Simulation methods

Powersim Studio is the leading dynamic-simulation software available today, enabling the modelling of both continuous and discrete mechanisms, and offering stochastic simulation (based on the probability of different events) and optimisation capabilities. Most importantly for many of the models develped by Powersim UK, it facilitates multidimensional modelling, interfaces easily with other applications and enables clear, intuitive and powerful interface to the simulation allowing non-technical executives to use simulations with ease. You can buy the software platform here.

Dynamic simulation is one of a number of different kinds of simulation model that are readily available today. Each is appropriate for different purposes - it's a question of the right tool for the job. For our work supporting leading organisations in solving complex and dynamic problems, **dynamic simulations** are the most helpful because of they enable analytical rigour, combined with a holistic overview of the organisation's behaviour, and because of their ability to illustrate that behaviour clearly through animation.

Dynamic (or "continuous") simulations are very powerful at representing the strategic issues that arise in interconnected systems. Historically they have been used to simulate operational business issues and, at a less quantitative level, to illustrate the dynamics of social and organisational issues. For our leading work in strategy simulation, we use *Powersim Studio*, the most powerful dynamic-simulation tool available.

Most managers use **spreadsheets** to model commercial outcomes. Spreadsheets are very flexible in showing financial and physical numbers in discrete time steps. But they reach their limits when it comes to representing the business dynamics caused by interaction and time delays, or modelling the effects of intangibles on your business, or explaining *why* your modelled course of action is the right one. That's when you start to need a dynamic simulation.

"Discrete event simulations" are powerful for showing how individual widgets in a production line or a distribution system will behave, or the arrival of customers in a queue throughout the day, or how named individuals might be posted around an organisation in the near term. For more holistic problems, though, or for looking further into the future, where managers need to shift the focus from the individual to the collective or from the local issue to the knock-on effect around the organisation, discrete event simulations give way to dynamic simulations.

"Agent-based simulations" specify rules of behaviour for individual entities or 'agents' such as customers, and specify how the agents interact with each other. The simulation then explores the consequences of the pre-specified individual rules on the population of agents as a whole. This approach is often used in social sciences, and because of the high levels of complexity of these systems the primary purpose of agent-based simulation is not to predict behaviour (where accuracy is vital), but more usually to assist in development of new and existing theories.