

U Assisted Model Building
in the Social Sciences
using Data Driven
Simulation



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AIMSS

- **Adaptive Intelligent Model-Building for the Social Sciences using Symbiotic Simulation**
- **ESRC e-Social Science Small Grant**
- **School of Computer Science**
- **School of Public Policy**
 - **The Institute of Local Government Studies**
 - **Centre for Urban and Regional Studies**

Outline

- **The problem**
- **A dynamic, data-driven simulation architecture for social science**
- **A case study: AIMSS**

The use of models for public policy

- **Public policy**
 - Evidence based
 - Evaluation

- **Strengths of mixed-method approaches**

- **Qualitative insights driving quantitative models**
 - Specifying broad parameters
 - Modelling discreet processes?

Too much data!

- **'Joined up' policymaking**
- **Interdependence, causation, reaction...**
- **We can detect patterns**
- **But what is meaningful?**

An Example: The housing market

- **The Barker Review of housing**
 - “A step change in supply”

- **But the housing market is complex and unlike most other markets**
 - **Discreet processes and transactions**
 - **Behaviour**

Analysing the housing market

- **Making the links...**
 - **The economy**
 - **Local neighbourhoods and services**
 - **Investment behaviour**
 - **Poverty, social exclusion, and wealth**

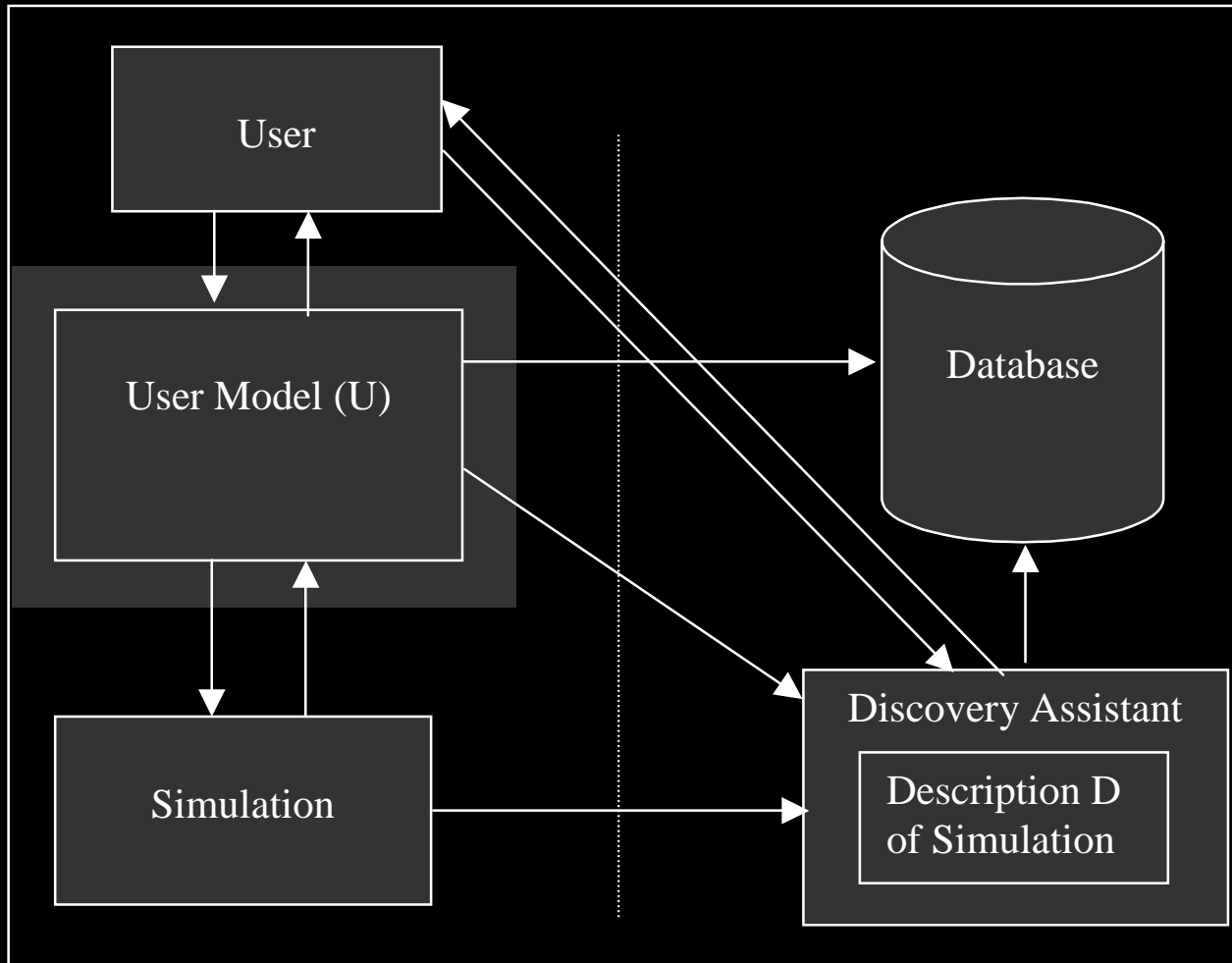
- **Manifested through individual decisions**

