

MOSES: Modelling and Simulation for e-Social Science

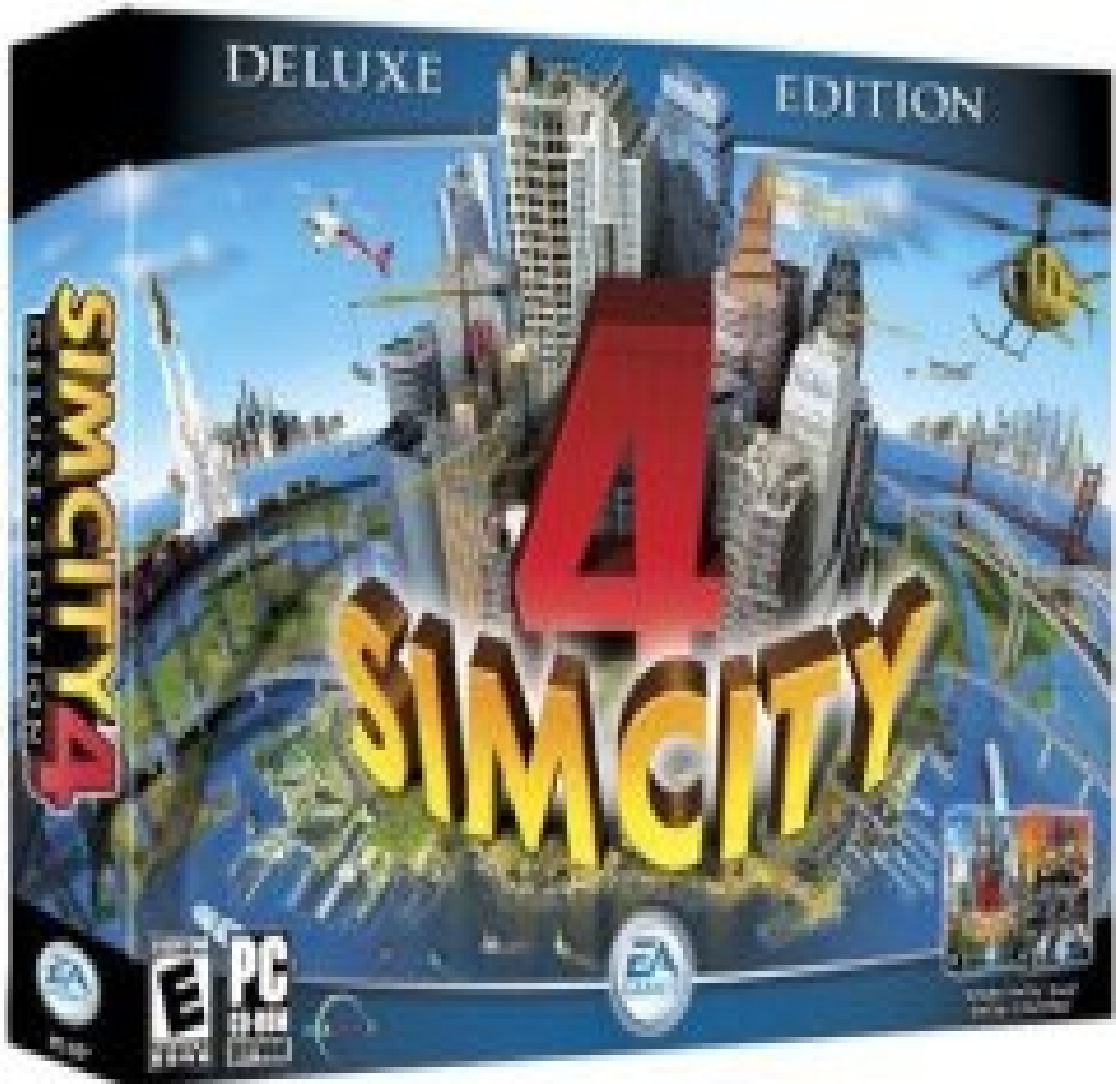
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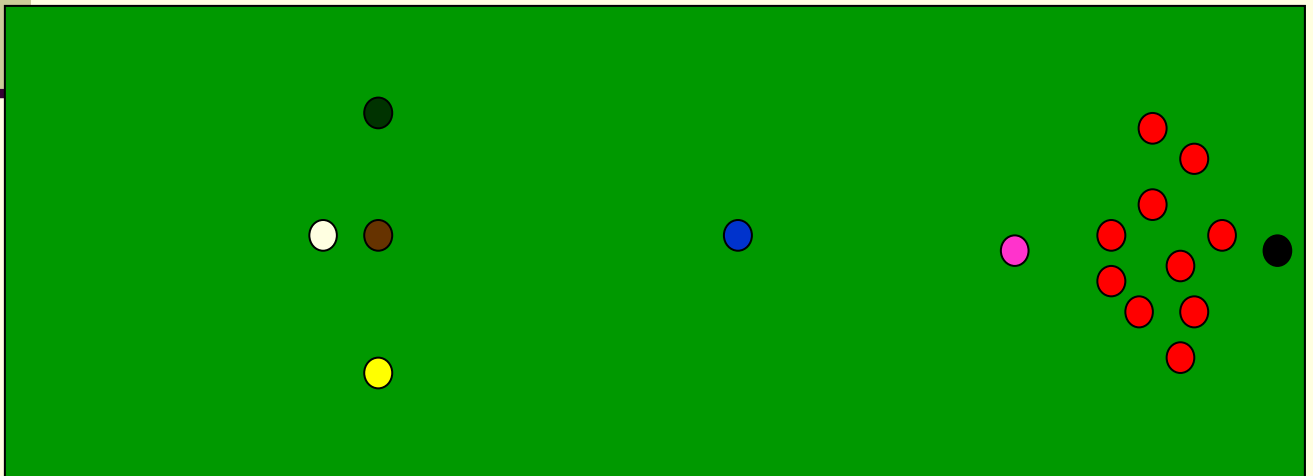
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Focus



