

## OPEN AGENT BASED SYSTEM FOR STRATEGIC DECISIONS USING JADE ARCHITECTURE

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### ABSTRACT

Strategy is difficult decision for human manger So if we have Right information at right time for right person manager can take best decision not to regret in future. In this paper Communication based Open Agents based system is designed and developed having different agents like knowledge, interface, analysis, communication and Jade technology based agent tech\_agent to answer tough question for strategy and policy formation in order to achieve goal of any company.

**Keywords:** Agents, Strategy, Decision Making

### I. STRATEGIC DECISION MAKING

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Decision is settlement, a fixed intention bringing to a conclusive result, a judgment and a resolution. "A Decision is the choice out of several options made by the decision maker to achieve some objective in a given situation. Major characteristics of the business decision making are:

- Sequential in nature.
- Exceedingly complex due to risks and trade offs.
- Influenced by personal values.

### **Problem in Making Rational Decisions**

**Ascertaining the problem:** Management focuses on finding right answer rather than right question and that is most common source of mistakes. Instead of defining “sales is symptomatic” management defines “sales are declining”

**Insufficient knowledge:** Total information leading to complete knowledge, if it is missing than not perfect rationality

**Not enough time to be rational:** If not enough time allocated to make rational decision

**The environment may not cooperate:** Decision may fail the test of rationality because of not cooperation. e.g. product pricing, factor oil and petroleum product price.

### **Other limitations**

- Compromise among the different positions
- Misjudging the motives and values of people
- Poor communications
- Misappraisal of uncertainties and risks
- Inability to handle the available knowledge and human behaviour.

## **II. AGENT BASED SYSTEM**

An Agent is the fundamental actor on an AP which combines one or more service capabilities into a unified and integrated execution model that may include access to external software, human users and communications facilities. An agent may have certain resource brokering capabilities for accessing software (see [FIPA00079]).

An agent must have at least one owner, for example, based on organisational affiliation or human user ownership, and an agent may support several notions of identity. An Agent Identifier (AID) labels an agent so that it may be distinguished unambiguously within the Agent Universe. An agent may be registered at a number of transport addresses at which it can be contacted and it may have certain resource brokering capabilities for accessing software.[3]

### III. OPEN AGENT BASED SYSTEM FOR STRATEGIC DECISIONS USING JADE ARCHITECTURE

Following is architecture for Agent based System for strategic decisions:

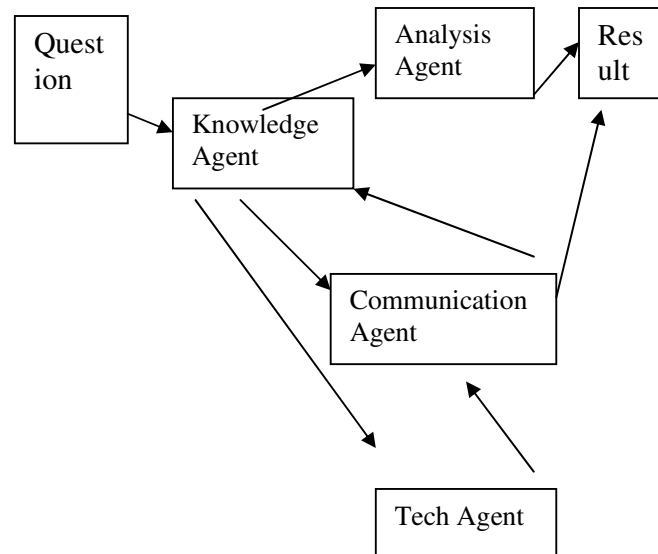


Figure 1 Architecture of Agent based system for strategic decisions

For eg If a manager poses question to Open Why sales are declining: Find reasons and solution this agent based system can be useful for same. Jade Architecture as described below is used for communicating between different agents in the proposed architecture .Following figure shows the main architectural elements of a JADE platform. A JADE platform is composed of agent containers that can be distributed over the network. Agents live in containers which are the Java process that provides the JADE run-time and all the services needed for hosting and executing agents. There is a special container, called the main container, which represents the bootstrap point of a platform: it is the first container to be launched and all other containers must join to a main container by registering with it. The UML diagram in Figure 3.2 schematizes the relationships between the main architectural elements of JADE. The programmer identifies containers by simply using a logical name; by default the main container is named 'Main Container' while the others are named 'Container-1', 'Container-2', etc. Command-line options are available to override default names.As a bootstrap point, the main container has the following special responsibilities:[3]

- Managing the container table (CT), which is the registry of the object references and transport addresses of all container nodes composing the platform
- Managing the global agent descriptor table (GADT), which is the registry of all agents present in the platform, including their current status and location

- Hosting the AMS and the DF, the two special agents that provide the agent management and white page service, and the default yellow page service of the platform, respectively.

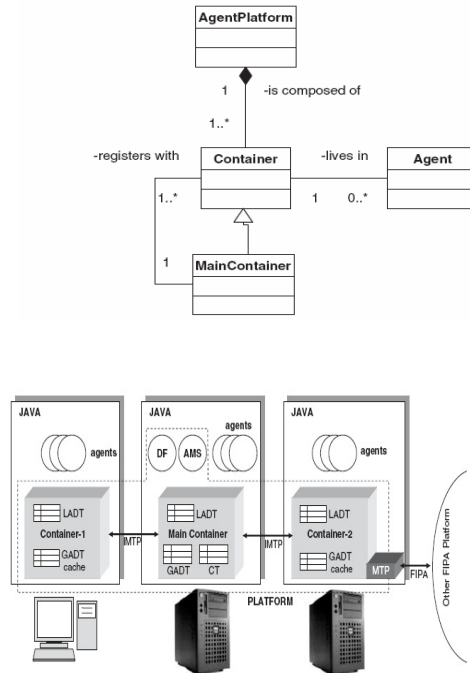


Figure 2 Architecture Relationship between the main architectural elements

We have designed several agents based on the system, following table summarize the agents, its purpose and whom it communicates.

Agent Name	Purpose	Communicates with Agents
Query/Problem/interface/input	User who is mainly form upper and middle Management poses to Interface	Knowledge
Knowledge_Agent	This agent has knowledge ,precious experience ,data etc. about Organization and External resources useful for inference the knowledge	Tech_agent, Analysis
Tech_agent	Here Jade Architecture is considered as tool for establishing communication between two very important agents K and A as they are responsible for new strategy formation	Knowledge_Agent Analysis
Analysis_Agent	Analysis of problem through Model or data based for result	Tech_agent
Communication_Agent	Represent output to user which is policy making /strategy formation with analysis of problem and justification of solution	Tech_ agent Analysis

TABLE I: The summarized of different agents is as below:

#### IV. CONCLUSIONS

Strategy is difficult decision for human manager so if we have Right information at right time for right person manager can take best decision not to regret ion future. For this communication agents system as developed in this paper can be very helpful as it is modularity and agent based divided.

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