Application for An Architecture to Coordinate Multi-Agent Systems

Angela Carrillo Ramos - acarrill@unianes.edu.co
Universidad de los Andes - Systems and Computing Department
Santafé de Bogotá, Colombia

Abstract
Coordination is the process that manages the interdependencies in the activities. Communications are based in the detection and response to coordination relations between tasks sets that are known by some agents. Coordination discute how agents can generate communication tasks which help the coordination process, how the agents can thrust in the inferences from receivers to carry out their tasks and, how the agents are in favor to plans and communications to carry out concurrent executions using PGP and GPGP. PGP and GPGP are sets of coordination mechanisms, independent-domain that use constraints to split a local planner in modules. These constraints give importance to some tasks due they help to no-local tasks can be done and their beginning and ending time can be good.

In this article, we use Yubarta framework referenced in (Ucros, 1996) to carry out the coordination process for the distribution of the information in an organization that flows between Auditory department and Systems department areas. This process avoid loss, delay or replication of the information. Coordination process was done in two levels: the first level talks about the agents which involve the system and, the second level talks about the task that each agent carries out. For these levels we use Template Mediator, an hierarchical architecture to coordinate agents that is used to distribute task for each agent and to verify the results of themselves.

System Auditing
System Auditing consists of evaluating the information internal control system of those that are working. As the auditable object, the data processing loop (system where the data to be protected flows) is taken. Lately an operational view has been taken for this field, applying parameters such as low costs, efficiency and effectiveness; this auditing is carried out by testing and evaluating the administrative process applied to computers, where the systematized areas are part of the auditable object and of the whole computers area with the organization components, in general, always keeping in mind the objectives and mission of the organization.
Conclusions

- The administrative process requires a strong coordination work, because of the information management between different stages and to check on the way the tasks are carried out on each one of them.

- The coordination process of an organizational task (such as auditing) is very complex. The task not only has to be seen as a whole, but the processes that have to be carried out inside have to be considered too. It is important to mention that in order to make easier the coordination task, it is better to carry it out at different levels, as explained on this paper.

- To model information management in the auditing administrative process, the YUBARTA model was chosen because the coordination task that is done among the agents, allows them to consider all the task to distribute them coherently according to time, costs, dynamic environment and other constraints. Also, such process allows execution coordination to: avoid work replication, avoid work overloaded agents and make agent’s subplans compatible. The administrative process architecture is a hierarchy like the Template Mediator, because it fits very well in the process definition and the coordination model better described in (Carrillo 1998).

References

