Table of Contents

[COOPERATION MECHANISM 1](#_Toc468803562)

[System Agent 1](#_Toc468803563)

[Coordinator Agent 1](#_Toc468803564)

[Scout Coordinator 1](#_Toc468803565)

[Harvester Coordinator 2](#_Toc468803566)

[Scouts 2](#_Toc468803567)

[Harvesters 2](#_Toc468803568)

# COOPERATION MECHANISM

## PGP

### Advantages

### Disadvantages

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Deliberative | | Negotiation | | |
|  | **PGP** | **Coalition** | **Contract Net** | **Auctions** | **Voting** |
| System Agent |  |  |  |  |  |
| Coordinator Agent |  |  |  |  |  |
| Scout Coordinator Agent |  |  |  |  |  |
| Harvester Coordinator Agent |  |  |  |  |  |
| Scout Agent |  |  |  |  |  |
| Harvester Agent |  |  |  |  |  |

## Coordinator Agent vs Harvester Coordinator

### Contract – Net

Coordinator agent have a list of garbage that needs to be picked up that is why it is necessary to establish a communication between them. The coordinator agent needs to know when was the garbage collected, because it needs to inform the system agent, so it updates the information of the garbage in the map. Contract net protocol gives you precisely this. Contract net has five steps; the final step, expediting, consists of the contractor communicating the manager that the task has been done; in this case the harvester coordinator informs the coordinator agent that the garbage was collected.

## Harvester Coordinator vs Harvester Agent

### Contract – Net

The harvester coordinator once it knows the amount and kind of garbage to be collected, it starts a contract net protocol. The contract is divided by type of garbage; any agent can bid for the contract depending on the type of garbage it collects. The contract is won by the nearest agent to the garbage. The contract ends when the harvester informs the coordinator that the garbage has been collected successfully.

## Harvester Agent vs Harvester Agent

### Coalition

When a harvester has been assigned to a contract. In the case that the agent can perform the task, it forms a coalition of just one; if it cannot perform the task by itself then the agent forms a coalition depending on the amount of garbage it needs to collect. Once the task has been completed, the coalition ends. If an agent is in a coalition, then it cannot bid for a contract.

## System Agent

Coord agent FIPA-ACL message inform

* Reactive: the system agent reacts to the message from the coordinator agent to know when to start a new simulation.

## Coordinator Agent

System agent FIPA-ACL message inform

Harvester coord agent FIPA-ACL message inform

Scout coord agent FIPA-ACL message inform

* Reactive: this agent only reacts to two things. The first one is to transfer information from both the scout and harvester coordinator. The second one is to tell the system agent when the task has been completed.

## Scout Coordinator

Con Scout Contract-Net

Con coordinat agent FIPA-ACL message inform

* Hybrid: this coordinator focuses on long-term planning of finding the garbage but also has to react for fast reactions in case there is garbage discovered.

## Harvester Coordinator

Con harvester FIPA-ACL message inform-broadcast

Con coordinat agent FIPA-ACL message inform

* Hybrid: this coordinator focuses on long-term planning of recollecting the garbage but also has to react for fast reactions in case there is garbage discovered.

## Scouts

Con scout coordinator FIPA-ACL message inform

Entre gente Emergent.

* Reactive: they have to react fast to changes detected such as discovering new garbage.

## Harvesters

Themselves coalition

Entre gente Emergent.

* Reactive: they have to react fast to changes detected such as picking up garbage.

Bibliography:

https://en.wikibooks.org/w/index.php?title=Artificial\_Intelligence/AI\_Agents\_and\_their\_Environments&oldid=3034421&diff=cur&diffonly=0

Russell and Norvig (2009)

Russell, S. & Norvig, S. (2009). Artificial Intelligence: A Modern Approach. Third Edition. Prentice Hall.