

# Using Trading Games to Interpret a Health Environment

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# Introduction



- There is a long tradition of using trading games as teaching tools
  - RoboCup
  - TAC etc
- These have been used to allow students to explore a range of market-based models
- The NHS is moving towards a much more market orientated approach
  - Commonly called the “Internal Market”
  - All sorts of professionals need to understand its working and how it could be improved

# Background



- The teaching model is rather different from most of the competitions in that:
  - The objective is to use and configure existing agents to investigate the effectiveness of your management strategy
  - To understand the constraints of different professionals in the Service, and understand the effects of your decisions on their practice
- Approach based on the Kings' Fund *Rubber Windmill* in which:
  - Teams take specific roles
  - Take decisions for one or more turns or simulation periods
  - Come together to discuss the results of their decision making and how it

# Teaching Objectives



- The teaching objectives have been specified as:
  - Understand how a health economy responds as a system
  - Understand the policy framework for health and social care
  - Explore organisational relationships in health and social care - competition or collaboration
  - Consider the operational consequences of policy decisions
  - Analyse the impact of individual actions on wider non-linear systems.

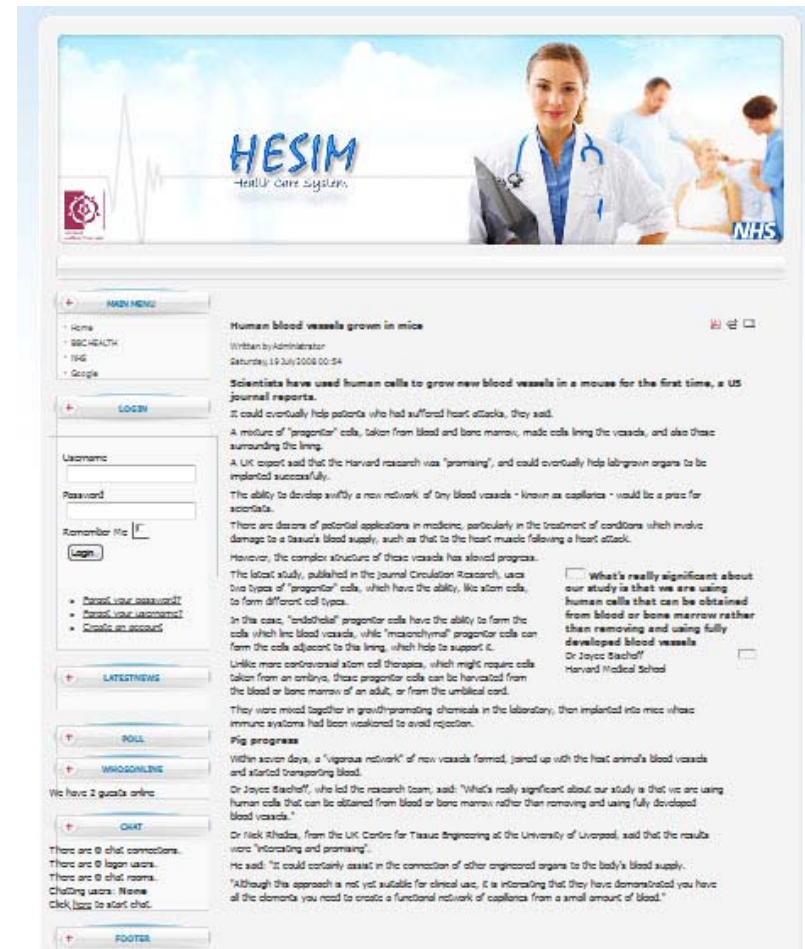
# Health Economy Simulation



- The system was built using Rapid Application Techniques (RAD) by a group of students over the Summer of 2007
- The objective was to develop a system with sufficient user capability for the healthcare lecturing staff to understand how the system could be used in a teaching environment
- Only a small part of the NHS “economy” was considered
  - This means that the current system is considered to be much too hospital based
- Minimum technology was used to drive the interfaces
  - A minimum set of agents is available
  - They have just sufficient functionality to perform their allotted tasks
  - There is no automatic monitoring or mentoring

