

Third Party Services for Enabling Business-to-Business Interactions

Santosh Shrivastava

University of Newcastle upon Tyne - UK

Short Bio

Santosh Shrivastava was appointed a Professor of Computing Science, University of Newcastle upon Tyne in 1986. He received his Ph.D. in Computer Science from Cambridge University in 1975.

His research interests are in the areas of computer networking, middleware and fault tolerant distributed computing. Current focus of his work is on middleware for supporting inter-organization services where issues of trust, security, fault tolerance and ensuring compliance to service contracts are of great importance. From 1985-98 he led a team that developed the Arjuna distributed object transaction system. Arjuna transaction service software is now an integral part of JBoss application sever middleware from Red Hat Inc. So far he has supervised 25 PhD students.

Talk

“Third party services for enabling business-to-business interactions”.

Abstract. Business-to-business (B2B) interactions concerned with the fulfilment of a given business function (e.g., order processing) requires business partners to exchange electronic business documents and to act on them. This activity can be viewed as the business partners taking part in the execution of a shared business process, where each partner is responsible for performing their part in the process. Naturally, business process executions at each partner must be coordinated at run-time to ensure that the partners are performing mutually consistent actions (e.g., the seller is not shipping a product when the corresponding order has been cancelled by the buyer). A number of factors combine to make the task of business process coordination surprisingly hard:

(i) Loose coupling: B2B interactions take place in a loosely coupled manner, typically using message oriented middleware (MoM) where business partners are not required to be online “at the same time”. Shared business process coordination in such a setting is inherently difficult, as interacting partners rarely have an up-to-date information on the state of other partners, so there is a danger of partners getting out of synchrony with each other (state misalignment).

(ii) Timing and validity constraints: Business document exchange protocols (e.g., RosettaNet PIPs) have stringent timing and validity constraints: a business message is accepted for processing only if it is timely and satisfies specific syntactic and semantic validity constraints. Such constraints can be yet another cause of state misalignment between the partners. For example, if a message is delivered but not taken up for processing due to some message validity condition not being met at the receiver, the sender's and the receiver's views could divert (the sender assumes that the message is being processed whereas the receiver rejected it).

(iii) Faulty environment: Business interactions encounter software, hardware and network related problems (e.g., clock skews, unpredictable transmission delays, message loss, incorrect messages, node crashes etc.).

In summary, one can appreciate that there is plenty of scope for business partners to misunderstand each other leading to disputes. Partner misbehaviour adds additional complications. Within this context, we will explore the possibility of developing third party services for coordination, fair exchange, exception resolution, contract monitoring that can be utilized by business partners to simplify the task of performing B2B interactions.