



Market Simulation with Jade

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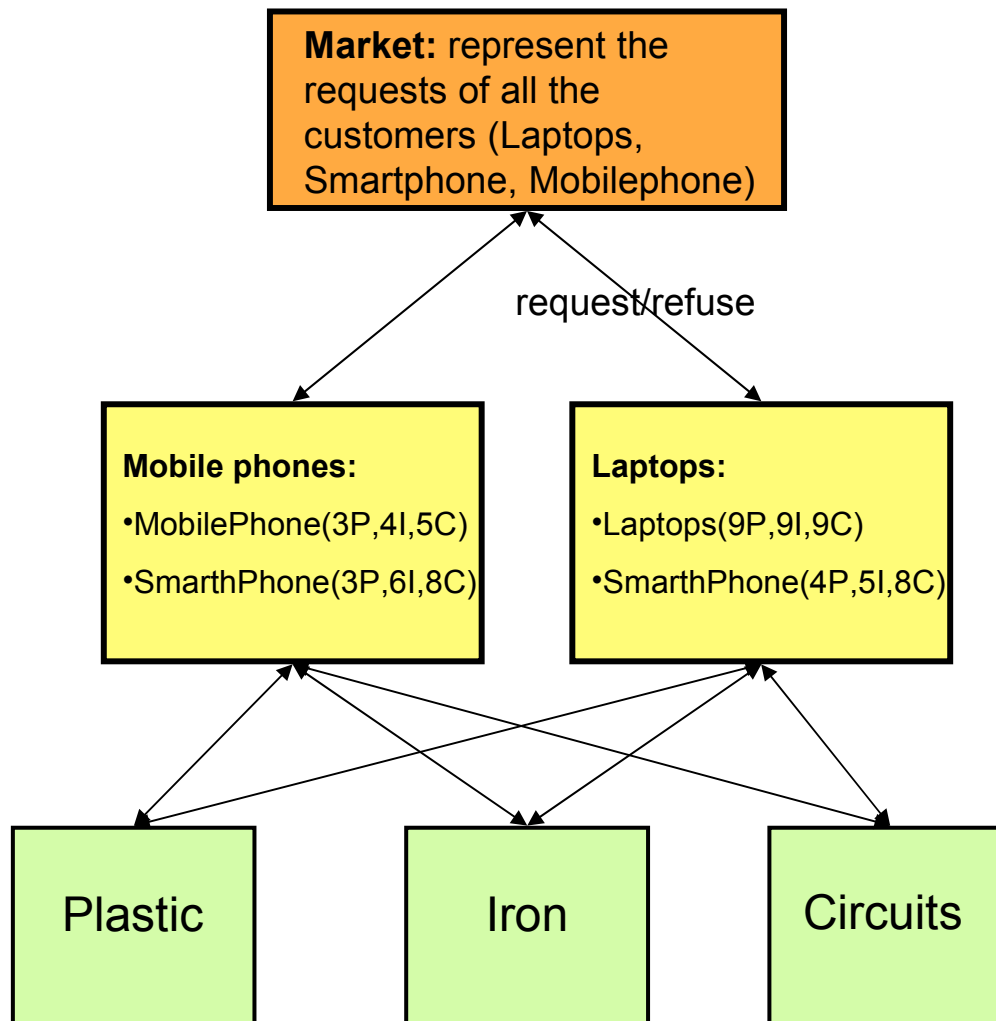


- Goal: Use a Multi Agent System to simulate the interaction among different actors in a market: prices variation and strategies
- Architecture:
 - Multi Agent System: Jade
 - Communication: Fipa ACL
 - Agents:
 - Customers: wants to buy a particular product
 - Producers: produce and sell basic materials
 - Industries: buy materials or intermediate products to obtain a final product to sell
 - Behaviors:
 - Cyclic Behaviors that exchange request/agree message with the other agents
 - Implement simple strategies (that decide the selling price in order to maximize the utility)