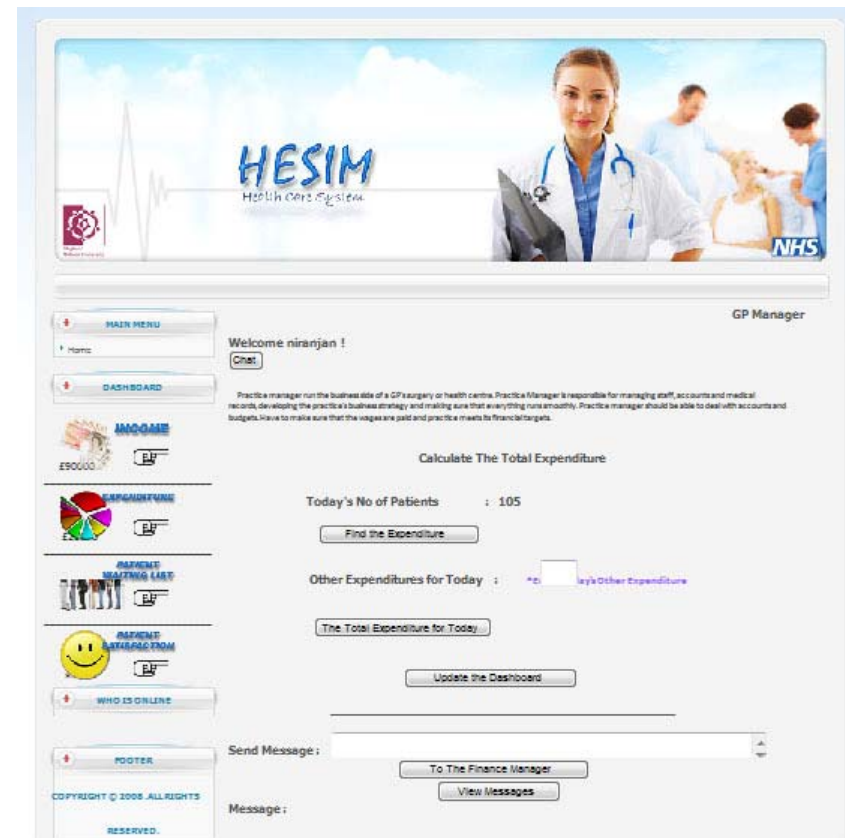
# Login Screen

- This is the initial interface to the system
- Users register on the system and choose a role



# Control Panel

- Allows students to enter their management decisions and monitor the key properties
- The following properties are monitored after each round
  - Income
  - Expenditure
  - Patient's Waiting List
  - Patient Satisfaction



# Future Directions



- The current prototype only considers a small part of the NHS
  - It is a simple prototype to allow the Health Teachers to visualise how such a system could be used
  - It is very much hospital service oriented for simplicity
  - It is still too simplistic for practical teaching use
- A proper prototype now needs to be produced that:
  - Handles a realistic sub-set of the the services offered by the NHS
  - Is robust enough for practical use in demonstration teaching situations

# Conclusions



- Key to this project is the involvement of health teaching staff from the start:
  - The initial specification of the teaching scenario came from them
- There are many opportunities for tutorial agents to assist students, for example:
  - The *Trust Director of Finance* could step in when decisions are likely to have serious financial implications
    - This was originally seen as a human tutorial role, but it can readily be automated
  - Unexpected situations, such as a 'flu epidemic can be injected into the system

# Acknowledgements



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- Probodha Mathangaweera

as part of their Computing Project over the Summer of 2008.

# Pre-Announcement



Maria and myself are organising a workshop on

Educational Uses of MultiAgent Systems  
(EduMAS-09)

At AAMAS in Budapest

May 2009

Further Details

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