Importance of Modelling

- Simple systems
- Systems of disorganised complexity
- Systems of organised complexity



Importance of Simulation

- SimCity analogy
 - As an academic and intellectual exercise
- Wind tunnel analogy
 - Test environment for real policies
- Flight simulator analogy
 - Learning environment for policy-makers

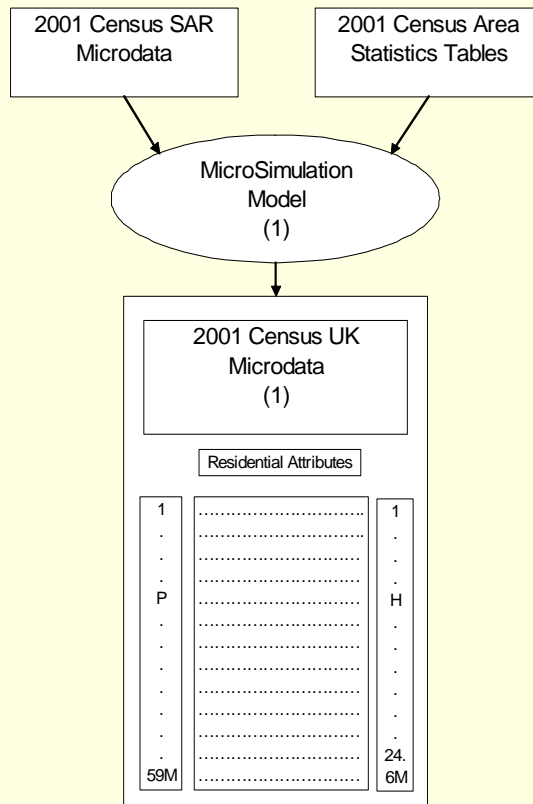
Moses – Aims

- To create a flagship modelling and simulation node, in which the capabilities of Grid Computing are mobilised to develop tools whose power and flexibility surpasses existing and previous research outputs.
- To demonstrate the applicability of grid-enabled modelling and simulation tools within a variety of substantive research and policy environments
- To provide a generic framework through which grid-enabled modelling and simulation might be exploited within any problem domain
- To encourage the creation of a community of social scientists and policy users with a shared interest in modelling and simulation for e-social science problems.

