Collaborative Response Model on Business Event of Multi-Core Enterprise Cluster for SaaS Platform

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ABSTRACT

To achieve the needs of business collaboration between business-related multi-core enterprise clusters based on Software as a Service (SaaS) platform, a multi-core management mechanism based on single-core collaboration relationship and business-related multi-core collaboration relationships were erected for the modern industrial system. On base of implicit authority of business functions, a collaborative response model on business event of multi-core enterprise cluster for SaaS platform was established, and an event-based business collaboration process and its algorithms for multi-core enterprise cluster were presented. The model and algorithms had been used in quality problems of auto warranty which needs multi-agent collaborative diagnosis. Business-related agents include after-sales provider, OEM, the assembly parts supplier and the culprit supplier could collaborative diagnosis on base of the SaaS platform.

Keywords: Business Event, Business-Related, Collaborative Response, Multi-Core, Software as a Service (Saas)

INTRODUCTION

With the continuous development of information technology, network technology, and advanced manufacturing technology, the development of the industry chain, the scale and the ecological of manufacturing tends to become stronger and stronger. The enterprises are not collaborating around their single-core enterprise limitedly and more. However, the co-operations turn into many symbiotic complementary ecological industry chains, which are on the basis of manufacturing needs.
of specialized professional differentiations and socialized co-operations of all kinds of enterprises in different levels and types. Those chains are depend on each other intricately so that the business related collaborations of the chains are beyond simple business co-operational relationships and become a multi-core enterprise cluster business cooperation system, which joined by multi-core enterprises or business groups and driven by certain business relationships.

According to the researches on complicated system, multi-core enterprise cluster business cooperation system is highly adaptive. Besides, each enterprise in the system has the features of having autonomy in their affairs and co-operations between their coordinators and all these features are all affected by their business goals. In addition, the system is formed by those closely related enterprises with loosely coupling non-linear relationships. The developments of distributing computing and internet technology offer the possibility for achieving synergy and integration between individuals in business-related multi-core enterprise cluster. Particularly with the development of the ASP/SaaS/Cloud Computing technology, the SaaS collaborative solving plans along with its products draw the attentions of enterprises and the researchers heavily for having the advantages in gathering resources, cost savings, and professional services (Wuming, Pingyang, & Fei, 2009) over other similar systems. Also, in recent years, the SaaS collaborative solving plans achieved success in the field of multi-tenant data structure storage technology (Weissman, 2009; Lan-Ju, Qing-Zhong, & Yu-Liang, 2010), personalized customization technology (Yi-chuan, Bin, & Yin, n.d.; Yu-Liang et al., 2010; Wei, Xin, Wei, & Hai-Qi, 2007), and adaptive evolution technology in the process of operation (Shuying, 2012), etc. However, most of these results are count on the single leading enterprises as a core in the business collaboration. For instance, Literature (Huijuan, Huijia, & Linfu, 2006) simplified the business collaborative relationships between enterprises as: all business collaborations only occur between the dominant enterprise and collaborative enterprises, however, those collaborative enterprises have no direct business deals with each other. Literature (Shuying, 2008) simplified the clients of the SaaS platform as a union of multiple single-core business alliances and regardless of business synergy between these single-core business alliances. These technologies simplify the difficulty of constructing the platform, but limit the business collaboration supports between enterprises and reduce the efficiency of the business collaboration between enterprise groups.

In the researches of business collaboration between multi-core enterprise clusters, literature (Jing & Linfu, 2010) prospectively proposed the concept of multi-core industrial chain collaboration and set up a multi-industry chain collaboration network simulator to evaluate the intensity and importance of the nodes in the chains. But this simulator was only made for evaluating the collaborative enterprise evaluation and optimizing the alliances between collaborative enterprises theoretically. The implementation the business collaboration between multi-core enterprise clusters. On the basis of the above study, a research of the business collaboration system between multi-core enterprise clusters is left alone. Based on the researches above, this paper presents the business collaboration between multi-core enterprise clusters model and multi-agent collaboration technologies driven by business event.

**THE DEMAND OF BUSINESS COLLABORATION BETWEEN MULTI-CORE ENTERPRISE CLUSTERS**

**Analysis of the Multi-Core Nature of the Supply Chain**

The supply chain is a complex nonlinear system; the business of the enterprise cluster has high correlation and long collaboration chain. In the process of cooperation, an enterprise may play multiple roles, and formed a collaborative relationship between the single-core enterprises...
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