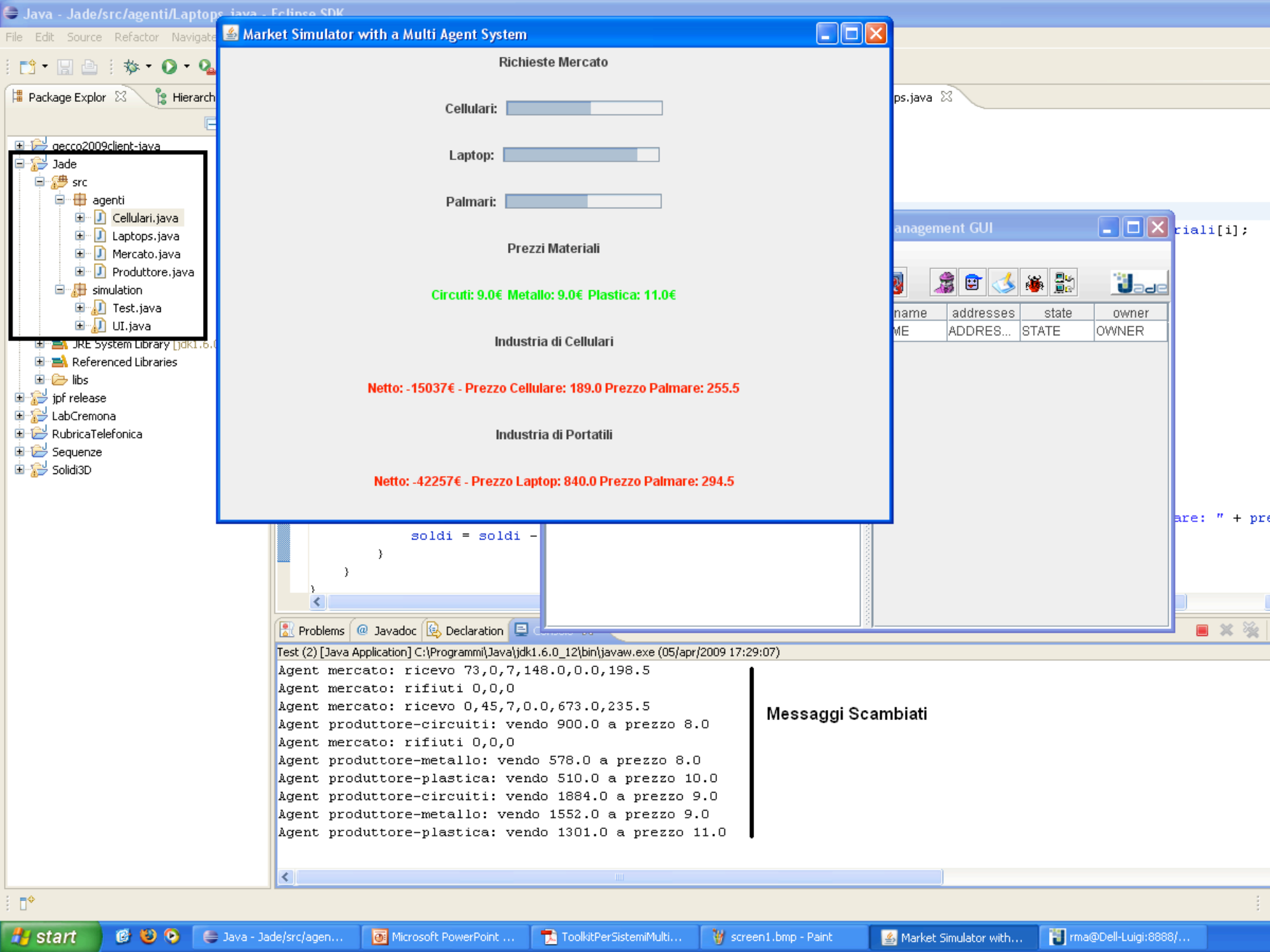


Industries:
Competition
on smart
phone

Producers
of basic
materials



Sends periodically the offers:
synchronizes the simulation



Richieste Mercato

Cellulari:

Laptop:

Palmari:

Prezzi Materiali

Circuiti: 9.0€ Metallo: 9.0€ Plastica: 11.0€

Industria di Cellulari

Netto: -15037€ - Prezzo Cellulare: 189.0 Prezzo Palmare: 255.5

Industria di Portatili

Netto: -42257€ - Prezzo Laptop: 840.0 Prezzo Palmare: 294.5

```
        soldi = soldi -  
    }  
}
```

Problems @ Javadoc Declaration

Test (2) [Java Application] C:\Programmi\Java\jdk1.6.0_12\bin\javaw.exe (05/apr/2009 17:29:07)

Agent mercato: ricevo 73,0,7,148.0,0.0,198.5
Agent mercato: rifiuti 0,0,0
Agent mercato: ricevo 0,45,7,0.0,673.0,235.5
Agent produttore-circuiti: vendo 900.0 a prezzo 8.0
Agent mercato: rifiuti 0,0,0
Agent produttore-metallo: vendo 578.0 a prezzo 8.0
Agent produttore-plastica: vendo 510.0 a prezzo 10.0
Agent produttore-circuiti: vendo 1884.0 a prezzo 9.0
Agent produttore-metallo: vendo 1552.0 a prezzo 9.0
Agent produttore-plastica: vendo 1301.0 a prezzo 11.0

Messaggi Scambiati



Conclusions and Extensions

- Jade is very well suited to implement this kind of simulation:
 - the real interactions are naturally translated in a exchange of message among agents
 - It is possible to clone the basic agents to build a big and complex population
 - Similar agents can compete for similar resource (in this case for market share)
 - The agents have not to know the other agents but can discover the needed agents with the yellow pages service
- It is possible to implement dynamic strategies that change interacting with the other agents (for example using RL)
- Adding many details to the system make possible to obtain a complex simulation from which many interesting information can extracted that apply well also to real market
- Even in this simple examples many interesting interaction emerge like for example the cyclic behavior of request/offer