Organization-Centric Coordination

Problem description

During this practical session, you will have to design a coordination process based on organization (first part) and a coordination process based on the environment (second part).

The use case remains the same; a multi-agent system is used for coordinating the building of a house. Now we focus on the coordination process based on an organizational model. In this version, the construction is started, i.e. the contracting phase is ended (a company is allocated to each task) and we consider the execution phase.

The organization of the building is described in the XML file src/org/house-os.xml. Three parts are described for describing an organization in Jacamo:

- Structural specification: what are the roles groups involved in the house building? What are their links?
- Functional specification: How the agents will build the house? What will be the order of the building?
- Normative specification: What are the rules of building an house?

Question 1

Using an example of a specific task in the xml file, how this is processed for each specification?

Use the number in the xml file for the reference to the required part of the file for the chosen task.

Question 2

Find in the *.asl how organization model influences the behavior of the agents. For each you give the instruction and explain the result.

Question 3

Give the graphical representation of the structural and functional specification for building an house.

Question 4

Discuss pro and cons of this organization approach for coordination.

Practical work 1

1) Execute the use case (see agent-centric organization practical session) and analyze the result in the "Organisation Inspector" or on the website (better solution). The address is in the execution trace "*Moise Http Server running on* http://192...". Look at the definition of the group.
2) The initial organization has to be changed. The electrical system must be installed in parallel of plumbing. Exterior and interior paint must be done at end in parallel.
3) That is the crisis and there is a new budget restriction, the owner wants to do the interior paint task. Change the organization according to this modification. Is it enough? Do modifications in order that the house building is completed. What happens? Which modification do you have to do to satisfy the modification of the owner?

Practical work 2

Propose your own organization for building. Propose an adapted new organization file and modify the code accordingly. You can change order, rules, …