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Hierarchical, Searchable, Secure, Persistent Publish / Subscribe Software Framework

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ABSTRACT

One of types of Decision Support Systems (DSS) is Communications-Driven DSS. It enhances decision-making by enabling communication and sharing of information between groups of people. The media for communication is generally a simple email or video conferencing. However, simple communication methods are not adequate for decision support systems. We believe Distributed Publish/Subscribe Messaging Systems may be used as an information sharing infrastructure even if such an asynchronous messaging system is quite complex to develop.

Distributed Publish / Subscribe systems such as Java Message Service (JMS) [1] and Web Service Eventing and Notification [2] provide basic services such as queuing, publishing and subscribing. However they provide no other services such as authentication, authorization, persistence, hierarchy and discovery. Development of such services or implementation of such services using software libraries developed by third parties is considered to be responsibility of developers.

For the services mentioned above, software development in a reasonable period and acceptable accuracy is very difficult to be achieved, because of the complex nature of distributed publish / subscribe systems and the necessity of many functions running in a seamlessly coordinated way. In this work, we describe how a software framework was designed and developed. This framework includes services authentication, authorization, persistence, hierarchy and discovery in addition to the services that JMS provides. The framework may be used by developers by just plug-in style. In order to demonstrate usability and ease of the framework, an application is developed on the services that the framework provides.

Keywords: Publishing, subscription, asynchronous, messaging, JMS, distributed, enterprise, framework