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| Software Engineering of Distributed Systems, KTH |
| AOSE and Mobility |
| Distributed AI and Intelligent Agents, Homework 3, Question 4 |

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| Shanbo Li, Sike Huang  2007-12-1 |

# Role Model

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| --- | --- | --- |
| Role | | Decider |
| Description | | It acts as a decider and selects the best offer from negotiators. |
| Protocols and Activities | | SelectBestGlobalOffer |
| Permissions | |  |
|  | reads | supplied localBestOffers |
|  | generates | globalBestOffer |
| Responsibilities | |  |
|  | Liveness | GenerateGlobalBestOffer = (CollectLocalBestOffers·SelectBest) |
|  | Safety | true |

|  |  |  |
| --- | --- | --- |
| Role | | Negotiator |
| Description | | Initial and manage contract with contractors |
| Protocols and Activities | | SelectBestLocalOffer |
| Permissions | |  |
|  | reads | supplied localOffers |
|  | generates | localBestOffer |
| Responsibilities | |  |
|  | Liveness | GenerateBestLocalOffer = (CollectLocalOffers·SelectBestOfCurrentRound)+ |
|  | Safety | true |

|  |  |  |
| --- | --- | --- |
| Role | | Contractor |
| Description | | It behaves like a contractor and makes offer to local negotiator |
| Protocols and Activities | | MakeOffer |
| Permissions | |  |
|  | reads | currentLowestOffer |
|  | generates | myNewOffer |
| Responsibilities | |  |
|  | Liveness | GenerateNewOffer = (ReadCurrentLowestOffer·CalculateNewOffer)+ |
|  | Safety | true |

# Interaction Model



# Agent Model

ManagerAgent ContractorAgent

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Negotiator Decider Contractor

# Service Model

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Service | Inputs | Outputs | Pre-condition | Post-condition |
| Make offer |  | *offer* | *able to make a better offer* | *offer ≠ nil* |
| Select best offer | *offers* | *best offer* | *receive all offers* | *best offer ≠ nil* |
| announce local best offer | *offer* | *local best offer* | *only one contractor left* | *true* |
| announce global best offer | *local best offers* | *global best offer* | *end of local contracts* | *true* |

# Acquaintance Model

ManagerAgent

ContractorAgent