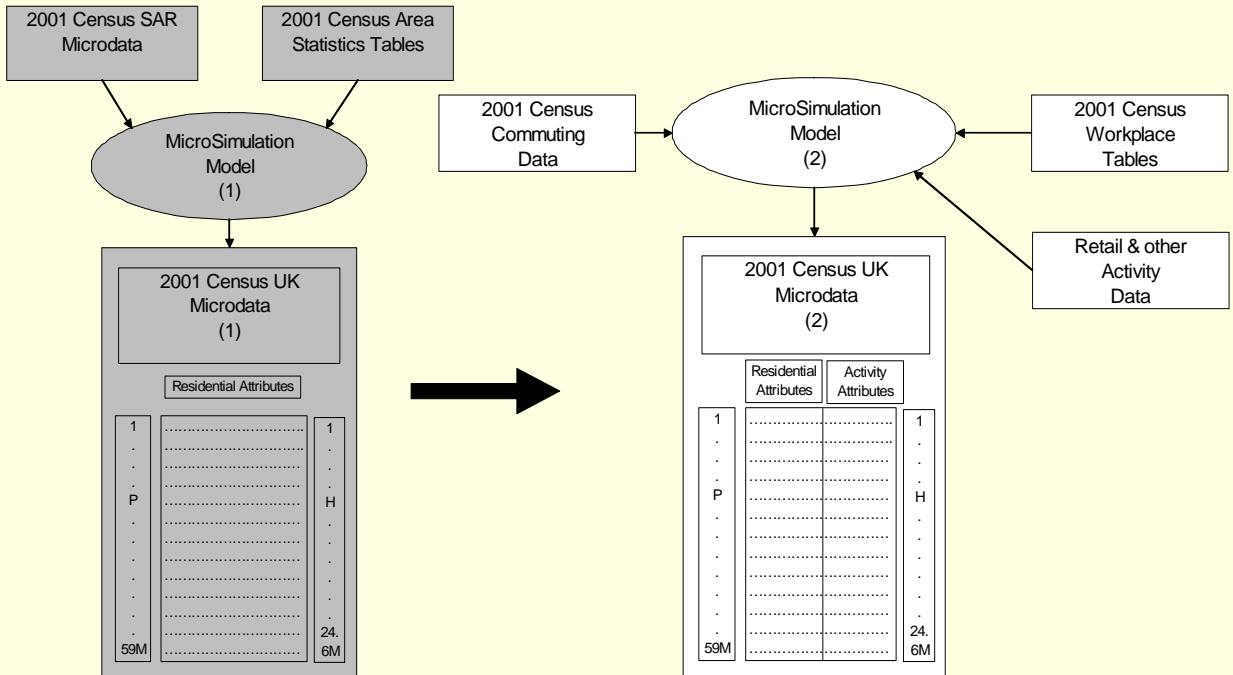
Moses - Objectives

- to create a synthetic model of the whole UK population
- to demonstrate a forecasting capability for the population model
- to develop case study applications with specific reference to health, business and transport, including evaluation of wider-ranging policy scenarios
- to create a generic framework for the application of policy and simulation tools to social science problem domains.

