

Integration of SD and GIS for Land Use Planning: A case study of an urbanizing area in China

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At present, System Dynamics(SD) and Geographical Information System(GIS) can still be considered as scientific tools in developing stages which are gaining popularity because of their utilities in their own separate fields. When it concerns urban land use planning, system dynamics is successfully used to describe and analyze the dynamic, social-economical interactions of different sectors in the complex urban system.[Urban Dynamics, Jay Forrester] On the other hand, GIS is widely used to build LIS(Land Information System), which is a comprehensive database for all the cartographic and other related data. Its visualization and spacial analysis functions largely enhance the spatial decision making.

This paper focuses on two parts. First, making the linkage more simple(technical part), DDE(Dynamic Data Exchange) is used for the link .

Secondly, how to enhance SD model by GIS's visualization and spacial analysis effects. When SD deals with spatial analysis, the big challenges are visualization function and aggregation. We prefer more generetic models which are analyzable and learning-supporting. GIS can be very helpful when it gives a splendid function of visualization, and it avoids several complicated disaggregation work in SD.

Urban Dynamics model is used as the starting point of the SD model, and it's accustomed to a case study of an urbanizing area in China. Mainly, two topics are included in the case study. First, the improvement of the transportation system and its demographic, social-economical effects. Secondly, the environmental effects for the developing of the area.