- **What are their collective impact?**

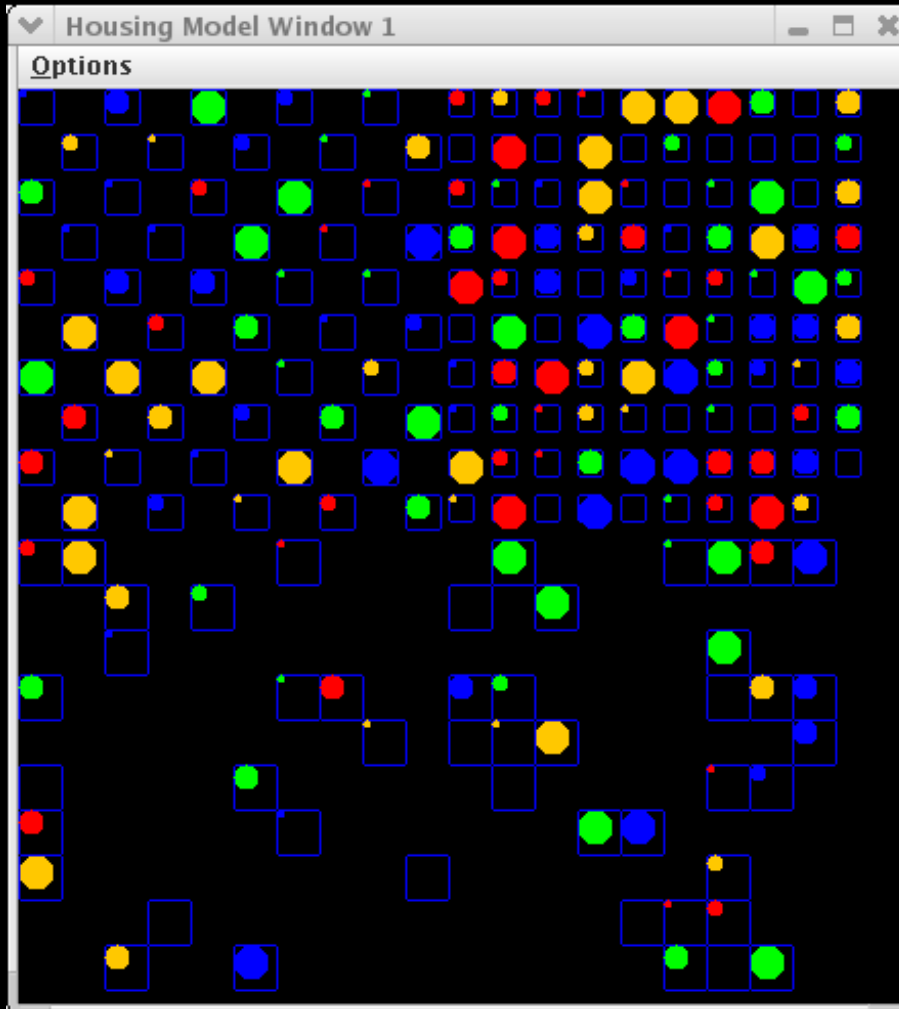
What is needed?

- **More realistic models**
 - **Understand what is relevant**
 - **On-line adaptation**
 - **Data driven**

