

Chapter 36

Trade Collaboration Systems

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ABSTRACT

A trade collaboration system (TCS) is a system designed to coordinate the work of supply chain stakeholders involved in the business processes of global logistics. Using the Software as a Service (SaaS) model, the TCS provides a cohesive, process-oriented viewpoint on the stakeholders' collaborative work. The stakeholders supported by these systems include a customer and supplier, carriers, third party logistics providers (3PLs), freight forwarders, customs brokers, and government agencies. The National Institute of Standards and Technology, (NIST) through collaboration with the Automotive Industry Action Group (AIAG) is developing an enabling framework for trade collaboration systems. The AIAG Materials Off-Shore Sourcing (MOSS) project performed a pilot investigation of TCS capabilities in cooperation with a software vendor that developed a MOSS-conforming TCS. This chapter reports on the enabling framework, its approach to improving data quality (DQ), and a cost/benefit analysis of trade collaboration systems.¹

INTRODUCTION

This chapter describes an enabling framework supporting the business processes of logistics and order management in international trade. Systems in this area support the activities of a loose federation of stakeholders, starting with a buyer placing an order, and ending with the delivery of the goods. A trade collaboration system (TCS) is an inter-organizational system (Johnston & Vitale, 1988)

(Sherer, 1997) that leverages Software as a Service (SaaS) (Chong & Carraro, 2006) technology to coordinate the work of stakeholders involved in the business processes of global logistics. Trade collaboration systems are emerging solutions; currently only a few commercial solutions exist. The stakeholders supported by these systems include a customer and supplier, carriers, third party logistics providers (3PLs), freight forwarders, customs brokers, and government agencies. The scope of processes coordinated by the TCS include, at least, master order specification, com-

DOI: 10.4018/978-1-4666-2625-6.ch036

munication of order forecasts, order placement, transportation booking, and customs clearance. The TCS might additionally manage payment processes associated with the order. Trade collaboration systems are easily deployed Software as a Service solutions intended to replace the ad hoc mix of paper, fax, phone, email, and Electronic Data Interchange (EDI) messaging typically supporting these activities now.

Significant impediments to the operation of long-distance supply chains arise from the use of error-prone communication channels (fax, email, telephone calls) to coordinate the business processes of the stakeholders. These communication channels, endemic in the typical business process, are implemented extemporaneously and ad hoc, and cannot provide quality operational information (“visibility”) necessary for efficient operation of the supply chain. The consequences of this are excessive safety stock inventory, excessive expediting of shipments, and an inability to deploy strategic supply chain initiatives. By providing a cohesive, process-oriented viewpoint on the shipments managed, updated through an error-resistant communication channel, the TCS should significantly improve the operation of long-distance supply chains.

The National Institute of Standards and Technology (NIST) of the United States, through collaboration with the Automotive Industry Action Group² (AIAG) have been studying trade collaboration systems since 2005. The AIAG’s Materials Off-Shore Sourcing (MOSS) project is an automotive industry effort to reduce the costs, and improve the visibility and performance of transcontinental supply chains of automotive parts bound for US assembly plants. The project has developed an enabling framework for TCS solutions, including a conceptual model of goods order and ocean-going transport, a mapping of EDI messages used to manage shipments to the conceptual model, and software for validating conformance to the EDI message types designed under the project.

The MOSS project performed a pilot investigation of TCS capabilities in cooperation with a software vendor that developed a MOSS-conforming TCS as Software as a Service (SaaS). The pilot investigation involved the shipment of automotive batteries from a Korean supplier to an OEM customer. Supporting the pilot process were the 3PL, freight forwarder, ocean carrier, and customs broker supporting the existing supply chain process. The pilot ran “live” data in parallel with the existing process for three months, managing about 20 containers per month. The AIAG has published a cost/benefit analysis of the MOSS solution. (AIAG, 2009) At the time of this writing, the project is preparing publication of its best practice recommendation on the use of TCSs in ocean-going shipments of automotive parts.

This chapter reports on how the requirements of global trade management (GTM) were met using the framework developed under MOSS. The section following this one reviews the challenges of global trade management. Principal challenges to overcome center on data quality (Wang & Strong, 1996) in operational and system design contexts. In the operational context, properties of SaaS deployment are leveraged. SaaS is typically promoted as a means of reducing the cost of managing IT assets. The more interesting property in the context of GTM is its ability to encapsulate both ends of inter-firm communications, and thereby support collaborative processes. The third section describes a solution to data quality problems in a system design context. Specifically, it describes the methodology developed for the design of EDI messages, addressing weaknesses in the prevailing practice. The development activities described in that section are essential to providing the cohesive viewpoint in TCS solutions. The fourth section reports on the MOSS pilot experience and the subsequent cost/benefit analysis performed under the project. The fifth section of the chapter describes a vision for the long-term development of Trade Collaboration Systems, where the TCS can provide effective tools supporting sustain-

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