhan, 2007). Industry analysts argue that unmanaged change is one of the leading causes of downtime and consequent failure to meet the terms of service level agreements.

VO participating organizations can trigger changes to their business processes and services for different reasons and at different levels, which will affect overall VO operations and performance. Therefore, developing and designing high-level processes, based on the Information Technology Service Management (ITSM) best practices for managing change, offer the most potential for facilitating change in SOVO business processes and services. Various researchers (Akram, Bouguettaya, Liu, Haller, & Rosenberg, 2010; Dumitraș et al., 2007; Liu & Bouguettaya, 2007; Tripathi & Hinkelmann, 2007; Wang, Zhang, & Ge, 2010; Wang, Yang, & Zhao, 2010) have investigated changes in SOA and VOs by categorizing the types, triggers, and impact of changes, and providing a model for reacting to change. However, to the best of our knowledge, no other research provides a step-by-step change process that follows best practices and focuses on the change process, control procedures, collaboration, and automation in a multiorganizational environment (i.e., among different partners).

Consider an automobile enterprise where the entrepreneur intends to combine services including Search, Purchase, Insurance, Finance, and Shipment, as illustrated in Figure 1. The services will be selected, constituted, and orchestrated to meet the purposes of the VO.

The VO starts with the creation phase, identifying the business opportunity and selecting and orchestrating the list of services. In this scenario, the automobile VO allows users to search for a car, purchase by providing information and makes payments through financial services. Furthermore, users have the choice of buying insurance and shipping the purchased car to their location. The entrepreneur can choose the right search, purchase, insurance, financial, and shipment services available from various service providers. After orchestration, selected organizations collaborate as partners to achieve the expected value by going through the operation phase of the VO lifecycle. In the evolution phase, the VO makes changes to its business processes and services, based on aspects that could trigger changes for various reasons. Monitoring the performance of the VO could be one reason; a new business strategy could be another. For example, if the performance of shipment services
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