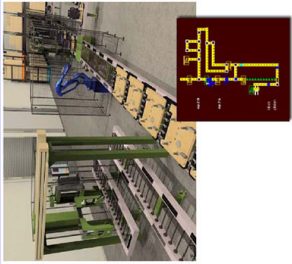


Simulation Examples



Discrete Event Simulation

Agent-Based Simulation

Aim and Focus

Our aim is to develop a simulator that helps to understand and predict the impact of different management practices on retail store productivity

Our Focus is on:

- individual departments within department store
- simulation study supported by case studies
- using Agent-Based Simulation

Retail Management Practices

Research indicates that human resource management practices offer leverage for productivity improvement.

The practices we are investigating include empowerment, training and development, and teamwork.

Our current working model considers:

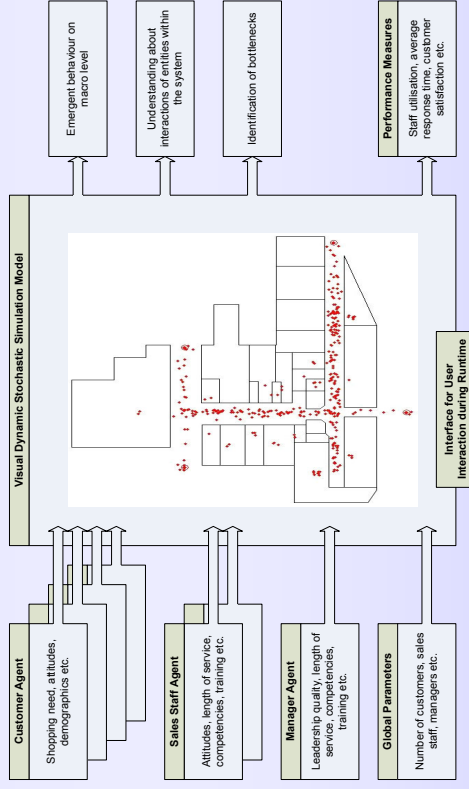
- team skills composition
- team member autonomy

Agent Based Modelling and Simulation

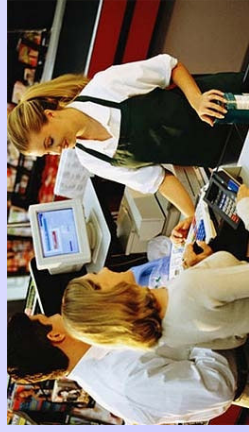
In agent-based modelling and simulation the researcher explicitly describes the decision process of simulated actors at the **micro** level. Structures emerge at the **macro** level as a result of the actions of the individual agents, interactions between agents, and also with their environment.

In our simulation agents represent real people and are lifelike in the sense that they behave autonomously and pro-actively.

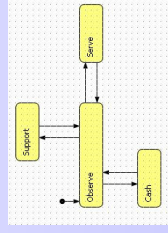
Conceptual Model



Conceptual model of our department store simulator



Staff serving customers



Staff agent state chart

Case Study Research

We have conducted 4 case studies with a top ten UK retailer to empirically inform the modelling and simulation process looking at Audio & TV and Womenswear departments across two branches

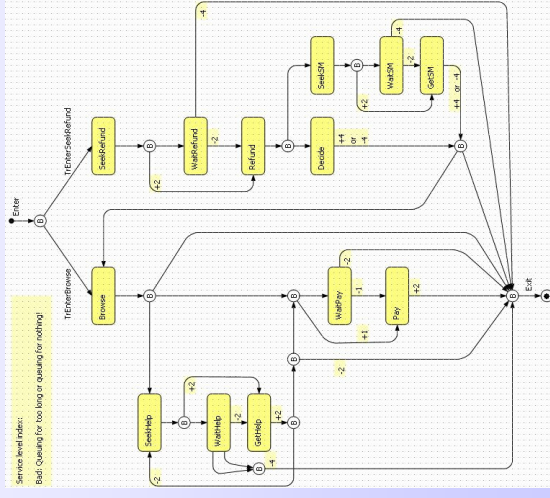
We applied a variety of complementary research methods: 4 weeks' informal participant observation, 40 interviews with employees, and analysis of company data

The simulator

Our agents are designed using state charts which:

- show the different states an entity can be in
- define possible transitions from one state to another
- define the events that cause them

Frequency distributions are used for defining state change delays and probability distributions for supporting decision making.



Customer agent state chart