A Collaborative Solution for IT Infrastructure Maintenance Based on Web Services and Mobiles Agents
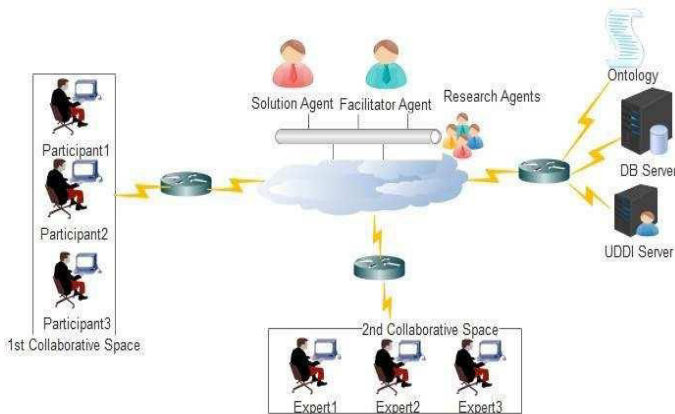
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Abstract

Today, organizations have become more and more complex which has complicated the decision making process. However, with the technological advances and the evolution of collaboration technologies, industrial companies wish to benefit from it, in order to accelerate the interventions of the specialists of maintenance on the sites and to reduce the time inactivity of their equipment. As a result, this makes it possible to envisage keeping them at a distance without necessarily having locally qualified staff. Indeed, these situations require the rapid and effective intervention of experts, who are not basically available. Furthermore, in this work we propose a new service oriented approach which is essentially based on mobiles agents.

Global Architecture

•Research Agents: These mobile agents are responsible for searching information (Web services) asynchronously.
•Solution Agent: This agent is responsible for seeking solutions to the problem that is posed.
• Facilitator Agent: The main task is to control the whole mechanism of decision-making.
•Database, Servers, Ontology of the domain, Directory UDDI.

Proposed Approach

•The development of a collaborative platform that facilitates a collective decision-making .
•Invoke and execute some WEB services depending on the problem nature.
•Integrates some mobiles agents in order to take benefit from the characteristics of mobile agents and to minimize response time.

Research Agent Structure

DB= Data Base ; KB= Knowledge Base ;

•Responsible for searching information (Web services) asynchronously.
•Move between the sites that are related to the company.
•Analyze the problem and to avoid the possibility of having a bad identification of the problem.
•Able to work more efficiently: rather than accessing this resource through a WAN.

Collaborative Spaces

•An internal collaborative space: Which consists of a set of participants by using a set of tools which are offered by the developed tools (Forum discussion, Shared calendar ....).
•A set of external decision-makers: represents the experts who offer solutions (with the recommendation of some web services).
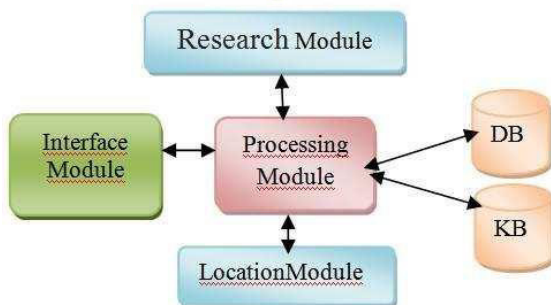
A General View Of Our Collaborative Space

•In Our System, we use some tools as follows: Jade platform for multi-agent system development and Wamp server for databases implementation, Java Netbeans environment and Apache Tomcat for web pages deployment.

CONCLUSIONS

Our approach will enable us to reinforce the communication and cooperation of the various actors that are involved in the decision-making process and also allow them to consolidate their points of view by using multiple services which are developed and proposed by experts in the field. The integration of mobile agents increases the flexibility and reliability of the system and minimizes the response time by seeking the best service according to specific methods. As a result, it has allowed us to avoid the bad identification of the problem by the participants.