TRUST AND REPUTATION IN MULTI AGENT SYSTEM

Belief maintenance in multi-agent system:

In a multi-agent system, a truth maintenance system (TMS) is designed to ensure the integrity of an agent's knowledge, which should be stable, well founded, and logically consistent.

➢ Depending on how beliefs, justifications, and data are represented, a knowledge base is defined in which each datum that has a valid justification is believed, and each datum that lacks a valid justification is disbelieved.

➢ A well knowledge base permits no set of its beliefs to be mutually dependent.

➢ A logically consistent knowledge base is one that is stable at the time that consistency is determined and in which no logical contradiction exists.

➢ A consistent knowledge base is one in which no datum is both believed and disbelieved (or neither), or in which no datum and its negation are both believed.

➢ A knowledge base should be always complete, concise, accurate, and efficient.

The multi-agent TMS is invoked by the addition or removal of a justification, and obeys the following principles:

➢ The belief changes should be resolved with as few agents as possible.

➢ The belief changes should be resolved by changing as few beliefs as possible.

Societies of agents in multi-agent system:

In a multi-agent system, a group of agents can form a small society in which they play different kind roles. The group defines the roles, and the roles define the commitments associated with them.

When an agent joins a group, he joins in one or more roles, and acquires the commitments of that role. Agents join a group autonomously, but are then constrained by the commitments for the roles they adopt. The groups define the social context in which the agents interact. Social agency involves abstractions from sociology and organizational theory to model societies of agents.

Social commitments are the commitments of an agent to another agent that in turn define social dependence. An agent 'A' is said to be dependent on agent 'B' with regard to act 'Ac' for

realizing state 'S', when 'S' is a goal of A and A is unable to realize 'A' while 'B' is able to do so. Social dependence can be voluntary when the agents adapt the roles that bind them to certain commitments. But, it is an objective relationship, in that it holds independently of the agents' awareness of it.

Cooperation is a form of such mutual dependence.

Social exchange is a form of such reciprocal dependence. With this as a basis, a group of agents form a cooperative team when,

➢ All agents share a common goal.
➢ Each agent is required to do its share to achieve the common goal by the group itself or a subgroup.
➢ Each agent adopts a request to do its share