Modelling Framework for Integration of Geographical Information System and Multi-Agent Models as Planning Support Tools in Enhancing Local Authority Functions

Noordini Che’Man
Outline

1. Introduction
2. GIS and MAS Integration
3. Study Area and Data Sets
4. Economic Growth and Firm Demography
5. Modelling Framework and Methodology
6. Conclusion
Introduction

• Interest in modelling urban system increasing
• Contribution of advance modelling approach – new models to improve the understanding of urban development process
• Current development in Malaysia- economic region
• Integration of Multi-Agent System (MAS) and Geographical Information System (GIS) - Progress in modern GIS tools and technique
GIS and MAS Integration

• Geographical Information System (GIS)
  “GIS is widely used to facilitate in analyzing, modeling, manipulating, representation and displaying geo-referenced data in order to solve complex problems which relate to planning and management of resources”


• Multi-agent system (MAS)
  “collection of interacting autonomous agent each with their own capabilities and goal”

MULTI-AGENTS SYSTEM MODELS

Agent represent decision maker

Allow investigating urban land use as complex system
GIS and MAS Integration

• GIS + MAS = enhance capability of urban simulation technique
• Makes available a considerable amount of data and information produced and used by users who commonly employ GIS.
• Model builder to validate the dynamic models.
• improves the results of decision process – cooperate between stakeholders and decision maker.
Study Area
Data Sets

- Firm data
- Klang Valley’s GIS Data
- Statistic and economic data for Klang Valley and Malaysia
How to Incorporate Economic Growth?
Modelling Framework
Methodology
Analysis and modelling

- Firm Dynamic Performance

- Location Choice – Geocoding, Proximity and Area analysis
Conclusion

• Firm demography concept as solution to modelling of economic development as bottom-up development process.
• partial data is available—opportunities are limited to data availability.
THANK YOU FOR YOUR ATTENTION

FIG Commission 3 Workshop
The Empowerment of Local Authorities: Spatial Information and Spatial Planning Tools
Paris, France, October 25-28 2011