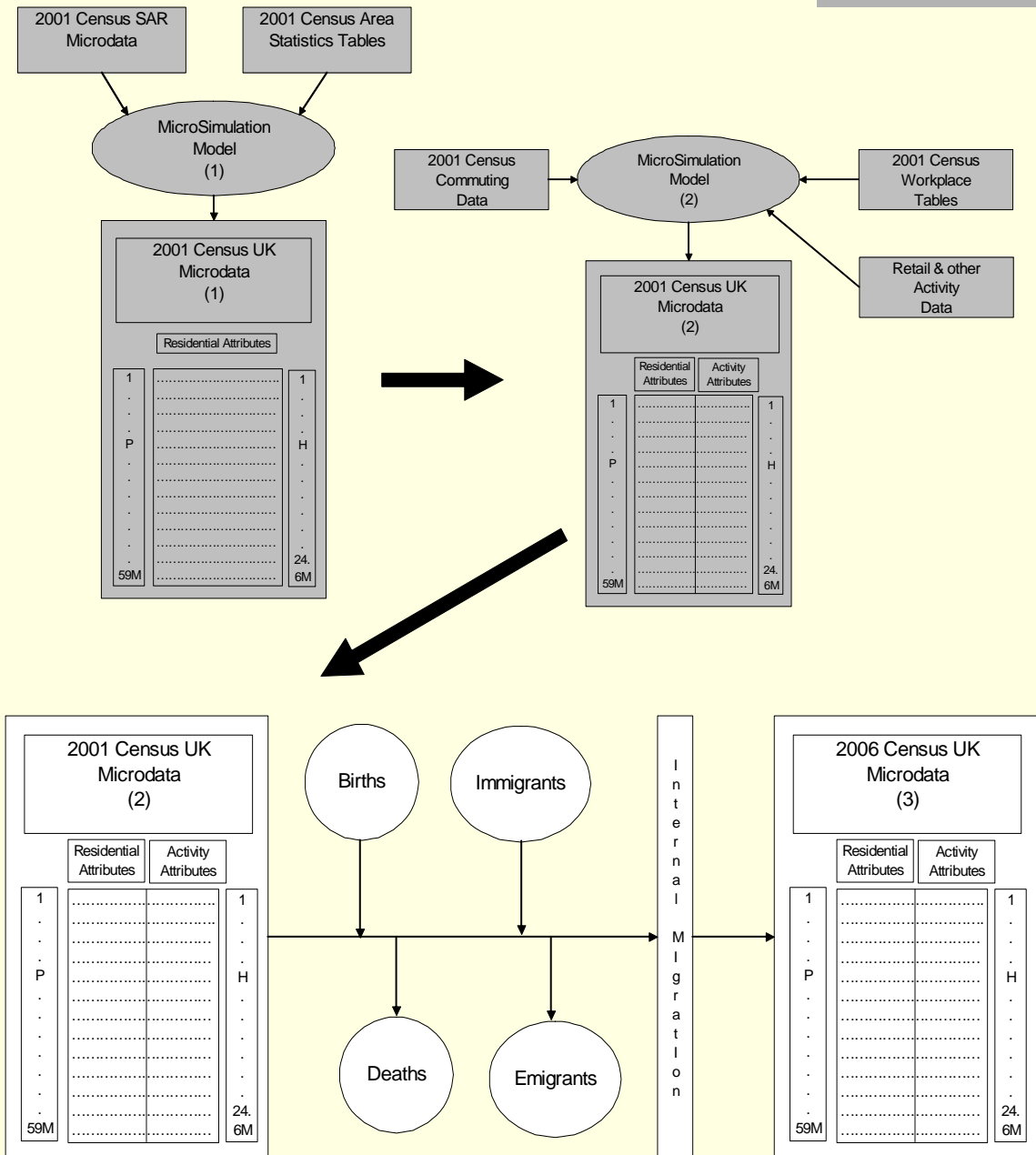
Moses - Methodology



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Moses - Methodology

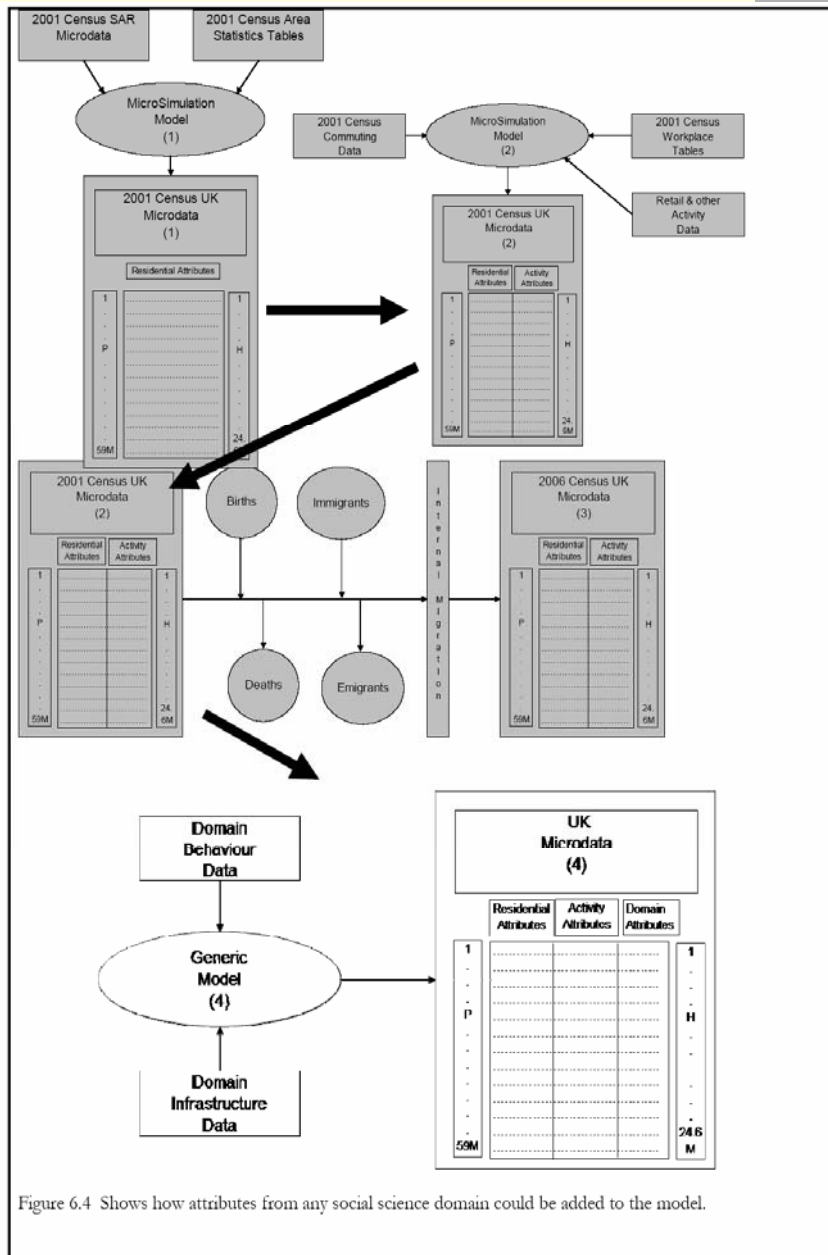


Figure 6.4 Shows how attributes from any social science domain could be added to the model.

Importance of e-Science & Grid

- Complex simulation
- Data sharing
- Security and confidentiality
- Collaboration
- Visualisation

Applications: Health

- Goal is to look at the balance of service provision across both the health and social care sectors
 - Important policy implications due to poor integration between these sectors
 - Increasingly problematic in particular with respect to the very elderly
 - Geographical variation as variations in use will reflect variations in provision: different demographic groups may also demand alternative service mix
 - Possible importance of ‘social networks’ – voluntary services, church, school, health clubs and centres – may have subtle and important influence
 - Problem domain of interest to geography, health economics, political science and social policy
 - Practical importance to Health Care Commission, CSCI, Local Government/ Social Services, Hospital Trusts, Primary Care Trusts
...
 - Important dimension of data sharing, confidentiality and security...

Applications: Transport

- Network and vehicle simulations are beyond the scope of this project
 - Concentration on aggregate processes of trip generation and distribution rather than assignment
 - Look at broad scale policy impacts and options: new roads versus subsidies; decentralisation; greenbelt issues?...
- This research of interest to a broad community of users – DoT, ODPM, Yorkshire Forward, ...

Applications: Business

- Increased life expectancy will create continued pressure on annuity rates
- Active elderly populations will need higher incomes in retirement
- Funding via equity release products will reduce inter- generational wealth transfer
- Increased housing supply could lead to price stagnation – or crash?
- Interesting geographical patterns?

Conclusions

- If successful, this research will demonstrate the value of e-social science to:
 - Geographers
 - Transport, health and business users
 - Social scientists in a range of domains (crime, politics, social policy, ...)
 - Policy makers in local and national corporations, both public and private