Boxed Economy

Boxed Economy Foundation Model
Toward Simulation Platform for Agent-Based Economic Simulations

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Boxed Economy

- To support the process of simulation research
- To define the language for designing artificial society

Boxed Economy Simulation Platform
Boxed Economy Foundation Model
My Research Experience

- Learning and Evolution of Neural Agent [1996-98]
- Winner-Take-All Market Simulation [1997-01]
- Financial Market Simulation [1998-99]
- Entire Economy Simulation [1999-] and so on...

3 Gates
which we should break through

Collaborative Cumulation

Research Efficiency
Simulation Quality
The Key

Boxed Economy Foundation Model

Collaborative Cumulation

Sharing Components

sharing

sharing
Model consist of many smaller model components

Cumulation and Reuse of Model Components
model components can be modeled by different modeler

model components should work with other components
“framework”

Framework is the architecture template that is specialized to a certain domain.

Frameworks is important for reusing and co-improving due to define a “context” for the components.

Boxed Economy Foundation Model

Framework for agent-based economic simulation
Using Boxed Economy Foundation Model
Boxed Economy Foundation Model

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Agent is not a minimum indivisible unit in a simulation!

(ex) the individual who act the role of consumer
(ex) the social group who act as wholesaler or retailer

Economics Framework for Swarm

Important Research Of Economic Framework
Charlotte Bruun (2000)

http://www.socsci.auc.dk/institut2/empl/obruun.html
Reliable Reuse  Reduce the tasks for Verification and Validation

Integration level
- Verification
- Validation

Component level
- Verification
- Validation

Shared Components
verification and validation

**Verification**
= the inspection whether the simulation program is coded rightly

![Diagram](Model → Program)

**Validation**
= the inspection whether the model is corresponded to the reality

![Diagram](Real world → Model)

And...

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**Boxed Economy Simulation Platform**
**Boxed Economy Foundation Model**

- Collaborative Cumulation
- Research Efficiency
- Simulation Quality
Conclusion

Boxed Economy Foundation Model

• Framework
  • To build, share, co-improve
  • To provide flexible design

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Boxed Economy Foundation Model

- Memory
- Information
- Social Group
- Goods
- Economic Actor
- Function
- Communication Path
- Needs
- Relation

Boxed Economy Foundation Model

- Information
- Economic Actor
- Goods
Boxed Economy Foundation Model

- Economic Data A : Information
- Paper : Goods
- Voice : Goods

Boxed Economy Foundation Model

- Memory
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Boxed Economy Foundation Model

- Economic Actor
- Relation
- Communication Path

- Observing the target
- Abstracting the feature
- Building the model
- Implementing the simulation
- Running the simulation
- Evaluating the simulation results
- Comparing the behavior Between the Real and the Artificial
- Publication
Observing the target

Abstracting the feature

Comparing the behavior Between the Real and the Artificial

Building the model

Implementing the simulation

Running the simulation

Evaluating the simulation results

Publication

Software Reuse

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