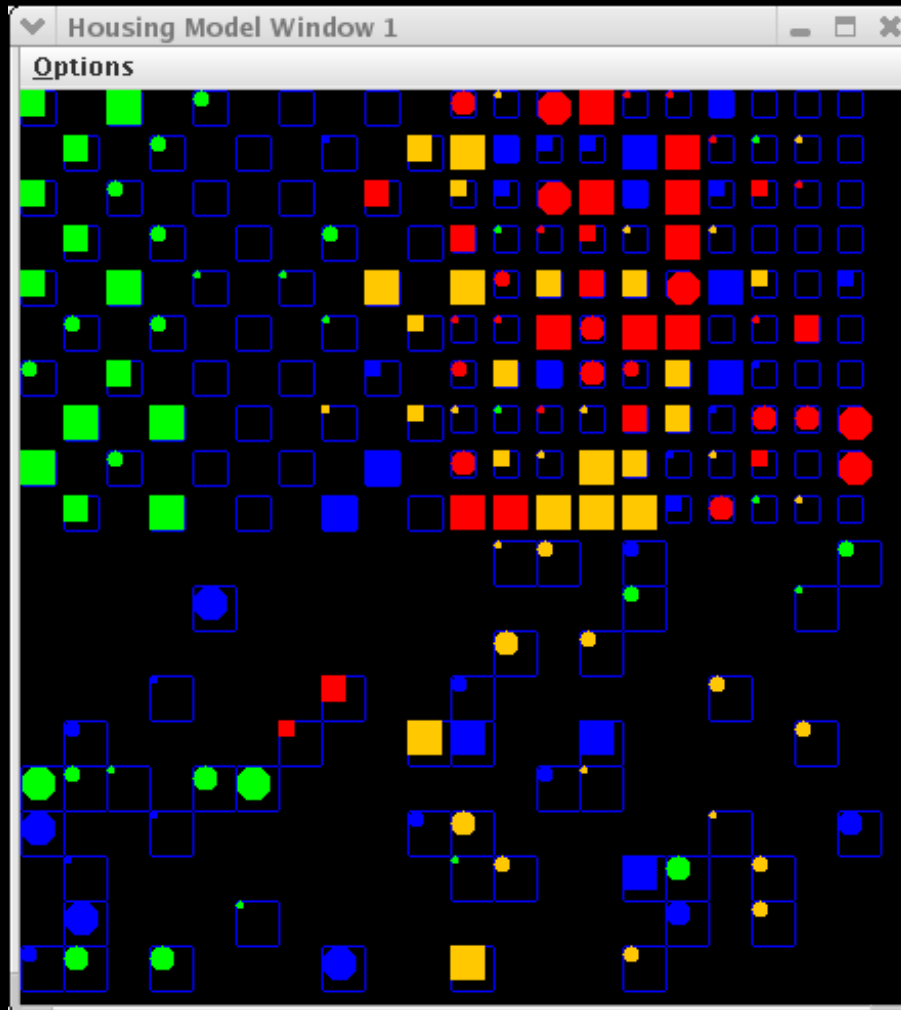
A Data Driven Architecture



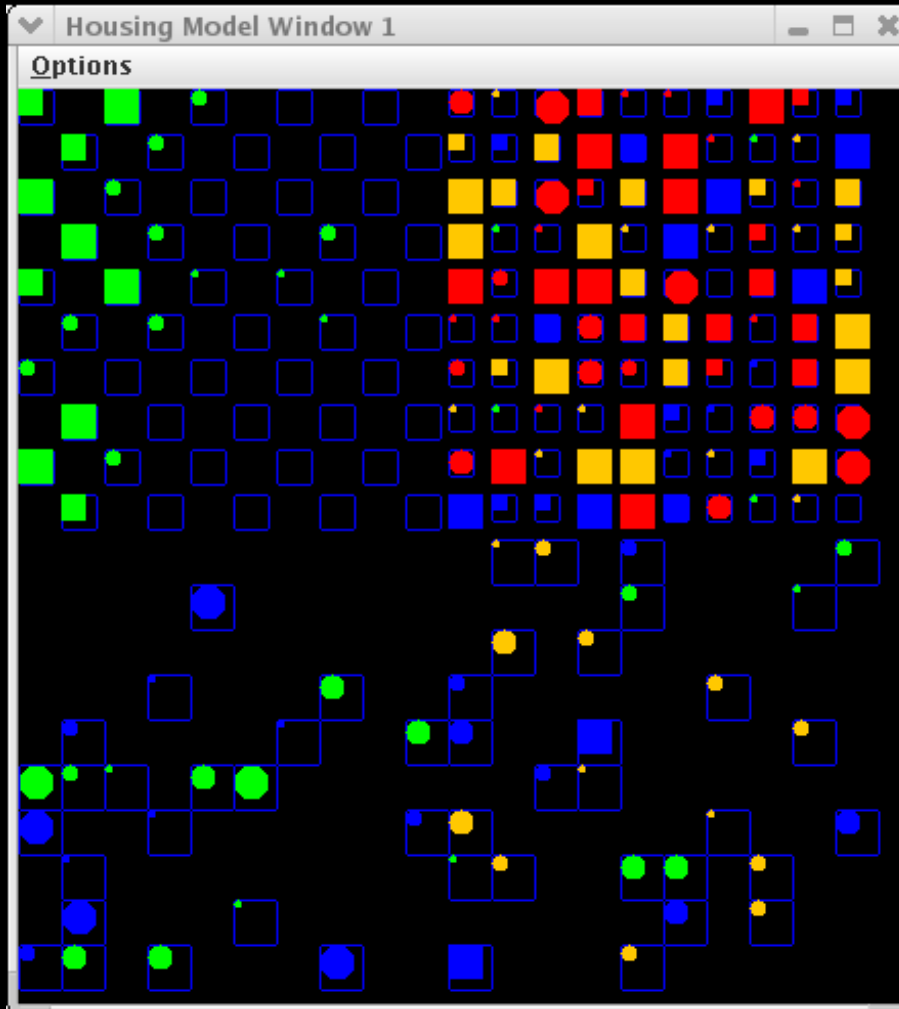
A Case Study



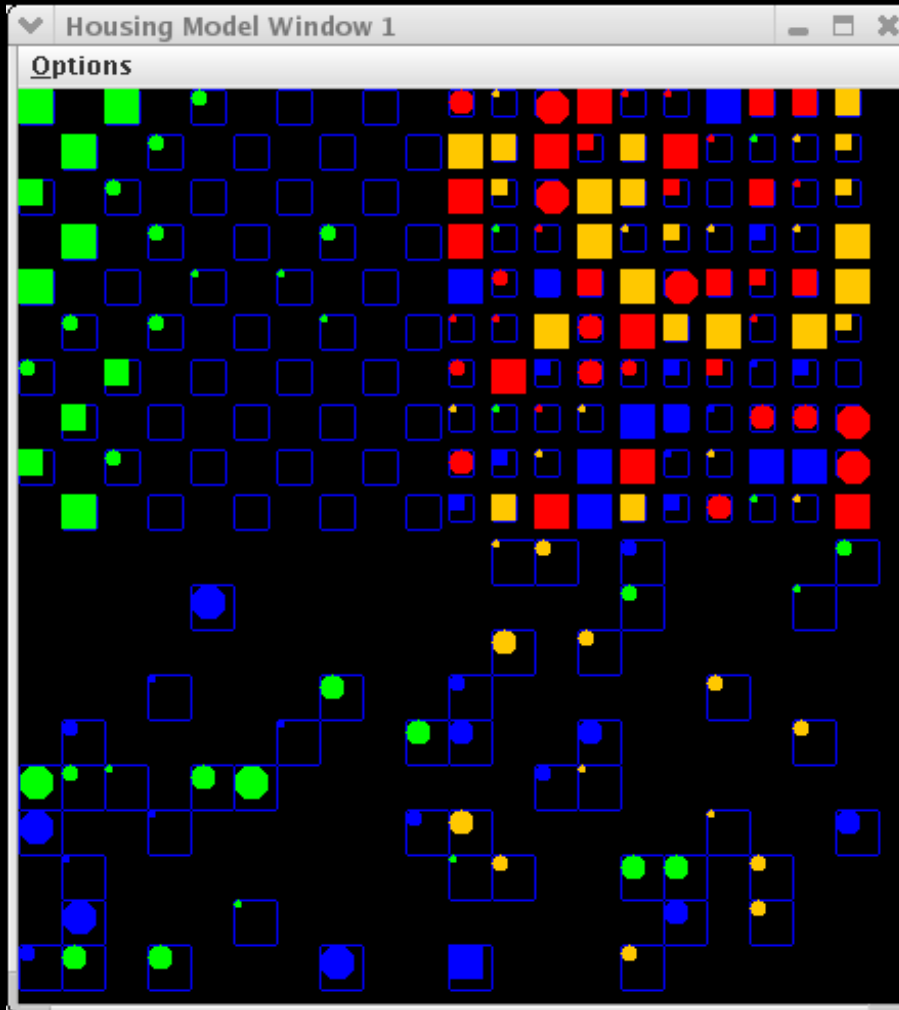
A Case Study



A Case Study



A Case Study



Conclusion

- **More than data mining or agent based model in isolation**
 - **Addresses the twin problems of multidimensionality and the interactions-gap**
- **Could lead to novel uses of data mining algorithms**
- **Key challenge:**
 - **Interpreting the simulation**
 - **Automatically identify relevant data sources**